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AI, AUTHOR, AMANUENSIS

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Abstract

The limitless potential of artificial intelligence (AI) to analyse information, execute complex tasks, create and invent, has yet to be fully comprehended or harnessed. At the same time, the laws regulating the behaviour and output of AI systems are also lagging behind. Much has been written on whether AI-generated works should receive copyright protection with different perspectives on elements of originality, creativity and broader policy considerations. This article compares the approaches in a number of jurisdictions and contends that AI today essentially acts as an amanuensis – an assistant or agent – that carries out the creative plan that has been programmed and assigned to it. In the exceptional circumstances that AI arguably creates a work as a result of independent and autonomous deep learning, recognition of "authorship" must nonetheless be satisfied by the location of a nexus to a human individual; otherwise, such works receive no copyright protection. In conclusion, we propose an evaluative framework that recognises both the centrality of the creativity of the human author in the canons of copyright law and the constantly evolving marvels of modern technology.

I. INTRODUCTION

Today, rapid advancements in artificial intelligence ("AI") capabilities to create art continue to redefine the human role in the creative process. Most of these works of art generated by computers rely heavily on the underlying algorithm and creative input of the programmers. The computers are akin to paintbrushes or chisels – they are tools used in the creation of the artworks.[1] Jane Ginsburg and Luke Ali Budiardjo referred to the "amanuensis" — who acts as an agent by faithfully carrying out the subordinate task assigned by the principal — as distinct from the author in copyright law, and therefore to whom the attribution of authorship should not be accorded.[2] The authors will be adopting the term "amanuensis" to distinguish between AI that acts in an

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[1] Andres Guadamuz, *Artificial Intelligence and copyright*, WIPO MAG., Oct. 2017, at 14.

[2] Jane C. Ginsburg & Luke Ali Budiardjo, *Authors and Machines*, 34 BERKELEY TECH. L.J. 344, 355, 360 (2018) ("Attribution of authorship effectively follows general rules of agency: 'the physical acts of the agent are attributed wholly to the author' under whose control and direction the amanuensis acts."). *See also*, Elizabeth Adeney, *Authorship and Fixation in Copyright Law: A Comparative Comment*, 35 MELBOURNE U. L. REV. 677, 682 (2011) ("when another person acts as an amanuensis to the author, the author will achieve copyright protection for the words recorded," and that "[t]he physical acts of the agent or scribe are attributed wholly to the author who has supplied the words to be recorded").

autonomous capacity and AI that functions as an amanuensis that is influenced and controlled by a principal author.

This article argues that the "core concept" of authorship in copyright law is the "creativity in conceiving the work and controlling its execution."[3] AI learning, no matter how sophisticated and advanced, only simulates and mimics human mental processes, even though it may surpass them. This universal paradigm of human creativity is borne out in many different jurisdictions around the world and is most prominently observed in judgments on authorship and copyright subsistence in compilation works.[4]

In April 2016, advertising executive Bas Korsten unveiled *The Next Rembrandt*; a computer-generated 3D painting created by a deep learning algorithm with facial recognition software that spent 18 months examining 346 known paintings by the Dutch painter, using 150 gigabytes of digitally rendered graphics. It was the result of a partnership between several industry leaders like ING, Microsoft and T.U. Delft.[5] In 2018, Obvious, a Paris-based collective, developed the painting *Portrait of Edmond de Belamy* through Generative Adversarial Networks (GANs), which used a sample set – in this case thousands of portraits – to recognise patterns before creating new pieces with that knowledge. In October that year, revered auction house Christie's in New York marketed the painting as the first portrait generated by an algorithm to come up for auction, and sold it for US$432,500, over 40 times its initial estimate.[6] Although the price paled in comparison to traditional masterpieces like Claude Monet's *Meules* or Pablo Picasso's *Le Rêve*,[7] *Portrait of Edmond de Belamy* was noteworthy for its claimed artist: it was not a person but an algorithm (min G max D x [log (D(x))] + z [log (1 – D (G(z)))]). In the field of music, the composition of polyphonic

[3] Jane C. Ginsburg, *The Concept of Authorship in Comparative Copyright Law*, 52 DEPAUL L. REV. 1063, 1067, 1072 (2003).
[4] *See, e.g.,* Feist Publications, Inc. v. Rural Telephone Service Co., 499 U.S. 340, 345 (1991); IceTV Pty Ltd v. Nine Network Australia Pty Ltd (2009) 239 CLR 458, [22], [24]-[26], [33], [95]-[99] (Austl.); Telstra Corporation Ltd v. Phone Directories Company Pty Ltd [2010] FCAFC 149, [72], [101], [104], [118]-[119], [130], [134], [137], [179] (Austl.); Global Yellow Pages Ltd v. Promedia Directories Pty Ltd, [2017] 2 SLR 185, [24], [28] (Sing.); David Tan, *Copyright in Compilations: Embarking on a Renewed Quest for the Human Author and the Creative Spark,* 18 MEDIA & ARTS L. REV. 151 (2013).
[5] *The Next Rembrandt*, MICROSOFT (Apr. 13, 2016), https://news.microsoft.com/europe/features/next-rembrandt; Dutch Digital Design, *The Next Rembrandt: Bringing the Old Master back to life*, MEDIUM (Jan. 24, 2018), https://medium.com/@DutchDigital/the-next-rembrandt-bringing-the-old-master-back-to-life-35dfb1653597.
[6] Gabe Cohn, *AI Art at Christie's Sells for $432,500*, N.Y. TIMES (Oct. 25, 2018), https://www.nytimes.com/2018/10/25/arts/design/ai-art-sold-christies.html; *Is artificial intelligence set to become art's next medium?*, CHRISTIE'S (Dec. 12, 2018), https://www.christies.com/features/a-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx; *But see, e.g.*, Amanda Turnbull, *The price of AI art: Has the bubble burst ?,* CONVERSATION (Jan. 6, 2020), https://theconversation.com/the-price-of-ai-art-has-the-bubble-burst-128698 (It may appear that novelty of AI-generated portraits has worn off, as the new fad of acquiring non-fungible tokens has taken the world by storm. In November 2019, another in the Belamy series, *La Baronne de Belamy*, was sold at Sotheby's for only US$25,000).
[7] Sarah Jacobs, *The 16 most expensive paintings ever sold*, BUS. INSIDER (May 15, 2019), https://www.businessinsider.com/most-expensive-paintings-ever-sold-including-157-million-nude-modigliani-2018-5#12-pablo-picassos-le-rve-155-million-5 (*Meules* sold for US$110.7 million and *Le Rêve* sold for US$155 million).

chorale music in the style of Johann Sebastian Bach by a deep learning neural network called DeepBach, developed by Gaetan Hadjeres and Francois Pachet at the Sony Computer Science Laboratories in Paris, has also made headlines in respect of AI-composed music.[8]

While "AI art" has been referred to as "neural network art", many online commentaries do not make a clear distinction between whether the AI is used as a tool by a human individual (e.g. how internationally renowned artist Sougwen Chung uses hand-drawn and computer-generated marks in her drawings, sculptures and installation works, and Scott Eaton who creates and trains AI to translate his drawings and animation into photographic, figurative representations as well as abstracted sculptural forms[9]) or the AI independently and autonomously produces a work without supervision or significant human intervention. Although non-fungible tokens (NFTs) appear to be the rage in the art world at the point of writing,[10] the copyright issues, albeit frequently misunderstood, are relatively straightforward.[11] This article will therefore focus only on delineating the meaning of authorship in relation to "AI art".

Part II of this article demonstrates how the human authorship requirement is deeply entrenched in copyright jurisprudence. Part III will discuss the underlying theoretical rationales and the unequivocal judicial emphasis on "creativity". Part IV contends that only AI-aided works (i.e., AI acting as amanuensis to assist or augment the efforts of natural persons in the creation of works), and *not* autonomous AI-generated works, should qualify for copyright protection. It proposes an evaluative framework to enable courts to clearly differentiate such AI-aided works from autonomous AI-generated works. Part V illustrates how a two-step analysis can be applied to different scenarios, using *The Next Rembrandt* as a baseline example. Part VI concludes that as AI systems become more sophisticated and even surpass human creativity, we should not lose

[8] Emerging Technology from the arXiv, *Deep-Learning Machine Listens to Bach, Then Writes Its Own Music in the Same Style*, MIT TECH. REV. (Dec. 14, 2016), https://www.technologyreview.com/2016/12/14/155416/deep-learning-machine-listens-to-bach-then-writes-its-own-music-in-the-same-style; *Artificial Intelligence Writes a Piece in the Style of Bach: Can You Tell the Difference Between JS Bach and AI Bach?*, OPEN CULTURE (Jan. 24, 2018), www.openculture.com/2018/01/artificial-intelligence-writes-a-piece-in-the-style-of-bach.html.

[9] Christopher McFadden, *7 of the Most Important AI Artists That Are Defining the Genre*, INTERESTING ENGINEERING (Nov. 10, 2019), https://interestingengineering.com/7-of-the-most-important-ai-artists-that-are-defining-the-genre; Sougwen Chung, AI ARTISTS, https://aiartists.org/sougwen-chung; Scott Eaton, *Artist + AI: Figures & Form in the Age of Intelligent Machines*, LUX REVIEW, www.lux-review.com/scott-eaton-artistai-figures-form-in-the-age-of-intelligent-machines.

[10] Scott Reyburn, *JPG File Sells for $69 Million as 'NFT Mania' Gathers Pace*, N.Y. TIMES (Mar. 11, 2021), https://www.nytimes.com/2021/03/11/arts/design/nft-auction-christies-beeple.html; Dana Thomas, *Dolce & Gabbana Just Set a $6 Million Record for Fashion NFTs*, N.Y. TIMES (Oct. 4, 2021), https://www.nytimes.com/2021/10/04/style/dolce-gabbana-nft.html; Jacob Hale, *Top 10 most expensive NFTs ever sold*, DEXERTO (Mar. 15, 2022), https://www.dexerto.com/tech/top-10-most-expensive-nfts-ever-sold-1670505/.

[11] *See, e.g.*, Andres Guadamuz, *The treachery of images: non-fungible tokens and copyright*, 16 J. INTELL. PROP. L. & PRAC. 1367 (2021); Pinar Çaglayan Aksoy & Zehra Özkan Üner, *NFTs and copyright: challenges and opportunities*, 16 J. INTELL. PROP. L. & PRAC. 1115 (2021).

sight of the fact that copyright laws are conceived to serve the progress of humanity and should always remain faithful to the centrality of human authorship.

II. THE HUMAN AUTHORSHIP REQUIREMENT

In his recent analysis of the concept of autonomy, Simon Chesterman notes: "what we mean when we describe an AI system as autonomous is not that it takes decisions 'by itself' but that it takes decisions *without further input from a human*."[12] Much has been written in this area with a preponderance of views against the extension of copyright to computer-generated works as a result of autonomous decision making by AI systems, and this article would not be addressing each specific argument canvassed by different scholars.[13] However, we would like to make some observations on the prevailing legislation and case law that govern the recognition of copyright in works. The UK's Copyright, Designs and Patents Act 1988 ("CDPA"), Australia's Copyright Act 1968 and Singapore's Copyright Act 2006 divide copyright subject matter into two categories – original authors' works and "subject-matter other than works."[14] In Singapore's revamped Copyright Act 2021, the literary, dramatic, musical and artistic (LDMA) works are known as "authorial works"[15] within the broad definition of "works" which comprise LDMA works and what used to be "subject-matter other than works" (e.g. sound recording, film and broadcast).[16]

The Commonwealth common law jurisdictions have consistently premised their copyright regimes on requiring human authorship. In *Asia Pacific Publishing Pte Ltd v. Pioneers & Leaders (Publishers) Pte Ltd*, the Singapore Court of Appeal cited the UK's Copyright Act 1911 and CDPA as examples of copyright legislation implying human authorship, since they afforded copyright protection to authors for their *lifetime* plus 50 years. While section 9(3) of the CDPA appears to afford copyright protection to computer-generated LDMA works even in the absence of a human

[12] SIMON CHESTERMAN, WE THE ROBOTS? REGULATING ARTIFICIAL INTELLIGENCE AND THE LIMITS OF THE LAW 61 (2021).
[13] *See, e.g.*, Mauritz Kop, *AI & Intellectual Property, Towards an Articulated Public Domain*, 28 TEXAS INTELL. PROP. L. J. 297 (2020); Megan Svedman, *Artificial Creativity: A Case Against Copyright for AI-Created Visual Artwork*, 9(4) IP THEORY 1 (2020); Pratap Devarapalli, *Machine Learning to Machine Owning: Redefining the Copyright Ownership from the Perspective of Australian, US, UK and EU Law*, 40 EUR. INTELL. PROP. REV. 72 (2018); Massimo Maggiore, *Artificial Intelligence, Computer Generated Works and Copyright*, *in* NON-CONVENTIONAL COPYRIGHT: DO NEW AND ATYPICAL WORKS DESERVE PROTECTION? 382 (Enrico Bonadio & Nicola Lucchi eds., 2018); Andres Guadamuz, *Do Androids Dream of Electric Copyright? Comparative Analysis of Originality in Artificial Intelligence Generated Works*, 2 INTELL. PROP. Q. 169 (2017); Kalin Hristov, *Artificial Intelligence and the Copyright Dilemma*, 57(3) IDEA 431 (2017); James Grimmelmann, *There's No Such Thing as a Computer-Authored Work – and It's a Good Thing, Too*, 39 COLUM. J. L. & ARTS 403 (2016).
[14] The key reason for distinguishing original LDMA works from "subject-matter other than works" is because only LDMA works require originality in the sense of originating from a human author. In the earlier Singapore Copyright Act 2006, a "qualified person" for LDMA works is restricted to natural persons (s. 27(4)) while "qualified person" for "subject-matter other than works" includes "a body corporate incorporated under any written law in Singapore" (s. 81(1)(b)); Copyright Act, Ch. 6, (rev. ed., 2006) (Sing.).
[15] Copyright Act 2021, s. 9 (Sing.).
[16] Copyright Act 2021, s. 88 (Sing.).

author,[17] it has been interpreted by courts to require the identification of a "causal link" between the computer-generated work and a human author.[18] The English High Court affirmed the human authorship requirement in *Nova Productions Ltd v. Mazooma Games Ltd* when it applied the computer-generated work sections of the CDPA to the computer-generated composite frames, and identified the human programmer in that case as the author of these artistic works.[19] Section 32(4) of the Australian Copyright Act 1968 clarifies that qualified persons refer to natural persons in respect of copyright subsistence in an original LDMA work.[20] Complementing the statutory approach, Australian case law, such as in *Telstra Corporation Ltd v. Phone Directories Company Pty Ltd* and more recently in *Acohs Pty Ltd v. Ucorp Pty Ltd*, requires that the "author" be an "actual person" and a "human author."[21]

In Singapore, the highest appellate court in a 2017 decision in *Global Yellow Pages Ltd v. Promedia Directories Pte Ltd* affirmed its earlier comment in *Asia Pacific Publishing Pte Ltd v. Pioneers & Leaders (Publishers) Pte Ltd* regarding the "natural persons" requirement,[22] where the same court held that for copyright to subsist in any literary work, the authorial creation must causally connect with the "engagement of the human intellect."[23] The Court of Appeal then proceeded to define human intellect as "the application of intellectual effort … or the exercise of mental labour," which a non-human author is deemed to be unable to provide.[24] Furthermore, in Singapore's new Copyright Act 2021, a suite of statutory provisions when read together indicate that only a human individual may be an "author": (i) the duration provisions (s. 114) – where duration is pegged to the death of a person (i.e. 70 years after death unless in the case of anonymous/pseudonymous works); (ii) the "qualified individual" provision (s. 77) – where copyright in an *authorial* work subsists only if the author is a qualified individual;[25] (iii) the connecting factors provisions (ss. 109, 110) that articulate the conditions for copyright to subsist in unpublished and published *authorial*

[17] Copyright, Designs and Patents Act 1988, c. 48, § 9(3) (Eng.). Section 178 defines "computer-generated" as work that is "generated by computer in circumstances such that there is no human author of the work".
[18] JACOB TURNER, ROBOT RULES REGULATING ARTIFICIAL INTELLIGENCE 125 (2019).
[19] Nova Productions Ltd. v. Mazooma Games Ltd. [2006] EWHC 24 (Ch), [12]-[18], [108].
[20] Copyright Act 1968, s. 32(4) (Austl.) ("qualified person means an Australian citizen or a person resident in Australia").
[21] Telstra Corporation Ltd v. Phone Directories Company Pty Ltd [2010] FCAFC 149, [100], [134] (Austl.); Acohs Pty Ltd v. Ucorp Pty Ltd [2012] 201 FCR 173, [57] (Austl.).
[22] *Asia Pacific Publishing* [2011] 4 SLR 381, [82] (Sing.).
("without the identification of a human author from whom the work originates, there can be no 'original work' capable of copyright protection".).
[23] Global Yellow Pages Ltd v. Promedia Directories Pte Ltd, [2017] 2 SLR 185, [24] (Sing.).
[24] *Id.*
[25] Copyright Act 2021, s. 77 (Sing.) (According to this provision, an individual is a qualified individual only if *he or she* is (a) a Singapore Citizen; or (b) a Singapore resident; or (c) an individual who, if he or she had been alive on 1 November 1957, would have qualified for Singapore citizenship under the repealed Singapore Citizenship Ordinance 1957).

works; and (iv) the moral rights provisions (ss. 370, 386, 387) – which refer to rights being personal in nature, and devolution of rights on death.

The Court of Appeal in *Asia Pacific Publishing* also noted that civil law jurisdictions treated authors' works as "emanations or extensions" of their personalities, based on the 19th-century European doctrine of *droit moral*. This was affirmed by the Court of Justice of the European Union (CJEU) on several occasions, especially in *Infopaq International v. Danske Dagblades Forening*.[26] Thus, copyright protection should subsist in these LDMA works to protect their authors' honour and reputations, which are inextricably connected to the works.[27] Similarly, the Berne Convention for the Protection of Literary and Artistic Works ("Berne Convention"), most of which has been incorporated into the WIPO Copyright Treaty[28] and the Agreement on Trade-Related Aspects of Intellectual Property Rights,[29] was drafted with a focus on human authors' rights in LDMA works.[30] Asian jurisdictions, like Japan, also require human authorship. The Copyright Law of Japan specifies that copyrightable works are "production[s] or works in which thoughts or sentiments are expressed creatively."[31] The expression of creativity is understood as arising from the author's personality.

In the United States, while the Ninth Circuit Court of Appeals in *Naruto v. Slater*, which involved copyright in selfie photographs taken by a monkey, did not rule on the authorship issue, the court held that animals lacked statutory standing to sue under the Copyright Act.[32] In a separate opinion, Circuit Judge Smith commented that even allowing next-friend standing would be against public policy and Supreme Court precedent:

> Allowing next-friend standing on behalf of animals allows lawyers … and various interest groups … to bring suit on behalf of those animals or objects *with no means or manner to ensure the animals' interests are truly being expressed or advanced*. Such a change would fundamentally

[26] Case C-5/08, Infopaq International A/S v. Danske Dagblades Forening, [2009] E.C.R. I-6569, [37]. (The court held that copyright only applied to original works, and that originality must reflect the "author's intellectual creation" which was generally interpreted as including the human element of an author's personality.).
[27] *Asia Pacific Publishing*, [2011] 4 SLR 381, [57]-[58] (Sing.).
[28] WIPO Copyright Treaty, art. 1(4), Dec. 20, 1996, 2186 U.N.T.S. 121 (to which Singapore is a party).
[29] Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 9(1), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 3 (which is incorporated into Singapore's World Trade Organisation commitments).
[30] *See, e.g.*, Berne Convention for the Protection of Literary and Artistic Works, art. 2, 6(2), Sept. 9, 1886, 828 U.N.T.S 3. (Art. 2 refers to "author and his successors in title" and Art. 6(2) discusses the author's rights after his death). *See also*, Berne Convention for the Protection of Literary and Artistic Works, art. 7, Sept. 9, 1886, as revised at Berlin on Nov. 13, 1908, 828 UNTS 221 (which emphasised the human-centric focus when it extended the term of protection to 50 years after the author's death to cater to the higher life expectancies at that moment).
[31] Chosakukenhō [Copyright Law], Law No. 48 of 1970, art. 2, para. (1)(i) (Japan).
[32] Naruto v. Slater, 888 F.3d 418, 426 (9th Cir. 2018) ("If the statute does not so plainly state, then animals do not have statutory standing. The Copyright Act does not expressly authorize animals to file copyright infringement suits under the statute.").

> alter the litigation landscape. Institutional actors could simply claim some form of relationship to the animal or *object* to obtain standing and use it to advance their own institutional goals with no means to curtail those actions. We have no idea whether animals or *objects* wish to own copyrights or open bank accounts to hold their royalties from sales of pictures.[33]

Indeed, these are strong policy reasons to prevent institutional actors who own the AI ("object") from abusing the standing rules. But this can create an awkward fissure *if* the AI can be recognised as the author of a work, but is unable to have another individual or institution bring an action on its behalf for infringement. While US case law, unlike in the UK, Australia and Singapore, does not clearly state the requirement of a human author for copyright to subsist, the US Copyright Office, taking guidance from past cases like *Feist Publications, Inc., v. Rural Telephone Service Co.*,[34] only registers original works of authorship created by humans. Crucially, the Copyright Office clarifies that works "produced by a machine or mere mechanical process that *operates randomly or automatically* without any creative input or intervention from a human author" will not be registerable.[35] Based on the US Supreme Court's 2019 unanimous decision in *Fourth Estate Public Benefit Corp. v. Wall-Street.com, LLC*, a copyright claimant must comply with the requirements of 17 U. S. C. §411(a) and may commence an infringement suit only when the Copyright Office registers a copyright.[36] Hence, if the Copyright Office refuses to register a copyright for works created by AI, then the enforcement of copyright becomes impossible, and the question of *autonomous* AI authorship is moot.

In summary, the authors contend that the human authorship requirement should not be abandoned even in the face of technological developments, as the collective wisdom of case law across numerous jurisdictions clearly demand the identification of a human author. As Ng-Loy Wee Loon succinctly observes: "a failure or inability to pinpoint the identity of the creator of the work is fatal to a claim that the work is original. It is equally fatal if the outcome of the identification process points to a non-human as the creator of the work."[37]

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[33] *Id.* at 432 (emphasis added).
[34] *Feist Publications*, 499 U.S. 340, 345 (1991) (The Supreme Court of the United States required that works contain some "creative spark" to satisfy the originality requirement and qualify for copyright protection).
[35] U.S. COPYRIGHT OFFICE, COMPENDIUM OF U.S. COPYRIGHT OFFICE PRACTICES §§ 300, 313.2 (3d ed. 2021). The rejection of an application by Stephen Thaler to register a two-dimensional AI-generated work titled "A Recent Entrance to Paradise" is currently being challenged. The plaintiff Thaler had identified the author of the work as the "Creativity Machine" and noted that it was "Created autonomously by the machine". The US Copyright Office refused to register the claim based on lack of human authorship on August 12, 2019. *See* Thaler v. Perlmutter, Case 1:22-cv-01564 (filed June 3, 2022, D.D.C.).
[36] Fourth Estate Public Benefit Corp. v. Wall-Street.com, LLC, 139 S. Ct. 881 (2019).
[37] Ng-Loy Wee Loon & David Tan, *Intellectual Property in* LAW AND TECHNOLOGY IN SINGAPORE 399, 403 (Simon Chesterman et. al. eds., 2021).

III. THEORETICAL JUSTIFICATIONS AND THE REQUISITE STANDARD OF CREATIVITY

A. Theoretical Justifications for the Human Author

The economic utilitarian justification for copyright does not explicitly mandate human authorship. However, it does suggest that the delicate balance of various goals would be upset if copyright were conferred on works independently and autonomously generated by AI. It is widely accepted that the primary purpose of copyright as a limited monopoly is to promote the public good by protecting authors and other rights holders from uses of their works that unfairly appropriate the commercial value of their work, and to incentivise the production of more works for the public benefit.[38] Granting copyright protection to only AI-aided works incentivises to the extent necessary to encourage creativity, without disproportionately preventing reasonable access to works by the public.[39] However, providing copyright protection for autonomous AI-generated works would grant a monopoly to individuals and corporates who did not provide the requisite creativity that is connected to the creation of the final products. This is "disproportionate and excessive,"[40] and may cause "copyright stockpiling."[41]

For AI-aided works, there is significant human intellectual input that contributes to their production process. Copyright protection prevents free riders from copying these works.[42] This allows authors to recover "their fixed-cost investments" and incentivises them "to invest in the production of creative works."[43] This is consistent with the copyright regime's aim of benefiting "society by stimulating creativity through providing economic incentives to create new works."[44]

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[38] *See*, *e.g.*, Sony Corp. of Am. v. Universal City Studios, Inc.*,* 464 U.S. 417, 429 (1984); Pamela Samuelson, *Unbundling Fair Use*, 77 FORDHAM L. REV. 2537, 2617 (2009); Global Yellow Pages Ltd v. Promedia Directories Pty Ltd, [2017] 2 SLR 185, [74] (Sing.).

[39] *See*, *e.g.*, Official Reports, Parliament of Singapore, Parliamentary Debates (Hansard), vol. 78, column 1070 (Nov. 16, 2004) (incentivising only to the extent necessary is consistent with legislative intention for Singapore's copyright regime to preserve "the unimpeded exchange of information and ideas to create an environment which is conducive to the development of creative works.").

[40] Courtney White & Rita Matulionyte, *Artificial Intelligence Painting the Bigger Picture For Copyright Ownership*, 30 AUST. INTELL. PROP. J. 224, 238 (2020) (Awarding copyright protection to AI-generated works is also inconsistent with the originality requirement); Daniel J. Gervais, *The Machine as Author*, 105 IOWA L. REV. 2053, 2061 (2020) (the author classifies AI-generated works as "noise" as they lack the intellectually transformative ability found in AI-aided or classic works).

[41] Robert Yu, *The Machine Author: What Level of Copyright Protection Is Appropriate for Fully Independent Computer-Generated Works?,* 165 U. PA. L. REV. 1245, 1261-1263 (2017) (Yu argues that copyright stockpiling arises as AI algorithms can generate paintings faster than humans. Consequentially, the authors of these AI-generated works will be the bulk of authors. This dilutes and crowds out authors who produce AI-aided works or classic works).

[42] White & Matulionyte, *supra* note 40, at 236.

[43] Christopher Yoo, *Copyright and Product Differentiation*, 79 N.Y.U. L. REV. 212, 215 (2004); Richard A. Posner, *Intellectual Property: The Law and Economics Approach,* 19 J. ECON. PERSPECTIVE 57, 60 (2005); *Sony Corp. of Am.*, 464 U.S. 717, at 429 (The court recognised the ability of copyright to act as an incentive. It opined that copyright's aim was to "motivate the creative activity of authors and inventors by the provision of a special reward, and to allow the public access to the products of their genius after the limited period of exclusive control has expired.").

[44] David Tan, *The Transformative Use Doctrine and Fair Dealing in Singapore: Understanding the 'Purpose and Character' of Appropriation Art,* 24 SING. ACAD. L. J. 832, 833 (2012); RecordTV Pte. Ltd. v. MediaCorp TV Singapore Pte. Ltd., [2011] 1 SLR 830, [69] (Sing.).

Courtney White and Rita Matulionyte argue that with AI systems already protected as literary works that comprise computer programs, extending further copyright protection to AI-aided works may be unwarranted since it is unclear if that "would lead to additional incentive and increased outputs."[45] However, it has been said that the incentive to create general AI systems is different from the incentive to create AI systems that produce "commercially free-standing outputs whose value derives from their content"[46] for an "autonomous market."[47] It was also argued that the lack of copyright protection for the final AI-generated works might stifle research on robot-creativity machines as "programmers are left with no means to reap the economic benefits associated with the distribution of the creations of their AIs, and therefore there is no tangible incentive to invest in the development of AI-applications ."[48]

According to the natural rights theory, creators should be rewarded for their efforts in producing the authorial works.[49] Briefly, the theory refers to a basket of inalienable natural rights, including property; according to the philosopher, John Locke, people are entitled to own "whatever they have laboured on."[50] The view of copyright protection as a means of safeguarding a creator's personality or identity is attributable to the work of the German philosopher Hegel, and was also espoused by Immanuel Kant.[51] The natural rights theory supports the recognition of copyright in AI-aided works, but extending copyright protection to autonomous AI-generated works is incongruent with the traditional Lockean theory that property rights attach to products of human labour.[52] As the programmers of the algorithm that enables AI to independently and autonomously generate works cannot predict the works themselves, the human input lacks a sufficient nexus to the final product.[53] In contrast, the creation of AI-aided works requires the exercise of one's intellect, which is a sufficient act of labour that natural rights theorists regard as capable of justifying copyright protection.

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[45] White & Matulionyte, *supra* note 40, at 238.
[46] Ginsburg & Budiardjo, *supra* note 2, at 456.
[47] *Id.*
[48] Gabriele Spina Alí, *The Times They Are AI-Changin': Copyright and Computer-Generated Works,* 27 AIDA 367, [5.2.1] (2018) (Other laws like patents, trade secrets and contract do not prevent the unauthorised reproduction of the computer-generated works).
[49] David Tan & Chan Yong Neng, *Copyright Subsistence in Contemporary Times: A Dead Shark, An Unmade Bed and Bright Lights In An Empty Room*, 25 SING. J. LEGAL STUD. 402, 405 (2013).
[50] JANICE GRAY ET. AL., PROPERTY LAW IN NEW SOUTH WALES 14 (4th ed., 2018).
[51] Roberta Rosenthal Kwall, *The Right of Publicity vs. The First Amendment: A Property and Liability Rule Analysis,* 70 IND. L. J. 47, 57-59 (1994).
[52] JUSTINE PILA, THE SUBJECT MATTER OF INTELLECTUAL PROPERTY 70 (2017) (Traditionally, courts extended the Lockean theory to intellectual property by reasoning that since literary works are the fruits of literary labour, they are protected by property rights vesting in their creators at common law).
[53] Shlomit Yanisky-Ravid, *Generating Rembrandt: Artificial Intelligence, Copyright, and Accountability in the 3A Era – The Human-Like Authors are Already Here – A New Model*, MICH. ST. L. REV. 659, 701 (2017).

While this theory initially referred to tangible property, increasing numbers of scholars have consistently applied natural right theory to intellectual property.[54] Justine Pila, drawing on the Hegelian view of personhood and property, argues that authorship involves "the instantiation of personhood and the realization of individual freedom in the external (non-subjective) sphere, via the creation of objects separate from but reflecting the self."[55] This was emphasised in the European Union as well, where, the CJEU in *Cofemel-Sociedade de Vestuário SA v. G-Star Raw CV* emphatically held that "the fact remains that the circumstance that a design may generate an aesthetic effect does not, in itself, make it possible to determine whether that design constitutes an intellectual creation reflecting the freedom of choice and personality of its author."[56] Specifically, "it is both necessary and sufficient that the subject matter reflects the personality of its author, as an expression of his free and creative choice."[57] To acquire copyright in a work, European courts today require that the author must be able to express his or her creative abilities in the production of the work by making free and creative choices.[58] Gabriele Spina Alí phrases this requirement as discerning a "trace of the user's personal mark in the output" in relation to works generated by computers.[59] This requirement of human creativity in authorship is inextricably intertwined with originality. Jyh-An Lee notes that originality "reflects the author's creativity in the copyright work".[60] Unlike humans, machines are unable to fulfil the *sine qua non* of authorship – "creativity". While "creativity" is often assumed to be a fundamental component of authorship – e.g. the requirement of a "creative spark" in compilation works by the US Supreme Court[61] – it is often underexplored in judicial decisions and in academic writings.[62] The focus tends to be on "originality" which interrogates whether the work *originated* with the author, that it was not merely copied from another work, and that the creation of the work required some independent intellectual effort, but artistic merit or novelty or inventiveness as required in patent law should not be taken into account.[63] The authors are of the view that a better understanding of creativity as emanating from human personality is critical in understanding why the activities of AI cannot be perceived as "creative" no matter how artistic or novel the output works may be.

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[54] Gervais, *supra* note 40, at 2077; PILA, *supra* note 52, at 70; Jyh-An Lee, *Computer-generated Works under the CDPA 1988*, *in* ARTIFICIAL INTELLIGENCE & INTELLECTUAL PROPERTY 171, 186 (Jyh-An Lee et. al. eds., 2021).
[55] Justine Pila, *The Authorial Works Protectable by Copyright, in* ROUTLEDGE HANDBOOK OF EU COPYRIGHT LAW 63, 78 (Eleonora Rosati ed., 2021).
[56] Cofemel-Sociedade de Vestuário SA v. G-Star Raw CV, Case C-683/17, EU:C:2019:721, (Sept. 12, 2019), [54].
[57] *Id.* at [30].
[58] Eva-Maria Painer v. Standard Verlags GmbH, Case C-145/10, [2011] ECR I-12533, [87]-[89], [94].
[59] Alí, *supra* note 48, [6.3.3].
[60] Lee, *supra* note 54, at 184.
[61] *Feist Publications*, 499 U.S. 340, 345 (1991).
[62] Anna Shtefan, *Creativity and artificial intelligence: a view from the perspective of copyright,* 16 J. INTELL. PROP. L. PRAC. 720, 720, 724 (2021).
[63] *E.g. Feist Publications*, 499 U.S. 340, 344-346 (1991); *IceTV,* (2009) 239 CLR 458, 474 (Austl.).

Ginsburg and Budiardjo identify this creative element as the conception element, which they contend to be one of the two elements of authorship, the other being the execution element.[64] On the conception element, present AI systems are "fundamentally sets of processes designed by humans to accomplish specific tasks" that cannot conceptualise and determine the outcome independently.[65] Despite their outputs being ostensibly creative and sufficiently artistic to be perceived as created by human artists, there is a gap in reasoning if one were to equate the seeming equivalent in output with the equivalence in the creative process. Human input is still required to set the parameters and outcome. Therefore, if one recognises AI as a new form of legal person, capable of becoming authors, it would fundamentally disregard these crucial distinctions.[66] Anna Shtefan has compellingly argued that creativity is "a process of personal expression" and "it includes both self-knowledge and cognition and re-thinking of the world".[67]

For the execution element, although the human does not always physically generate the work, human authorship is still justified as the execution element only requires the author to maintain control over the execution process. Besides the international shift to the "creativity" approach which emphasises "conception" over "execution," the author-principal's relationship with its amanuensis[68] and the human-tool relationship permit authors to delegate the physical execution process.

The relationship between human authors and AI systems can be analogised to the agency relationship for amanuenses, which involves the primary actor detailing the creative process for the secondary actor to execute.[69] As the agent-amanuensis is under the direction and control of the principal-author, the agent-amanuensis's acts are considered the principal's authorial acts.[70] It is only when the agent-amanuensis goes on a "frolic of [its] own,"[71] without any of the principal-author's influence,[72] that it usurps its principal's authorship. However, as today's AI systems are

[64] Ginsburg & Budiardjo, *supra* note 2, at 347.
[65] *Id.* at 401.
[66] Gerald Spindler, *Copyright Law and Artificial Intelligence,* 50 IIC 1049, 1049 (2019).
[67] Shtefan, *supra* note 62, at 721.
[68] Ginsburg & Budiardjo, *supra* note 2, at 354 (Ginsburg and Budiardjo explain that amanuenses are akin to scribes or modern-day secretaries, and perceived as "agents" of the author-principals).
[69] This is different from a work-for-hire doctrine as the agent-amanuensis's acts are attributed to the author-principal, unlike the work-for-hire doctrine which enables the employer to claim his employees' work by virtue of their employment relationship.
[70] Andrien v. S. Ocean City Chamber of Commerce, 927 F.2d 132 (3d Cir. 1991).
[71] Joel v. Morison (1834) 172 Eng. Rep. 1338 (Eng.). This "time-honoured catch phrase" is drawn from vicarious liability jurisprudence. *See* Dubai Aluminium Co. Ltd. v. Salaam [2003] 2 AC (HL) 366, [32] (Eng.); WM Morrison Supermarkets v. Various Claimants [2020] UKSC 12, [47] (Eng.).
[72] Geshwind v. Garrick, 734 F. Supp. 644, 649 (S.D.N.Y. 1990).

still incapable of straying from their human principals' creative plans, they can be regarded unproblematically as agents or tools of the human authors who develop and utilise them.[73]

Furthermore, the human-tool relationship justifies human authorship despite the black-box problem[74] because the black-box problem is inconsequential to the authorship issue. Authorial control does not require the author to understand the machine. The programmer still controls the machine's fundamental process, even if the machine can improve its own internal processes and certain technicalities may be beyond the programmer's understanding. The programmer sets the parameters, data inputs, goals, optimisation process and time of commencement.[75] In a similar context, a photographer does not forfeit his authorship claim over his photographs merely because he does not understand the camera's mechanical and chemical processes,[76] if he formulated the placement of the "existing object[s]" and their lighting to express his intellectual conception of the images,[77] such that the photographs reflect the photographer's personality.[78] Therefore, as human authors dictate the conception and execution processes, sophisticated machines should still be regarded as tools or agents instead of authors. Section 178 of the CDPA defines "computer-generated", in relation to a work, as meaning "that the work is generated by computer in circumstances such that there is no human author of the work". However, this has to be read with s. 9(3) of the CDPA which states that "in the case of a literary, dramatic, musical or artistic work which is computer-generated, the author shall be taken to be the person by whom the arrangements necessary for the creation of the work are undertaken". These two provisions when read together does *not* mean that AI can be an "author" in English law. As the court in *Nova Productions* had held, the CDPA still requires a human author to perform necessary arrangements to create the work.[79] Thus, human authorship is justified via the conception and execution elements – this is an important rationale for attributing the creation of the final work to a human author when such a nexus is found.

In addition, the human authorship requirement is supported by the *droit d'auteur* principle in civil law jurisdictions, the utilitarian theory in Commonwealth jurisdictions, and natural rights theory. The *droit d'auteur* principle defends the human authorship requirement by regarding

[73] This is consistent with s. 9(3) of the CDPA intending to track the most relevant human intervention related to the work's production, which the court in *Nova Productions* interpreted as recognising the programmer as author of computer-generated artistic works.
[74] Michael L. Rich, *Machine Learning, Automated Suspicion Algorithms, and the Fourth Amendment,* 164 U. PA. L. REV. 871, 886 (2016) (according to Rich, the black-box problem arises when AI systems are so sophisticated that "the original programmers of the algorithm have little idea exactly how or why the generated model" achieves its goal).
[75] Ginsburg & Budiardjo, *supra* note 2, at 407.
[76] *See*, Nottage v. Jackson (1883) 11 Q.B.D. 627 (Eng.) (where it was held that the photographer was the author.)
[77] Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 54 (1884).
[78] *Eva-Maria Painer*, Case C-145/10, [2011] ECR I-12533, [85]-[88].
[79] Nova Productions Ltd v. Mazooma Games Ltd, [2006] EWHC 24 (Ch), [105] (Eng.).

copyright as a means to protect the author's personality embodied in his artwork, which is non-existent in works autonomously generated by computers.[80] Unlike civil law jurisdictions, the utilitarian theory of copyright protection in Commonwealth common law jurisdictions relies on incentivising creators to produce artworks by preventing their labour and investments from being misused by third parties.[81] Since only humans, and not computers, can be incentivised to produce paintings, the utilitarian theory requires human authorship in order to function. Separately, the natural rights theory's human-centric focus affirms the human authorship requirement. The concept of an "author" of an intellectual work being the "natural" holder of rights in that work first appeared during the thirteenth century.[82] The Universal Declaration of Human Rights subsequently recognised these rights as a human right when it elevated them to universal status.[83]

B. The Requisite Standard of Creativity

One must be careful not to equate "value" with "creativity" in copyright law. It has been pointed out by Mark Runco and Garrett Jaeger that "originality is vital for creativity but it is not sufficient."[84] Effectiveness, in the sense of the work or product being successful in the market, may take the form of value, but one cannot logically associate the notion of creativity with the effectiveness of its economic result. We are unlikely to say that the installation work of an avant-garde artist is not creative even though no one buys it. However, we should not draw a conclusion that just because a work sells for a high price, it is necessarily creative in the context of copyright; otherwise, copyright law would have to protect everything of value, and the criterion of originality with its concomitant requirement of creativity would be rendered nugatory.[85] The authors agree with Anna Shtefan that "the rejection of creativity as the basis of copyright would be unacceptable".[86]

It is worth exploring Shtefan's detailed description of "creativity" which essentially gives substance to the familiar notion of an "intellectual creation" found in many copyright statutes. She explains the creative process that happens in the mind of an author who ultimately produces a work as follows:

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[80] Alí, *supra* note 48, at [6.3].
[81] *Id.* at [7.2].
[82] Gervais, *supra* note 40, at 2073.
[83] G.A. Res. 217 (III) A, Universal Declaration of Human Rights, (Dec. 10, 1948) (sets out "the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.").
[84] Mark A. Runco & Garrett J. Jaeger, *The Standard Definition of Creativity*, 24 CREATIVITY RES. J. 92, 92 (2012).
[85] *See*, Brian L. Frye, *Against Creativity,* 11 N.Y.U. J. L. LIBERTY 426, 454 (2017) (there are contrary views regarding the recognition of the primacy of creativity in copyright law, with at least an author recently arguing that copyright should "ignore 'creativity' and focus instead on economic value).
[86] Shtefan, *supra* note 62, at 724.

> The creative process takes place in the subconscious mind, which generates various images, feelings, emotions, and transmits them to consciousness. Consciousness perceives these images and makes decisions about how they can be embodied in any form. Conscious comprehension of the impulses and enlightenments in the subconscious mind is necessary for persons to express their ideas in an objective form using some tools … Consciousness performs an auxiliary function selecting the form of expression for the results of creativity and controlling the process of modelling it.[87]

In the language of originality, it is the presence of the author's own choice or volitional path in the creation of a work – as a result of the conscious mind (entailing rules of logic) and subconscious mind (involving fantasy, imagination, intuition and premonition) working together – that makes a work "original".[88] Daryl Lim explains that AI augments what authors and inventors can do, but "while such AI technology assists artists in giving form to their expression, artists wield them while continuing to express their own intelligence, insight, and inspiration through creative processes."[89] Copyright law in the US confers protection to "the fruits of intellectual labor … found in the *creative powers of the mind*."[90]

In Singapore, the Court of Appeal in *Asia Pacific Publishing*,[91] and, more recently, *Global Yellow Pages Ltd* endorsed the "creativity" approach over the "sweat of the brow" approach, when ascertaining the originality of a work – in that case, a compilation work. The latter approach examines the author's "labour and industry" as well as effort during the preparatory stage, while the former approach focuses on work being "causally connected with the engagement of the *human intellect* [emphasis added]" when developing the expression of the work.[92] The focus of the court is on the "intellectual creation" which the court explains as follows:

> By the human intellect, we mean the application of intellectual effort, creativity, or the exercise of mental labour, skill or judgment. Effort (even intellectual) that is applied *not* towards the authorial creation but towards other ends such as the verification of facts will not be relevant in this context even if such verified facts might be the eventual subject of the authorial creation.[93]

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[87] *Id.* at 725.
[88] *Id.*
[89] Daryl Lim, *AI & IP: Innovation & Creativity in an Age of Accelerated Change*, 52 AKRON L. REV. 813, 831 (2018).
[90] *Id.* at 838 (citing *In re* Trade-Mark Cases, 100 U.S. 82, 94 (1879)).
[91] *Asia Pacific Publishing*, [2011] 4 SLR 381, [18] (Sing.).
[92] *Global Yellow Pages*, [2017] 2 SLR 185, [23]-[24] (Sing.).
[93] *Global Yellow Pages Ltd*, [2017] 2 SLR 185, [24] (Sing.).

Likewise, there is also an international departure from the "sweat of the brow" approach, such as in Australia, the US, and the EU. The High Court of Australia departed from the "sweat of the brow" approach, after casting doubt on *Desktop Marketing Systems Pty Ltd v. Telstra Corporation Ltd*[94] and citing the US Supreme Court's landmark decision of *Feist* with approval. The European Union also adopts the "creativity" approach. In *Football Dataco Ltd and Others v. Yahoo! UK Ltd and Others*,[95] the CJEU examined whether the author, in setting up a database, expressed his creativity in an original manner by making free and creative choices, to determine whether the database fulfilled the originality requirement.[96] The CJEU's position in *Yahoo!* is consistent with a lineage of past cases, such as *Infopaq*,[97] *Painer,*[98] and the recent *Cofemel*.[99] Besides compilations, other works must also be the author's own *intellectual creation* to satisfy the originality requirement. This intellectual creation must reflect the author's personality and express his "free and creative choices" made during production.[100] Justine Pila summarises the EU two-stage test as follows: "At the first stage, the Court asks whether the work is of a type that affords scope for the exercise of free and creative choices (formative freedom) in its production. At the second stage, it asks whether the person claiming authorship of the work has exploited the scope sufficiently to produce a work that is her own intellectual creation in the sense of reflecting her personality."[101]

The level of creativity required for copyright to subsist is universally regarded to be "extremely low"[102] in the assessment of originality of LDMA works when it is assumed that the works are the expressions of human authors. Across jurisdictions, while courts use different languages to describe the required standard of creativity, "the differences in language are essentially semantic" without any "meaningful difference in standards."[103] In *IceTV Pty Ltd v. Nine Network Australia Pty Ltd*, the High Court of Australia agreed with the US Supreme Court's decision in *Feist* that there must be some "creative spark"[104] to constitute "independent intellectual effort" or "sufficient effort of a literary nature."[105] This "creative spark" only necessitated a "minimal degree

[94] Desktop Marketing Systems Pty Ltd v. Telstra Corporation Ltd, (2002) 119 FCR 491 (Austl.).
[95] Football Dataco Ltd and Others v. Yahoo! UK Ltd and Others, Case C-604/10, EU:C:2012:115, (Mar. 1, 2012).
[96] *Nova Productions*, [2006] EWHC 24 (Ch), [105] (The UK's adoption of the "creativity" approach is consistent with s. 9(3) of the CDPA and *Nova Productions*. The EWHC in *Nova Productions* examined the programmer's creative contributions in crafting the appearance of each composite frame when interpreting s. 9(3)).
[97] Infopaq Int'l v. Danske Dagblades Forening, Case C-5/08, [2010] FS.R 20.
[98] *Eva-Maria Painer*, Case C-145/10, [2011] E.C.R. I-12533.
[99] *Cofemel-Sociedade*, Case C-683/17, EU:C:2019:721.
[100] *Infopaq Int'l*, Case C-5/08, [2010] FSR 20, [35]; *Eva-Maria Painer*, Case C-145/10, [2011] E.C.R. I-12533, [99]; PILA, *supra* note 52, at 65-66.
[101] PILA, *supra* note 52, at 71.
[102] *Feist Publications*, 499 U.S. 340, 345 (1991); *Asia Pacific Publishing*, [2011] 4 SLR 381 at [38].
[103] *Global Yellow Pages*, (2017) 2 SLR 185, [27].
[104] *IceTV,* (2009) 239 CLR 458, [187].
[105] *IceTV,* (2009) 239 CLR 458, [33], [99].

of creativity" that was "extremely low" such that "even a slight amount will suffice."[106] However, the mere fact that a work generates an aesthetic effect is insufficient on its own to establish its originality.

IV. A PROPOSED FRAMEWORK FOR IDENTIFYING THE HUMAN AUTHOR OF AN AI-GENERATED WORK

There is currently a dearth of case law on how to distinguish between human-authored works that are assisted or augmented by AI, and works that are *independently and autonomously* generated by AI. English decisions like *Nova Productions* in the interpretation of sections 9(3) and 178 of the CDPA are not instructive as the human author was clearly identified and not an issue.[107] Both categories of works are generated by computers or AI, but for the purposes of classification, we will refer to the former category as "AI-aided" works and the latter as "AI-authored" works.

Regarding legislative recognition, an uncoordinated patchwork of provisions can be found in a handful of Commonwealth jurisdictions. The Singapore Academy of Law's Law Reform Committee recognises that given AI's increasing capabilities, AI-generated works are inevitable. Thus, it recognised the need for statutory reform on copyright protection for computer-generated works and, in particular, contemplated adopting s. 9(3) of the UK's CDPA.[108] While provisions similar to s. 9(3) also appear in India,[109] Ireland,[110] New Zealand[111] and Hong Kong[112] (with the "author" of the computer-generated work considered to be the person who completed "the arrangements necessary for the creation of the work"), Singapore's latest copyright review declined to consider this matter.[113] The preference for the Singapore government is to leave it to the courts to determine when a work generated by AI or computers would be an "authorial work" in the new Copyright Act 2021. The Act, however, offers no further assistance to the courts on how they may properly evaluate such works. As a result, the Singapore courts would have to look to the scant case law in comparable Commonwealth common law jurisdictions. Section 9(3) of the CDPA has

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[106] *Feist Publications*, 499 U.S. 340, 345 (1991).
[107] *Nova Productions*, [2006] EWHC 24 (Ch) [105] ("In so far as each composite frame is a computer-generated work then the arrangements necessary for the creation of the work were undertaken by Mr Jones because he devised the appearance of the various elements of the game and the rules and logic by which each frame is generated and he wrote the relevant computer programme").
[108] LAW REFORM COMMITTEE, SINGAPORE ACADEMY OF LAW, RETHINKING DATABASE RIGHTS AND DATA OWNERSHIP IN AN AI WORLD, [2.76] (2020).
[109] Copyright Act 1957, No. 14, Acts of Parliament 1957, s. 2(d)(v) (India).
[110] Copyright and Related Rights Act (Act No. 28/2010) s. 21(f) (Ir.), https://www.irishstatutebook.ie/eli/2000/act/28/enacted/en/print.
[111] Copyright Act 1994, s. 5(2)(a) (N.Z.).
[112] Copyright Ordinance 1997, Cap 528, Acts of Parliament 1994, s. 11(3) (H.K.).
[113] MINISTRY OF LAW AND INTELLECTUAL PROPERTY OFFICE OF SINGAPORE, SINGAPORE COPYRIGHT REVIEW REPORT (Jan. 17 2019), https://www.mlaw.gov.sg/files/news/public-consultations/2021/copyrightbill/Annex_A-Copyright_Report2019.pdf.

been criticised for being inconsistent with the originality requirement[114] because it provides copyright protection for computer-generated works which lack the intellectual creation component required to be original.[115] The uncertainty arising from whether the programmer or user is the "author" – the identification of which is necessary pursuant to s. 9(3)– has also been highlighted.[116] When the CDPA's computer-generated work provision was enacted in the 1980s, the legislators had only a rudimentary understanding of the notion of AI,[117] and did not anticipate the sophisticated and advanced AI capabilities in the 21st century.[118] While s. 9(3) of the CDPA may appear to be ahead of its time, its clumsy language does seem to hinder its effectiveness; in a roundabout way, a human author still needs to be identified. It was only considered once by the English courts in *Nova Productions*. Furthermore, as *Nova Productions* did not involve any AI technology at all,[119] ascertaining the author in today's AI setting is much more challenging than it was in *Nova Productions*.

AI-aided works are clearly original as courts treat the AI systems as tools or agents, i.e. AI as amanuensis, that aid the human author to render ideas into expression.[120] In *Express Newspapers plc v. Liverpool Daily Post & Echo*, an early case which concerned AI-aided work, the court likened a computer to a pen in that both were tools, and that it would be "unrealistic… to suggest that, if you write with a pen, it is the pen that is the author of the work rather than the person who drives the pen." Therefore, the court regarded the programmer as the author because he programmed the computer and invested "a great deal of skill and labour."[121]

The analogising of a computer to a pen was applied to distinguish between AI-aided and AI-authored works in the decision of the Supreme Court of South Africa in *Payen Components S.A. Ltd v. Bovic CC and Others*.[122] In contrast to AI-aided works, AI-authored works should be deemed

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[114] *See e.g.*, Alí, *supra* note 48 [6.3.3].
[115] *See*, Emily Dorotheou, *Reap the Benefits and Avoid the Legal Uncertainty: Who Owns the Creations of Artificial Intelligence?*, 21(4) COMPUT. & TELECOM. L.R. 85, 87 (2015). (Dorotheou explains that the author of a non-computer-generated work contributes creatively, while the author of a computer-generated work (this paper considers the type of computer-generated work that Dorotheou refers to as AI-generated work due to the lack of human creative input) merely undertakes the necessary arrangements for the creation of the work, under s. 9(3) of the CDPA. During the enactment of the CDPA, Lord Beaverbrook clarified that this person "will not himself have made any personal, creative efforts." Thus, the work would have failed the originality requirement.)
[116] Toby Bond & Sarah Blair, *Artificial Intelligence & copyright: Section 9(3) or authorship without an author,* 14 J. INTELL. PROP. LAW. & PRAC. 423, 423 (2019).
[117] Yanqing Duan et. al., *Artificial Intelligence for Decision Making in the Era of Big Data – Evolution, Challenges and Research Agenda,* 48 INT. J. INFO. MGMT. 63, 64 (2019).
[118] Julia Dickenson et. al., *Creative Machines: Ownership of Copyright in Content Created by Artificial Intelligence Applications*, 39 EUROPEAN INTELL. PROP. R. 457, 458 (2017).
[119] *See*, *Nova Productions* [2006] EWHC 24 (Ch). As *Nova Productions* concerned the display of a sequence of computer-generated frames, it is arguable that *Nova Productions* is of limited authority for arguing that programmers are always authors of today's computer-generated works.
[120] Enrico Bonadio et. al., *Intellectual Property Aspects of Robotics*, 9 EUROPEAN J. RISK REG. 655, 667 (2018).
[121] Express Newspapers plc v. Liverpool Daily Post & Echo [1985] 1 WLR 1089, 1093.
[122] Payen Components South Africa Ltd. v. Bovic Gaskets CC and Others (448/93) [1995] ZASCA 57, [13].

"authorless" works because the computer, through a deep learning process, had undertaken the creative process independently and autonomously without specific human instruction and input.[123] The court noted:

> There is now a crucial distinction between a computer-aided work, as in the above case (the *Express Newspaper* case), and a computer-generated work. The latter work is one which is created without expenditure of significant human skill and effort in the completed work. For example, the compilation of new crossword puzzles, moves generated by computer chess programs or computer-generated original pieces of music in the style of a known composer. The steps to be taken by the operator of the machine may be so trivial (that it is difficult on normal principles to say that he or she is the author. The real creative work is done by the person who devises the original computer program, but it would be inconvenient and misleading to treat that programmer in all cases as the owner of the copyright in the new works which his program produces, for example, in all the new music produced by the various programs which are sold to the public.[124]

The crucial question before the South African court was whether the plaintiff Payen Components could prove "that there was a human author, in other words that the printout was not computer-generated" but was a result of the input of or instructions given by a human individual.[125] On the evidence before the court, details of which were not clearly articulated in the judgment, it was satisfied that "enough evidence has been produced" to find copyright in the catalogue cum price list.[126]

What is clear today is that when the human input lacks a "sufficient causal nexus with the final work",[127]then the human author, from whom a work originates, cannot be identified.[128] As a result, what we have is an authorless work – no matter how aesthetic, useful or valuable. This was pointed out in *Payen Components*:

> There may be cases where the real work has been done by the computer, the human contribution being too trivial or not sufficiently related to the work that has emerged. Suppose a computer linked directly to a large number of meteorological instruments and programmed automatically to print out a weather chart on demand. It seems factually

[123] *Id.* at [13]. *See also*, Gervais, *supra* note 40, at 2094.
[124] *Payen Component,s* [1995] ZASCA 57, [13] (citing GERALD DWORKIN AND RICHARD TAYLOR, BLACKSTONE'S GUIDE TO THE COPYRIGHT DESIGN AND PATENTS ACT 185 (1988)).
[125] *Payen Components,* [1995] ZASCA 57, [18].
[126] *Payen Components,* [1995] ZASCA 57, [19]-[20].
[127] *Global Yellow Pages,* [2017] 2 SLR 185, [24].
[128] *Asia Pacific Publishing*, [2011] 4 SLR 381, [82] (where the court held that "without the identification of a human author from whom the work originates, there can be no 'original work' capable of copyright protection.").

> wrong to contend that the deviser of the program is the 'author' of the chart. He may have died many years ago, the program may have been bought in from an independent software house, yet every day quite different charts are printed out. … It is perhaps even more artificial to argue that the operator of the computer is the author: the only skill and labour he had employed is ensuring that the flow of programs and data to the machine is maintained. It might be said that the real author is the owner or hirer of the computer who has expended the capital in setting up and operating the system; but such person is probably a body corporate, and if considered to be the 'author', would enjoy a potentially perpetual copyright.[129]

However, it can be seen from these hypothetical scenarios that the line which delineates human-authored AI-aided works from autonomous AI-authored works is unclear.[130]

We propose the following inquiry that may be useful for courts to consider when attempting to determine whether a human author who has a sufficient causal nexus with the final work can be identified: (a) Did the human author (as claimed) conceive and execute his or her creative plan? (b) Did the plan satisfy the level of creativity required? The proposed framework can comfortably fit into the present approach in many jurisdictions in respect of protection for LDMA works.[131] It is in line with the majority view in academic and judicial discussions that the author of a work generated by a computer should be the programmer who wrote the algorithm(s) that generated the work,[132] but goes a step further in offering an analytical tool to evaluate relative contributions of different human individuals in the process of creating the final work. It obviates an antecedent distinction between works that are generated by AI and works that are not. It goes straight to the heart of what really matters in the canons of copyright law – authorship and originality/creativity. We will discuss each stage of the test in turn below.

A. Did the human author conceive and execute his or her creative plan?

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[129] *Payen Components*, [1995] ZASCA 57 [15] (citing LADDIE, PRESCOTT AND VITORIA: THE MODERN LAW OF COPYRIGHT (2nd ed) (1995)).

[130] Bond & Blair, *supra* note 116, at 423.

[131] There is also a specific four-step test recently proposed for the examination of whether AI-assisted output can qualify as a "work" protected under EU law: (i) production in literary, scientific or artistic domain; (ii) human intellectual effort; (iii) originality/creativity (creative choice); (iv) expression. *See,* P. Bernt Hugenholtz & João Pedro Quintais, *Copyright and Artificial Creation: Does EU Copyright Law Protect AI-Assisted Output?*, 52 INT'L REV. INTELL. PROP. & COMP. L. 1190 (2021).

[132] *See e.g.*, Lee, *supra* note 54, at 187; Peter K. Yu, *Data Producer's Right and the Protection of Machine-Generated Data*, 93 TULANE L. REV. 859, 904 (2019); Dickenson et. al., *supra* note 118, at 458-9; Bruce E. Boyden, *Emergent Work,* 39 COLUM. J.L. & ARTS 337, 384 (2016); Lin Weeks, *Media Law and Copyright Implications of Automated Journalism*, 4 N.Y.U. J. INTELL. PROP. & ENT. L. 67, 92 (2014).

To fulfil the conception and execution elements articulated by Ginsburg and Budiardjo and be deemed the author of an AI-aided work, a human author is only required to formulate a creative plan and execute it. This creative plan is "manifested in the [programme]'s algorithms and processes, which will directly lead to the creation of expressive content."[133] Regarding the conception element, the author is not expected to have a clear pre-determined conception "of what the work should look like"; an "intent" to create a particular kind of LDMA work will suffice.[134] The execution of the work completes the artist's conception and recognises him as the author. This is because the elements in the final work stem *directly from the author's decisions* when formulating his or her creative plan.[135]

The non-necessity of a complete conception is supported by the notion of "accidental authorship," which Ginsburg and Budiardjo define as a work created by an author "without precise foresight of the work's ultimate form or contents."[136] Imagine in an alternate universe of *Naruto*, where the facts become such that Slater's camera captures an unexpected attack on the macaque Naruto by other monkeys. Such an outcome will vary significantly from the photograph Slater had in mind when he set up his camera to capture the photograph of a *single* monkey selfie-style. However, as with photographers in general, one instinctively feels that despite not knowing the exact image he ends up creating, Slater can still stake an authorship claim over the final photograph so long as he had selected and arranged particular elements in the execution of a creative plan. This is consistent with industry practice and legal jurisprudence. Many wildlife photographers rely on remote cameras to capture images after meticulously setting up the motion-sensor equipment.[137] Despite the lack of a clear conception of the final image that would constitute the artistic work, the photographer's *intention* to capture images of the animals and the elaborate setup using the camera as an assistive tool are proof of the presence of a creative plan.[138] The animal triggering the remote capture of the image produces the final artistic work and *completes* the photographer's conception, thus recognising the photographer as the author. The US Copyright Office does not examine whether the presumed author of a photograph had an adequately precise pre-execution conception of the various possible resulting photographs. The Copyright Office

[133] Ginsburg & Budiardjo, *supra* note 2 at 414.
[134] Lindsay v. The Wrecked and Abandoned Vessel R.M.S. Titanic, 97 Civ. 9248 (HB) (S.D.N.Y. 1999) [33].
[135] Ginsburg & Budiardjo, *supra* note 2, at 375.
[136] Ginsburg & Budiardjo, *supra* note 2, at 354.
[137] *See e.g.*, BBC Earth, Filming the Impossible Sets: Filming burrows and tanks, BBC, http://www.bbc.com/earth/story/20160310-filming-the-impossible-sets-filming-burrows-and-tanks.
[138] This is different from the situation of a photographer who lacked an intention to even take a photograph of animals in the first place, thus producing an authorless work. For instance, the photographer doing a fashion shoot with a model for *Vogue* in the Amazon Rainforest accidentally leaves a camera unattended, and a howler monkey picks up the camera to play with it, resulting in a photograph being taken.

states that the "author and initial copyright owner of a photograph is generally the person who 'shoots' or 'takes' the photo" and that copyrighting a photograph "protects the photographer's artistic choices, such as… the selection of camera lens, the placement of the camera, the angle of the image."[139] Likewise, courts are amenable to recognising photographers' authorship when photographers capture unforeseen events, despite the divergence between conceptions and results. For instance, when Abraham Zapruder "by sheer happenstance" captured President Kennedy's assassination in 1963 in his film, the court held that Zapruder was the film's author. This was notwithstanding the fact that Zapruder had intended to take "home movie pictures" of the presidential motorcade, but ended up creating a "historic document" of the fatal shot.[140] In a more controlled environment regarding copyright in a posed photograph, the US courts have evaluated what would constitute a product of the photographer's "intellectual invention",[141] i.e. the "creative choices" that "the photographer made in composing the image—choices related to subject matter, pose, lighting, camera angle, depth of field, and the like."[142]

In addition, the non-necessity of a complete conception is consistent with artists being recognised as authors despite the interference of unrestrained natural forces during the execution process. These scenarios, where artists intentionally relinquish some control over the execution process to random natural forces, are scenarios where the authors do not have a precise mental image of the resulting works. For instance, though Jackson Pollock's drip-and-splash painting process meant that he was unable to predict the exact direction and landing points of the paints despite controlling the paintbrush, copyright law would most likely recognise Pollock's authorship status, notwithstanding his sometimes aleatory paintings.[143] The analytical focus of some scholars is on the elements of causation, intent, volition and proximity.[144] Taking it a step further, while Damien Hirst's spin paintings are less predictable, and involve controlling a machine since the canvas is attached to a spinning platform,[145] copyright law should similarly recognise Hirst's authorship because he executed his creative plan to create a spin painting, despite not knowing the precise outcome definitively.

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[139] UNITED STATES COPYRIGHT OFFICE, CIRCULAR 42, COPYRIGHT REGISTRATION OF PHOTOGRAPHS (2018).
[140] Time, Inc. v. Bernard Geis Assocs., 293 F. Supp. 130, 131 (S.D.N.Y. 1968).
[141] *See e.g.*, Rentmeester v. Nike, Inc., 883 F.3d 1111, 1119 (9th Cir. 2018) (citing Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53, 60 (1884)).
[142] *Id.*
[143] *See* San Diego Children's Discovery Museum, *Art Activity: Jackson Pollock Drip Art*, https://www.sdcdm.org/blog/2020/04/art-activity-jackson-pollock-drip-art. Jackson Pollock's drip painting process involved dripping and splashing paint on a large canvas.
[144] *See*, Dan L. Burk, *Thirty-Six Views of Copyright Authorship, By Jackson Pollock* 58 HOUS. L. REV. 263 (2020) (presenting a very detailed analysis of Pollock's copyright in his paintings).
[145] *See Damien Hirst*, http://www.damienhirst.com/texts1/series/spins. (Damien Hirst's spin paintings involved dripping paint on a canvas attached to a spinning platform).

In an AI-context, this would entail an inquiry as to whether there was a human individual or a team of individuals who had formulated a creative plan to bring about the final work. A number of different human actors can be involved in the formulation and execution of this plan. We envisage four possible outcomes: (1) the programmer is the sole author in the execution of the creative plan; (2) the user is the sole author; (3) the programmer and user are joint authors;[146] and (4) the work is authorless. The table below illustrates when each scenario arises:

Outcome	**Did the programmer make an authorial contribution?**	**Did the user make an authorial contribution?**
(1) Programmer as sole author	Yes	No
(2) User as sole author	No	Yes
(3) Programmer and user as joint authors	Yes	Yes
(4) Authorless work	No	No

The first and fourth outcomes can arise when the user's intervention or creative input is minimal. Whether the first or fourth outcome arises depends on the nature of the programmer's input. In the first outcome, the upstream programmer limits the downstream user's creative control to relatively foreseeable choices, like starting the programme or setting a limited set of parameters that "do not amount to a protectable 'expression'."[147] Take for example, a video game where the player can "create" an avatar or character by making a number of choices within the game. The final graphical character created by the player is an "artistic work" capable of attracting copyright protection, but it does not mean that the player is the "author" of the work. The game programmer's creative plan would have included the creation of *every* eventual character because there would have been a finite number of characters that can be created as a result of the programming code. In *Nova Productions*, the programmer's creative plan was not interrupted by the downstream player's creative influences, as the programmer "devised … the rules and logic by which each frame [was] generated" thereby limiting the player's inputs to predictable choices made

[146] *See* Nova Productions Ltd. v. Mazooma Games Ltd. [2006] EWHC 24 (Ch) [105]-[106] (where a such a scenario occurred concerning a programmer and a player (i.e., the programme's user). The court analysed the programmer's and player's inputs in generating the composite frames, when determining the author).
[147] Ginsburg & Budiardjo, *supra* note 2, at 394.

when playing the game. Thus, the court held that the programmer was the author of the computer-generated works there.[148]

The second and third outcomes can occur when the user makes an authorial contribution. The second outcome arises when the user satisfies the requisite creativity, and the programmer's contribution is not apparent in the eventual work. In this case, the programme, which Ginsburg and Budiardjo liken to an "ordinary tool",[149] relies *solely* on the user's creative contributions: machines "designed to create outputs which reflect only the creative contributions of the users are 'ordinary' tools, and we should treat them in the same way we treat cameras, word processing programs, and other mechanical or digital adjuncts to the creative process."[150] The user directs the AI system's completion of its tasks and constructs the full conception that will establish the expressive elements of the eventual work. In doing so, he disrupts the programmer's authorship claim over the final work. However, for the user to claim authorship over the work, he or she has to also satisfy authorship's "execution" element by controlling how the programme creates the product. While the user is unable to influence the programme's algorithm directly,[151] he can perform acts of execution like defining the work's compositional elements. Take for instance, a freely available algorithm that one may use to feed different input in order to generate a painting. Different users will achieve distinct paintings; the author of the algorithm will have copyright protection over *only* the computer program but not over paintings created as a result of users feeding in different input. This conclusion is consistent with common logic. For example, the user of a picture created on Microsoft Paint is credited with the picture's execution, despite Microsoft Paint's developers being necessary for the painting's existence, because the painting's expressive features are directly attributed to the user. Thus, by employing the programme as a *tool* to produce the painting, the user is the sole author of the final painting. In contrast, the user's input in *Nova Productions* was held neither to be "artistic in nature" nor "skill or labour of an artistic kind", and was therefore insufficient to derail the programmer's authorship claim as the programme could not be considered the user's tool.[152]

[148] *Nova Productions*, [2006] EWHC 24 (Ch), [105]-[106]. *See also*, Gervais, *supra* note 40, at 2069 (Gervais explains that "the programmer of a videogame… authored the audio-visual output because… she created the code and files generating the image and sounds" and limited the user's choices to the programmer's prearranged choices).
[149] Ginsburg & Budiardjo, *supra* note 2, at 409.
[150] Ginsburg & Budiardjo, *supra* note 2, at 439.
[151] The user is also not required to understand the algorithms and how the programme functions because that is irrelevant to the issue of whether the user satisfies the "execution" element.
[152] *Nova Productions,* [2006] EWHC 24 (Ch), [106] (as analysed by the court, examples of the player's inputs were spinning the rotary knob to pivot the cue around the cue ball and clicking the play button at a particular point to determine the shot's power).

However, if the individual contributions cannot be separated from each other, then the third outcome of co-authorship can arise.[153] At the time of each individual's creative input, they must "be aware of and influenced by each other's specific contributions."[154] Suppose the user influences the creative process and expressive elements of the final work (i.e., the first outcome does not arise),[155] and his or her contributions are intertwined with the programmer's creative contributions. In that case, the programmer cannot be regarded as the sole author as the programmer's creative plan is unfinished without the user's creative inputs. As the programmer is unable to foresee how the user will use the program to complete the work, he cannot claim that his creative plan incorporates every possible finished work (like in the *Nova Productions* scenario). However, as the upstream programmer's choices still contribute to the creative plan by delineating the downstream user's role, the user does not disrupt the upstream programmer's authorship claim (i.e., the third outcome does not arise). Such a situation is likely to be witnessed within an organisation that has employed a team of individuals with discrete tasks to design the algorithm, select specific input, check data output and recalibrate further input etc. There would be a number of human co-authors but the copyright is likely owned by the employer organisation. As the Australian decision of *Telstra* has clearly demonstrated, it is critical to identify the human authors and show they have directed their contribution to the particular form of expression of the work in a collaborative or coordinated manner:

> The evidence demonstrated time and again that many of the staff perform their function separately from and often oblivious to the function of others … There is therefore a real question over whether there was the requisite level of collaboration between those workers to be considered joint authors.[156]

The fourth outcome of authorless works generated by AI arises when the programmer is unable to predict the final work, even vaguely, and relinquishes control over the creative process to the AI system, which independently generates the work, i.e. an AI-authored work.[157] An authorless work can also arise when there are multiple contributors, such as multiple code

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[153] For example, this is contemplated by Singapore's Copyright Act. *See* Copyright Act 2021, s. 10 (defining "work of joint authorship" as work that "is produced by the collaboration of two or more authors; and the contributions of the authors are not separate").
[154] Ginsburg & Budiardjo, *supra* note 2, at 440.
[155] In terms of the proposed test, this means that the user satisfies the second stage of the proposed test.
[156] Telstra Corporation Ltd. & Another v. Phone Directories Company Pty. Ltd. & Others [2010] FCAFC 149 at [33] (citing Telstra Corporation Ltd v. Phone Directories Co Pty Ltd [2010] FCA 44 at [337]). *See also*, *Telstra,* [2010] FCAFC 149, [92] ("Moreover, the work of these individuals was not collaborative. It was, no doubt, organised to facilitate the production of the directories but this organisation was not collaboration of the kind contemplated by the definition of joint authorship, and the contribution of each of the groups of individuals referred to earlier was made quite separately").
[157] LAW REFORM COMMITTEE, SINGAPORE ACADEMY OF LAW, *supra* note 108, at [2.72], [2.76].

contributors to a programme which subsequently produces the painting, but none of their contributions constitutes an authorial contribution sufficient for joint authorship, or the contributors did not collaborate; this is similar to the fact scenario in *Telstra* in respect of a compilation work where the Federal Court of Australia could not locate a human author(s) amongst the disparate group of human actors who had exerted any significant control or direction in a lengthy production process.[158] The court held that when determining originality, the focus must be "upon the origin of the work in some intellectual effort of the author"[159] and more importantly, there was no individual really in control of or coordinating the automated process of producing the directories there:

> The compilation of the directories was overwhelmingly the work of the Genesis computer system or its predecessors. The selection of data and its arrangement in the form presented in each directory occurred only at "the book extract" or "book production" process. The compilations which emerged from the operation of the computer system do not originate from an individual or group of individuals. Indeed, *none of the individuals who contributed to the production of the directories had any conception of the actual form in which they were finally expressed.*[160]

In the UK, the Court of Appeal's interpretation of s. 9(3) of the CDPA in *Nova Productions* similarly supports such an outcome.[161] As a result, these authorless works – despite the investment of skill, labour and money – would nonetheless belong to the public domain.

B. Is the requisite creativity satisfied?

This hurdle should be easily cleared. To determine whether the creative plan satisfies the "extremely low" level of creativity,[162] the extent of human input is assessed holistically to determine whether the human did indeed direct the machine to produce the particular work.[163] It is perhaps in the most exceptional circumstances akin to the generation "garden-variety"[164] compilation works that an AI-aided work would fail this criterion.

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158 Sam Ricketson, *Reflections on Authorship and the Meaning of a 'Work' in Australian and Singapore Copyright Law*, 24 SING. ACAD. L. J. 792, 822-823, 826-827 (2012) (discussing "authorial contribution" and the collaboration requirement as requirements for joint authorship under s. 10 of the Copyright Act 2021.) *See also, Telstra,* [2010] FCAFC 149, [91] (for an application of the collaboration requirement for joint authorship).
159 *Telstra*, [2010] FCAFC 149, [58].
160 *Telstra*, [2010] FCAFC 149, [89].
161 *Nova Productions,* [2006] EWHC 24 (Ch), [106] (the court held that the player's contribution did not amount to an authorial contribution under s. 9(3) of the CDPA as he did not undertake any arrangements necessary for the creation of the computer-generated artistic work).
162 *Asia Pacific Publishing*, [2011] 4 SLR 381, [38]. *See also*, Gervais, *supra* note 40, at 2105 (Gervais clarifies that the human and AI contributions need not be even, but that the human contribution must be more than "de minimis.")
163 LAW REFORM COMMITTEE, SINGAPORE ACADEMY OF LAW, *supra* note 108, at [2.75].
164 *Feist Publications*, 499 U.S. 340, 362 (1991) ("The end product is a garden-variety white pages directory, devoid of even the slightest trace of creativity.").

While much of the hype today surrounds the creation of paintings, music and literary works by AI, computer programs have been used in the production of compilation works for decades. The US Second Circuit Court of Appeals held that:

> The creative spark is missing where: (i) industry conventions or other external factors so dictate selection that any person composing a compilation of the type at issue would necessarily select the same categories of information, or (ii) the author made obvious, garden-variety, or routine selections.[165]

When it comes to the selection or arrangement of information, "creativity inheres in making non-obvious choices from among more than a few options."[166]

The creation process for an AI-aided work is often lengthy and complicated. For convenience, we can view the production process as comprising three steps, as each step has a different type of human-machine collaboration: (1) preparation step, (2) creation step, and (3) review step.[167]

The preparation step examines whether the programmer "feeds" the computer with input data and *instructs* it to examine that data. For instance, in a *Next Rembrandt*-type scenario, this can include selecting a range of paintings and classifying them, such as by painting style or painter. However, the programmer must select and classify based on criteria established by him exercising his independent intellectual effort.[168] The court will likely deem selection and classification based on a standardised set of rules as a mechanical exercise lacking creativity.[169] In *Telstra*, Gordon J in the Federal Court of Australia held that copyright did not subsist in any of the directories, as the necessary human intervention focused on applying, to the telephone listings, rules that "were automated in the sense that they were programmed into the Genesis Computer System."[170] In contrast, if a programmer expresses his creative freedom through "feeding" the AI system carefully

[165] Matthew Bender & Co. v. West Publishing Co., 158 F.3d 674, 682 (2d Cir. 1998). *See also*, Victor Lalli Enters., Inc. v. Big Red Apple, Inc., 936 F.2d 671, 673 (2d Cir.1991); Bell South Advertising & Publishing Corp. v. Donnelley Info. Publishing, Inc., 999 F.2d 1436, 1444 (11th Cir. 1993).
[166] *Feist Publications*, 499 U.S. 340, 362 (1991).
[167] JONATHAN OSHA ET. AL., INTERNATIONAL ASSOCIATION FOR THE PROTECTION OF INTELLECTUAL PROPERTY (AIPPI), COPYRIGHT IN ARTIFICIALLY GENERATED WORKS: STUDY GUIDELINES 8-9 (2019) (suggesting a similar division of the production process). *See*, *Nova Productions,* [2006] EWHC 24 (Ch), [105] (where the EWHC implicitly supports this division when examining the programmer's efforts).
[168] Spindler, *supra* note 66, at 1050.
[169] *Global Yellow Pages* [2017] 2 SLR 185, [14].
[170] *Telstra,* [2010] FCAFC 149 [91].

curated paintings,[171] and he does not base the curation on technical considerations,[172] then he has strongly influenced the creation of the final AI-aided painting and satisfied the originality requirement.[173] The resulting work would be an intellectual creation reflecting the freedom of choice and personality of its author.

The creation step analyses whether the programmer directs the AI system, like via digital manipulation or using filters,[174] in a way that reflects the programmer's personality and expresses the programmer's own "free and creative choices".[175]

Finally, the review step scrutinises the human intervention, such as editing and polishing, in refining the raw computer output. However, this does not include editing according to technical considerations, like correcting AI-generated literature according to grammar rules.[176] In addition, if human intervention is limited solely to selecting what is perceived to be economically valuable paintings out of many paintings generated by the AI system, this ex post human intervention is insufficient to confer originality upon the works. This is because the creative process concludes when the painting is created.[177]

V. APPLICATION OF THE PROPOSED FRAMEWORK TO *THE NEXT REMBRANDT*

This section applies the proposed evaluative framework to four scenarios – *The Next Rembrandt*[178] and three variations of it – each with different degrees of human input to illustrate how it may assist courts in analysing whether or not these works generated by computers would receive copyright protection.

The first scenario shows how *The Next Rembrandt*, without any variation, is a straightforward example of an AI-aided work. The painting satisfies the standard of conception,

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171 *See e.g.*, *Is Artificial Intelligence Set to Become Art's Next Medium?,* CHRISTIE'S (Dec. 12, 2018), https://www.christies.com/features/a-collaboration-between-two-artists-one-human-one-a-machine-9332-1.aspx. (the programmers for *Portrait of Edmond de Belamy* carefully selected 15,000 portraits painted between 14th century to the 20th century to "feed" the AI system).

172 Bezpečnostní softwarová asociace – Svaz softwarové ochrany v. Ministerstvo kultury, EU:C:2010:816, Case C-393/09 (Dec. 22, 2010) at 46-51 ("Bezpečnostní") (the CJEU held that the graphic user interface ("GUI") was considered the programmer's own intellectual creation if the specific positioning of the GUI components were not determined solely by their technical functions, which would have overly limited the various possible positions, but determined in a way that enabled the author "to express his creativity in an original manner.").

173 Spindler, *supra* note 66, at 1050.

174 Niloufer Selvadurai & Rita Matulionyte, *Reconsidering Creativity: Copyright Protection for Works Generated Using Artificial Intelligence,* 15 J. INTELL. PROP. LAW. & PRAC. 536, 539 (2020).

175 *Infopaq Int'l*, Case C-5/08, [2010] FSR 20, [35]; Case C-145/10, *Eva-Maria Painer*, 2011 E.C.R. I-12533, [99].

176 Football Association Premier League Ltd and Others v. QC Leisure and Others, EU:C:2011:631, Cases C-403/08 and C-429/08 (Oct. 4, 2011) [97]-[99].

177 Ginsburg & Budiardjo, *supra* note 2, at 375.

178 *The Next Rembrandt*, MICROSOFT (Apr. 13, 2016), https://news.microsoft.com/europe/features/next-rembrandt; Dutch Digital Design, *The Next Rembrandt: Bringing the Old Master back to life*, MEDIUM (Jan. 24, 2018), https://medium.com/@DutchDigital/the-next-rembrandt-bringing-the-old-master-back-to-life-35dfb1653597.

as the programmers executed their creative plan of producing a computer-generated painting based on Rembrandt's style. In terms of human intervention, during the preparatory step, the programmers fed the AI system with a particular selected data set.[179] Producing the data set included compiling and scanning all of Rembrandt's 346 paintings, and classifying over 400 faces in these paintings.[180] From the creation step to the review step, a unit of 20 data-analysts, developers, AI professors and 3D-printing experts transformed the computer-generated 2D image into a 3D-printed painting, and subsequently refined this 3D-printed painting. Viewed holistically, *The Next Rembrandt* was shaped by continuous human creativity decisions made at various steps in a systematic and coordinated fashion (unlike the disparate human action in *Telstra*), and is therefore considered a human-authored AI-aided work.[181] In addition, *The Next Rembrandt* is most probably a work of joint authorship. There was constant interaction between the team of data-analysts, developers, AI professors and 3D-printing experts, and each of their individual contributions was inseparable from the rest. Given that the team worked on this painting for 18 months, depending on who had played key roles in assigning, coordinating and supervising the execution of the tasks, it is likely that we can Identify a number of co-authors of the AI-aided painting (although copyright ownership would likely vest with the organisation under employment agreements).

In the second scenario, we assume that human input is limited only to the preparatory step, i.e., compiling and scanning all of Rembrandt's paintings, and classifying the faces in these paintings. The algorithm is programmed to run, analysing these paintings and faces, and ultimately generating a crude 2D version of *The Next Rembrandt* in accordance to the creative plan designed by the programmers. Nevertheless, the resulting work still qualifies for copyright protection in light of the "extremely low" level of creativity that courts require;[182] most courts would agree with the observation of the US Supreme Court in *Feist* that "[t]he vast majority of works make the grade quite easily, as they possess some creative spark, no matter how crude, humble or obvious it might be."[183]

In the third scenario, the programmer "feeds" the AI system a variety of different LDMA works, and knows that the AI system will eventually produce an LDMA work, but does not know

[179] White & Matulionyte, *supra* note 40, at 243 (White and Matulionyte cites the *Portrait of Edmond de Belamy* as an example that such creative idea and effort at the preparation step is sufficient human intervention for copyright to subsist in the computer-generated work).
[180] DUTCH DIGITAL DESIGN, *supra* note 5.
[181] Benita Lau, *How copyright applies to AI-generated works*, TECH IN ASIA (Dec. 13, 2017), https://www.techinasia.com/talk/copyright-apply-ai (Greg Borenstein's "algorithmic comics" is another example of a computer-generated artistic work, which Benita Lau argues qualifies for copyright protection, as Borenstein determined the parameters of what the programme searched for and constantly chose keywords).
[182] *Asia Pacific Publishing*, [2011] 4 SLR 381, [38].
[183] *Feist Publications*, 499 U.S. 340, 345 (1991).

the type of LDMA work that will be generated. For instance, the AI system is given the complete literary works of William Shakespeare, the musical compositions of Mozart, the paintings of Rembrandt, the sculptures of Michelangelo and the photographs of Man Ray. The AI then generates a painting; it is not in the style of Rembrandt but is an artistic work that is the result of the cacophony of LDMA works that had been fed to the AI system. While the human-output causative link here is weaker than the previous two scenarios, but based on the second scenario, if the programmer exercises creativity in preparing the data set to "feed" the AI system, then there is sufficient human input. However, the vital issue that arises is whether the programmer satisfies the standard of conception. Although the programmer is only required to formulate a creative plan and execute it, the programmer in the third scenario can be said to lack a sufficiently defined creative plan since he does not have even a vague conception of the final output. Comparing with the notion of "accidental authorship" and incorporation of natural forces which could justify a low standard of conception – for instance, when setting up a motion-capture camera to photograph animals in the wild – the author in these situations minimally knows the type of LDMA work that will be produced.[184] In contrast, the programmers in this third scenario do not even know the type of LDMA work that will be produced, thus failing the standard of conception even though they have exercised free and creative choices in the input of data.

Autonomous AI systems are already being used in certain industries. For instance, autonomous artificial intelligence has been defined as "routines designed to allow robots, cars, planes and other devices to execute extended sequences of manoeuvres without guidance from humans"[185] or "systems that are able to accomplish a task, achieve a goal, or interact with its surroundings with minimal to no human involvement."[186] However, for the purposes of copyright law, our fourth scenario imagines a number of futuristic autonomous AI systems, such as one capable of producing a "push button" output[187] or one that contemplates a complex number of data sets and then decides to spontaneously create a work much like J.A.R.V.I.S. in the Marvel

[184] The nature or animal photographer would know that the work produced would be a photograph; the photographer just does not know when precisely this work would be produced and what image would be fixed. Regarding incorporation of natural forces, both Pollock and Hirst knew that the final outputs were paintings.

[185] Peter Wayner, *What is Autonomous AI? A guide for enterprises*, VENTURE BEAT (Mar. 31, 2022), https://venturebeat.com/2022/03/31/what-is-autonomous-ai/.

[186] Kathleen Walch, *The Autonomous Systems Pattern of AI*, FORBES (May 30, 2020), https://www.forbes.com/sites/cognitiveworld/2020/05/30/the-autonomous-systems-pattern-of-ai/?sh=123890706a6b.

[187] Sorab Ghaswalla, *Who Owns The Copyright Of AI-generated Content?*, MEDIUM (Jan. 18 2020), https://medium.com/@sorabg/who-owns-the-copyright-of-ai-generated-content-edbe7eb8d480. (Sorab Ghaswalla coins this term to describe an AI system that can churn an output with the simple push of a button.)

Cinematic Universe.[188] The works created are truly independent and autonomous AI-generated works. In the "push button" situation, besides pressing a button, the programmer does not shape or produce a specific image. Sorab Ghaswalla describes it as follows: "The logic being applied here is that an AI tool eventually 'figures out' for itself how to proceed and thus, creates its own design/content, etc without any human intervention at all. Push a button and the 'output' comes out."[189] Unlike the third scenario, the programmer here does not even know if and when a work would be created. Under such circumstances, even assuming that the programmer fulfils the standard of conception, the negligible human input throughout the creation process means that the programmer failed to execute his creative plan. The human individual would also fail to satisfy even the "extremely low" level of creativity that courts require.[190] Thus, the resulting work will be considered an autonomous AI-authored work and unlikely to attract copyright protection under current laws.

VI. CONCLUSIONS

Copyright is not about a matter of beauty or taste;[191] it is about encouraging and rewarding human creativity. Throughout history, humans have always relied on tools to produce paintings and other LDMA works. The oldest paintings were created with pigments. In the 1500s, paintings, like Leonardo da Vinci's *Mona Lisa*, were created with paintbrushes. In the 1960s, Andy Warhol used mesh screens to transfer ink onto the canvas. In the 1990s, Damien Hirst created his spin paintings by pouring different coloured paint onto machine-operated rapidly rotating canvases. More recently, David Hockney's series of 116 works, *The Arrival of Spring*, was "painted" on the iPad and then printed onto paper, with Hockney overseeing all aspects of production. In 2019, Scott Eaton in his debut exhibition, *Artist+AI: Figures & Form in the Age of Intelligent Machines*, in London, declared that he has trained AI to be his amanuensis, and that his interest in this emerging field of AI is "not in creating agents that 'create art' autonomously, but rather in making art 'assistants', AI collaborators that take direction and enhance the creative possibilities available to the human artist."[192] In an interview, Eaton triumphantly asserts the primacy of the human author: "The AI has no choice but to do what I ask, no matter how difficult or unreasonable my request.

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[188] *See*, J.A.R.V.I.S., MARVEL CINEMATIC UNIVERSE WIKI, https://marvelcinematicuniverse.fandom.com/wiki/J.A.R.V.I.S. (J.A.R.V.I.S. stands for Just A Rather Very Intelligent System).

[189] Ghaswalla, *supra* note 187; *See also*, Ricketson, *supra* note 158, at 820 (Ricketson distinguishes between AI-generated and AI-aided works by whether the programmer works with the programme to shape and produce the specific image, or whether the programme wholly produced the work).

[190] *Asia Pacific Publishing*, [2011] 4 SLR 381 [40].

[191] Marianne Levin, *The Cofemel Revolution – Originality, Equality and Neutrality* in ROUTLEDGE HANDBOOK OF EU COPYRIGHT LAW 82, 89 (Eleonora Rosati ed., 2021).

[192] Eaton, *supra* note 9.

The result is often a wondrous, unexpected, interplay of visual ideas, both mine and the machine's."[193]

While humans had been aided by the use of a kaleidoscope of tools in creating works of art, AI's seemingly infinite potential continuously recharacterises the role of humans in this creative process. All is not lost when AI independently and autonomously generates works; the human artist – albeit not the "author" – credited with this innovation will nonetheless enjoy important recognition, and can exploit other forms of commercial opportunities associated with such AI works. Mario Klingemann's "creation" of *Memories of Passersby I* is a paradigmatic example; his artworks have been exhibited at MoMA New York, the Metropolitan Museum of Art New York, and Centre Pompidou Paris.[194] To develop *Memories*, Klingemann trained his AI model by employing thousands of portraits from the 17th to 19th centuries. The flow of images presented in *Memories* does not follow a predetermined choreographic sequence but is the result of the AI autonomously interpreting its own output; the complex nature of this feedback loop means that no image will ever be repeated. *Memories* contain all the algorithms and GANs necessary to produce an endless succession of new images as long as it is running; in essence, the audience watches an AI brain "think" in real time and view unique portraits which are neither recorded nor repeated.

This paper had argued that the human authorship requirement is deeply ingrained in copyright subsistence and should not be abandoned even in the face of technological developments. Similar conclusions have been reached by a majority of scholars and policymakers. In a recent comprehensive examination of whether justifications of IP are applicable to AI from the perspective of copyright, Mauritz Kop concludes that "human authorship remains the normative organ point of intellectual property law and that (for now) smart robots do not have—and ought not have—legal personhood."[195] Daryl Lim succinctly captures the essence of the debate regarding AI works. Lim observes:

> No AI is itself the wellspring of creativity. Rather, the creativity the AI displays flows either from the algorithm used to design and train it, or from the instructions provided by the users operating it. Unlike human beings, algorithms do not have the quintessential lynchpin upon which to hang creativity – free will.[196]

[193] Eaton, *supra* note 9.
[194] Art Dip, *Mario Klingemann MEMORIES OF PASSERSBY I*, MEDIUM (July 15, 2019), https://medium.com/dipchain/mario-klingemann-memories-of-passersby-i-c73f72675743.
[195] Kop, *supra* note 13, at 338.
[196] Lim, *supra* note 89, at 842.

Our proposed framework recognises the roles of the programmer of the algorithm, the data supplier who selects and inputs the relevant data, and the users of the AI system who may add a further creative contribution to the final output. It is also able to allow the court to systematically evaluate the relative weight and nexus of creative input of each human individual to the final work to properly discern whether sole or joint authorship ought to be recognised. The European Parliament's 2016 draft report acknowledged that there are no legal provisions specifically for robotics but highlighted the need to establish a criteria for copyrightable computer-generated works.[197] In April 2020, the draft report issued by the European Parliament pushed for copyrighting computer-generated works.[198] The UK has just concluded its public consultation for AI and IP in relation to copyright and patents.[199] We very much welcome the advent of unexpected and unusual AI art, but there is unfortunately no room for the AI author.

[197] EUROPEAN PARLIAMENT, COMMITTEE ON LEGAL AFFAIRS, DRAFT REPORT WITH RECOMMENDATIONS TO THE COMMISSION ON CIVIL LAW RULES ON ROBOTICS (2015/2103(INL)) (May 31, 2016) at 10.

[198] STÉPHANE SÉJOURNÉ, EUROPEAN PARLIAMENT, COMMITTEE ON LEGAL AFFAIRS, DRAFT REPORT ON INTELLECTUAL PROPERTY RIGHTS FOR THE DEVELOPMENT OF ARTIFICIAL INTELLIGENCE TECHNOLOGIES (2020/2015 INI), (Apr. 24, 2020) [10]. ("considers that certain works generated by AI can be regarded as equivalent to intellectual works and could therefore be protected by copyright").

[199] *Artificial Intelligence and IP: copyright and patents,* https://www.gov.uk/government/consultations/artificialintelligence-and-ip-copyright-and-patents. (The consultation commenced on 29th October, 2021 and ended on 7th January, 2022. One of the specific questions posed is: "Copyright protection for computer-generated works without a human author. These are currently protected in the UK for 50 years. But should they be protected at all and if so, how should they be protected?". See also Martin Kretschmer, Bartolomeo Meletti & Luis H. Porangaba, *Artificial Inteligence and intellectual property: copyright and patents – a response by the CREATe Centre to the UK Intellectual Property Office's open consultation*, 17 J. INTELL. PROP. LAW. & PRAC. 321 at 323 (2022) (commenting that there is "no real need for a dedicated, *sui generis* provision dealing with copyright subsistence in computer-generated works").

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ROLLING IN THE DEEP: NFTS INTERFACING IN THE METAVERSE AND INTELLECTUAL PROPERTY

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Abstract

NFT has been the buzz word in 2021-22, even though it traces its origin to 2014 when a digital artist created the first NFT to develop an alternative marketplace for commercialization of artworks. The article traces the origin of NFT, it's meteoric rise across industry sectors and its interaction with metaverse. Touching briefly upon the background, the article delves into the interaction of NFT and metaverse with established principles of various intellectual property laws and how it challenges those principles or tries to expand on the scope of such laws and how the dispute scenario is being affected in the process. In this analysis the article constantly imports real life instances to ease the readers in understanding the nuances.

I. LET'S GET STARTED: WHAT IS THIS NFT ANYWAY?

In 2021, Collins Dictionary declared "NFT"- the abbreviation for 'Non-Fungible Token', as the word of the year.[1] Whilst the first purported NFT was created/minted in 2014 by a New York based digital artist- Kevin McCoy[2] with a view of creating an alternative platform/market for artists to commercialize their artworks, it was only in and around 2021 that the global phenomenon of NFT "minting" caught up with the masses.

Before we dive deeper into the NFT phenomenon that has taken the world by a storm, it would be worthwhile to understand what an 'NFT' is. The word "fungible" has been defined by Merriam Webster dictionary to mean "being something (such as money or a commodity of such a nature that one part or quantity may be replaced by another equal part or quantity in paying a debt or settling an account".[3] Accordingly, it can be inferred that a product may be termed as "non-fungible" if there is no standard value associated with the product and therefore such products are not easily used for a barter/settling a debt. For example, the paintings "The Starry Night" by Vincent Van Gogh and "Mona Lisa" by Leonardo Da Vinci are both celebrated artworks; however, the commercial value associated with the two paintings may not always be the same and

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1 David Shariatmadari, *Get your crypto at the ready: NFTs are big in 2021*, COLLINS: LANGUAGE LOVERS BLOG (Nov. 24, 2021), https://www.collinsdictionary.com/woty.

2 *The first NFT ever created, 'Quantum', goes under the hammer*, THE ECONOMIC TIMES (Jun. 5, 2022), https://economictimes.indiatimes.com/magazines/panache/the-first-nft-ever-created-quantum-goes-under-the-hammer/articleshow/83253657.cms.

3 "*Fungible*", MERRIAM-WEBSTER.COM DICTIONARY, https://www.merriam-webster.com/dictionary/fungible.

will vary according to the audience. This leaves us with the understanding that the value of "non-fungible" items is variable i.e., it may appreciate or depreciate as per the purchasing public's opinion. Pushing the envelope further, "non-fungible tokens" refer to tokens that are linked to digital works (could be art, music or any digital content) in the block-chain, which can be purchased by individuals online upon payment of the value that is associated with this token at that point in time. NFTs are supported by blockchain technology, Ethereum being one of the first blockchains to support the sale of NFTs. As discussed, NFTs function on the "block chain technology", now blockchain is a distributed ledger technology which stores the details of different transactions in separate blocks in a distributed manner such that there is no central computer/source that regulates the transactions, the data is spread across the network. The parties to the transaction have to the approve its validity and once the data is approved it forms a permanent part of the ledger and cannot be tampered with at a later stage.[4] Therefore, for art collectors in the digital space, NFTs are a safe and secure method of purchasing collectibles. NFTs can be purchased from various platforms (akin to e-commerce platforms for purchasing physical goods) such as OpenSea, Larvalabs (Cryptopunks), etc. Reportedly, the NFT market generated over 23 billion USD in trading volume in 2021.[5] It is evident that NFTs have gained popularity among the members of the public when popular British art auction house, Christie, announced in October 2021 that its sales surpassed 100 million USD only by minting NFTs.[6]

Several reasons can be attributed to the increase in sales of NFTs, first of which would be an improved understanding of cryptocurrency purchases and transfers.[7] Secondly, NFTs in particular, have provided artists with an additional platform to showcase and commercialize their artworks with ease.[8] It is pertinent to note that smart contracts for purchase of artworks related NFTs can be modified to include a provision of royalty payable to the original artist each time the NFT is sold i.e. unlike the physical world wherein the owner of an artwork is compensated only once, in case of NFTs, in addition to receiving payment for the entire artwork when it is sold for the first

[4] *Blockchain Explained: What is blockchain?,* EUROMONEY LEARNING, https://www.euromoney.com/learning/blockchain-explained/what-is-blockchain.

[5] Thomas Abraham, *Explained: Why some NFT creations are destroying physical art assets, including a rare copy of Dune*, CNBCTV18 (Jan. 21, 2022), https://www.cnbctv18.com/cryptocurrency/explained-why-some-nft-creations-are-destroying-physical-art-assets-including-a-rare-copy-of-dune-12200032.html.

[6] Varuni Khosla, *Christie's auction house surpasses $100 million in NFT sales*, MINT (Oct. 2, 2021), https://www.livemint.com/companies/news/christies-auction-house-surpasses-100-million-in-nft-sales-11633152356059.html.

[7] Mehab Quereshi, *Everyday Technology: What are NFTs? How are they different from cryptocurrency?*, THE INDIAN EXPRESS (Feb. 23, 2022), https://indianexpress.com/article/explained/everyday-explainers/what-are-non-fungible-tokens-nft-7783662/.

[8] Mitchell Clark, *NFTs, explained*, THE VERGE (June 6, 2022), https://www.theverge.com/22310188/nft-explainer-what-is-blockchain-crypto-art-faq.

time, the artist may also be entitled to receiving a certain percentage of royalty each time the NFT is sold further, thereby proving to be beneficial to the artist. At this juncture it is important to understand that the purchaser of an NFT only owns the NFT and uses it (as per the terms of the agreement), but the ownership of the underlying copyright or any other intellectual property contained in the NFT may continue to be vested with the artist(s), depending on the underlying smart contract.

II. YESTERDAY IT WAS NFT AND NOW ITS METAVERSE – HOW DO THEY KNOW EACH OTHER?

Amidst the growing NFT rage, in or around October 2021, Facebook Inc. made an announcement that it will be rebranding the company name as "META" which was inspired from the concept of "Metaverse".[9] The term "Metaverse", as often used by technology companies, is a reference to a universe that exists in a virtual or in an augmented reality environment.[10] To put it simply, it is akin to the online game "Second Life" launched by Linden Labs, that had gained considerable popularity in or around 2003 because it allowed the users to choose their digital avatars and lead a fantasy life that was an alternative to their present life. Now imagine this game, but with more serious and real-life implications. Metaverse is intended to be created on the basis of a new form of internet known as "Web3", a decentralized form of the internet relying heavily on the blockchain technology.[11] The Metaverse is projected as a world wherein people/industries will interact in the virtual/augmented world in a manner which is similar to our existing lives. It is expected that the NFTs minted may have use and further value in the Metaverse given that NFTs are indeed digital possessions. This exciting possibility on further commercialization has inspired various brands to re-align their corporate strategies so as to further create value and market base in the Metaverse. Needless to say, popular brands like Nike, Louis Vuitton, Adidas, Lamborghini, Mahindra & Mahindra have entered the NFT markets and have started generating digitized products, in a limited quantity, available for sale.[12] This has now resulted in a close inter-linking between NFTs and Metaverse, which closely brushes with the settled intellectual property jurisprudence.

[9] Shruti Dhapola, *Explained: Why Facebook is starting its metaverse journey by rebranding itself as Meta*, THE INDIAN EXPRESS (Oct. 29, 2021), https://indianexpress.com/article/explained/facebook-meta-rebranding-name-explained-7596771/.
[10] Eric Ravenscraft, *What Is the Metaverse, Exactly?*, WIRED (Apr. 5, 2022), https://www.wired.com/story/what-is-the-metaverse.
[11] *Web 2 v. Web 3*, ETHEREUM.ORG, https://ethereum.org/en/developers/docs/web2-vs-web3/ (last visited Apr. 22, 2022).
[12] Josh Gerben, *Metaverse Trademarks: A Guide to Notable Filings*, GERBEN LAW FIRM'S TRADEMARK BLOG (Mar. 16, 2022), https://www.gerbenlaw.com/blog/metaverse-trademarks-a-guide-to-notable-filings/.

III. HOW DO NFTS AND THE METAVERSE MINGLE WITH THE ESTABLISHED STANDARDS?

A. Winds of Change-Recent Trade Mark Filings for Goods/Services in the Metaverse

Among the various companies that have pivoted towards expanding their business activities in the Metaverse, Nike appears to be a pioneer. In or around November 2021, it was widely reported by the media that Nike has filed new trademark applications before the United States Patents and Trademarks Office ["USPTO"] with a range of goods/services specifically targeting the Metaverse.[13]

Nike is renowned for its quality athletic apparels and footwear, therefore, in line with the nature of "goods" in the Metaverse, one of the trademark applications filed by the company in class 9 before the USPTO, is for "Downloadable virtual goods, namely, computer programs featuring footwear, clothing, headwear, eyewear, bags, sports bags, backpacks, sports equipment, art, toys, and accessories for use online and in online virtual worlds."[14] In a more traditional sense, as per the NICE classification for goods and services, the goods "apparels and footwear" would be classified under class 25 whereas, "toys" would be classified under class 28 of the NICE classification however, the existing NICE classification system does not identify/classify goods that are meant for sale exclusively in the virtual world. This small but significant lacunae sparked a debate among IP specialists regarding the need to rehaul the existing NICE classification to either introduce a special class of goods that will exclusively identify goods sold in the virtual medium; or to expand the scope of the existing classes of goods, to include goods that are sold in the tangible as well as intangible format. However, as on the date of writing, proprietors have a limited option of seeking protection of their trademark (that may be used in Metaverse) within the scope of Class 9 of the NICE classification by specifying the type of "downloadable virtual goods" for which the trademark is sought to be protected. The clamor for re-classification of the NICE classification has gained importance on account of rising disputes pertaining to sale of "virtual goods" via NFT.

B. Brewing Storm- Confusion in the Origin of Goods: Hermes & Nike Saga

Recently, Hermes International S.A. ["Hermes"], a luxury fashion brand found itself embroiled in controversy when it filed a trademark and a trade dress infringement suit against a digital artist - Mason Rothschild for selling NFTs of "fur covered tote bags" under the trademark

[13] Jessica Golden, *Nike is quietly preparing for the metaverse*, CNBC (Nov. 2, 2021), https://www.cnbc.com/2021/11/02/nike-is-quietly-preparing-for-the-metaverse-.html.
[14] Cindy Tan, *Nike Prepares for Next Moves in the Metaverse with Latest Trademark Filings*, NFT GATORS (Feb. 22, 2022), https://www.nftgators.com/nike-prepares-for-next-moves-in-the-metaverse-with-latest-trademark-filings/.

"METABIRKINS".[15] The two primary issues for Hermes were - one, the mark "METABIRKINS" is a variation of Hermes' registered trade mark "BIRKINS" with just the generic word "META" added to it; and second, the design of the tote bag is similar to Hermes' registered trade dress for its bags.[16] Accordingly, Hermes has relied on its trade mark registrations for the mark "BIRKINS" in various classes, including class 18 (relevant for handbags) and also a trade dress registration for its handbags. However, the trademark "BIRKINS" in class 18 is registered only in respect of physical handbags and not the digital handbags which, in fact, appear to be the goods sold by the digital artist.

Hermes has also claimed that such unauthorized use of its trademark "BIRKINS" by the digital artist leads to dilution of goodwill and reputation associated with the trademark "BIRKINS" and the goods sold thereunder. The digital artist, in his motion to dismiss the suit, has argued that as per the existing laws of the United States of America, he was merely exercising his artistic expression by creating the NFTs under the trademark "METABIRKINS". It was also contended that the Hermes' trademark "BIRKINS" was used for physical goods whereas, his use of the METABIRKINS was not misleading since it had on its website claimed that it only represents the artwork of the digital artist.[17]

This case is pending adjudication; however, it has cautioned brand owners to seek necessary protection for their trademarks even in respect of the necessary digital goods to avoid a similar situation. Furthermore, in suits pertaining to infringement of trademarks, one of the common tests to identify infringement is "likelihood of confusion" that may exist between the rival goods i.e. the rival goods are so similar to each other and since they are operating in the same channel of trade, it is likely to confuse the potential customers about the origin of goods and they may mistake the counterfeit good as goods originating from the original brand owner. In the Hermes case, while it may be argued that the image of the METABIRKINS NFTs is similar to or derived from Hermes' handbags, it is also true that purchasers of a Hermes handbag and the METABIRKINS NFTs will be completely different, and their requirements will be different altogether and may not be confused with one another. This understanding gets convoluted when one considers that in the Metaverse, people may be using the METABIRKINS NFTs to represent handbags thereby affecting Hermes' potential market in the Metaverse.

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[15] Robert Williams, *Hermès Sues NFT Creator Over 'MetaBirkin' Sales*, THE BUSINESS OF FASHION (Jan. 17, 2022), https://www.businessoffashion.com/news/luxury/hermes-sues-nft-creator-over-metabirkin-sales.
[16] *Id.*
[17] *Hermès International, et al. v. Mason Rothschild - Memo of Law*, THE FASHION LAW (Dec. 1, 2020), https://www.thefashionlaw.com/hermes-international-et-al-v-mason-rothschild-memo-of-law.

The uncertainty regarding the relevance and use of brands in the Metaverse has resulted in brands being cautious about their digital representation in any form. For instance, in December 2021, Nike Inc acquired RTFKT, a company engaged in the business of minting NFT collectibles in the gaming space;[18] this was another step undertaken by Nike to claim its place in the Metaverse, however, in or around January/February 2022 Nike saw the rise of an unexpected competition from StockX LLC, an online reseller of shoes. It came to Nike's notice that StockX launched a few limited-edition Vault NFTs, i.e., digital tokens that represent the actual physical product's ownership, that were linked with Nike's shoes. Therefore, Nike filed a suit for infringement of its trademarks by StockX, alleging that StockX 's act of selling the Vault NFTs containing the "NIKE" registered trademarks amount to an act of infringement of Nike's trademarks.[19] It has also been alleged that StockX has deliberately launched the Vault NFTs with a view to confuse the consumers about its association with Nike and to benefit from such confusion.[20] In its response, StockX has contended that it is not selling standalone NFTs of Nike shoes, in fact, it is selling the digital tokens representing the physical Nike shoes that the purchaser will own. StockX has compared this situation to sale and purchase of goods via any e-commerce platform i.e., the original goods have been purchased by StockX from Nike and now StockX is simply re-selling them via NFTs to members of public. This is often referred to as doctrine of first sale wherein the owner of a work does not have the right to further control the way the goods are / can be re-sold in the marketplace. Whilst in a physical marketplace, the doctrine of first sale is easily applicable, it becomes quite tricky in a completely virtual space. At this juncture, it is important to consider that in 2020, the CJEU ruled that the doctrine of first sale does not apply in case of e-books[21] given that digital version of books do not deteriorate unlike the physical ones. Drawing an analogy from this understanding of the CJEU, it may also be argued that in case of NFTs even if a physical product has been purchased, sale of its NFT may not be permissible and may amount to an act of copyright infringement. However, in the case filed against StockX, the complication arises from the fact that the NFTs do not include the sale of the digital image of the Nike shoes but in fact, the sale of original physical Nike shoes. Subsequently, in May of this year Nike has amended its petition to add counterfeiting claims stating that counterfeit products are available on StockX based on Nike's trap purchase of 4 pairs of sneakers.[22] This case is pending adjudication and will

[18] *NIKE Inc. Acquires RTFKT*, NIKE NEWS (Dec. 13, 2021), https://news.nike.com/news/nike-acquires-rtfkt.
[19] Nike Inc v. StockX LLC, No. 1:22-cv-00983 (S.D.N.Y. Mar. 2, 2022).
[20] Adi Robertson, *Nike is testing NFT trademark law by suing a sneaker reseller*, THE VERGE (Feb. 10, 2022), https://www.theverge.com/2022/2/10/22925252/nike-stockx-shoe-lawsuit-vault-nft-trademark-infringement.
[21] Case C-263/18, Nederlands Uitgeversverbond v Tom Kabinet 2019 ECJ ECLI:EU:C:2019:11.
[22] Victoria Song, *StockX hits back at Nike in legal battle over NFTs and counterfeit sneakers*, THE VERGE (June 6, 2022), https://www.theverge.com/2022/6/6/23156515/nike-stockx-nfts-counterfeit-sneakers-lawsuit.

play a key role in laying down the difference in application of trademark law/doctrines in relation to the sale of physical goods and digital goods.

Interestingly, trademarks are not the only form of intellectual property that are facing a challenge with the boom of NFTs. Since NFTs essentially comprise "digital content" the possibilities of content that may be made available as NFTs are limitless. Therefore, it was no surprise when personalities from the entertainment industries also started minting NFTs. In February 2021, Linkin Park's vocalist Mike Shinoda, released a new single "Happy Endings" as 10 NFTs and the first NFT was sold within 40 seconds of its release online.[23] In the smart contract for the NFT sale of the aforementioned song, it was expressly stated that the purchaser shall "have no right to license, commercially exploit, reproduce, distribute, prepare derivative works, publicly perform, or publicly display the NFT or the music or the artwork therein"[24] thereby rendering it akin to a limited-edition CD of the song.

C. Conflict Regarding the Ownership of NFT in Images of Screenplay: The Quentin Tarantino Pulpy Affair

This excitement regarding sale of NFTs pertaining to entertainment industry also inspired popular director Quentin Tarantino to announce the launch of NFTs comprising images of the screenplay of the iconic film "Pulp Fiction" along with additional information from him regarding the final making of the film. This announcement was immediately followed by Miramax, the producer of the film, filing a suit for copyright infringement against the sale of the said NFTs.[25] Miramax has claimed that as the producer of the film they have the rights in the cinematograph work a.k.a. the film and all the underlying work therein including the screenplay of the film. Tarantino has claimed that he has retained certain rights pertaining to the film "Pulp Fiction" such as the rights for interactive games, live performances, and other ancillary media.[26] However, Miramax has contested that these rights claimed by Tarantino do not include the right to sell NFTs for the images of the film's screenplay. This case is important from the point of precedent that it may set i.e., whether the rights reserved by Tarantino in his contract with the producer under the heading of "ancillary media" can be extended to cover NFTs? and secondly, whether the scope of underlying works also includes "images of hand-written screenplay"? This case is a timely reminder for creative individuals to re-visit their licensing/assignment agreements that were executed prior in time to

[23] *Happy Endings*, LINKINPEDIA, http://linkinpedia.com/index.php?title=Happy_Endings (last visited Apr. 30, 2022).
[24] *Press*, WARNER RECORDS, https://press.warnerrecords.com/wp-content/uploads/2021/03/Mike-Shinoda-Press-Doc.pdf (last visited Apr. 30, 2022).
[25] Adi Robertson, *Miramax sues Quentin Tarantino over Pulp Fiction NFTs*, THE VERGE (Nov. 17, 2021), https://www.theverge.com/2021/11/17/22787216/miramax-pulp-fiction-quentin-tarantino-nft-lawsuit.
[26] *Id.*

ensure that they have the necessary rights to mint NFTs pertaining to their works. It is also important to understand that since IP rights are territorial in nature, there are certain nuances that have to be looked at for assignment and licensing of these rights as per the laws of the territory from which the NFTs originate.

D. Indian Copyright Laws and Sale of NFTs

It will be relevant to note that, the (Indian) Copyright Act, 1957 has certain specific requirements/ conditions that must be met for assignment or licensing of copyright in a work.[27] For instance, it is imperative that the term of the license/assignment is specified in the agreement failing which the term is statutorily presumed to be 5 years. Similarly, it is recommended that the territory for which the license/assignment is being granted should be specified, if not the territory is presumed to be limited to India. Also, Section 18 of the (Indian) Copyright Act, 1957 prohibits assignment in any medium or mode of exploitation which did not exist or was not in commercial use at the time when the assignment was made, unless the assignment specifically referred to such medium or mode of exploitation of the work. Considering that "NFT" and "Metaverse" were not in existence or could not be in contemplation when many of the assignment agreements were executed, it could be argued that rights for minting of "NFT" were not expressly assigned to the assignee and was retained by the assignor. Another unique provision under the (Indian) Copyright Act, 1957 pertains to the reversion of rights to the initial owner of copyright if the work licensed/assigned is not commercialized within a period of one (1) year from the date of execution of such license/assignment agreement therefore, usually copyright agreements include waivers from the licensor/assignor regarding the non-reversion of rights. It is pertinent to reiterate that the aforementioned conditions are specific to Indian laws whereas, NFTs can be purchased by anyone across the globe.

While it is possible to draft copyright licensing and assignment agreements incorporating the unique conditions, the situation is not the same in case of smart contracts that are executed while selling NFTs. Modifying and adding new terms in standard smart contracts, that are created by the platform through which the NFT is sold, can be an expensive procedure and may not always be a plausible alternative furthermore, the members of general public may not be capable of defining and elaborating upon the rights being licensed/assigned via the smart contract(s), which may further lead to possible complexities/confusion regarding the term and territory of use of the NFT considering that there will be several purchasers of Indian NFTs from outside India. The Indian Copyright Act, 1957 also grants the owner of a copyright the right to enforce their "moral rights"

[27] The Copyright Act, 1957, § 18, No. 14, Acts of Parliament, 1957(India).

on their works even after the ownership in the work is assigned by the original owner.[28] This provision of enforcing "moral rights" may be useful for Indian copyright owners if and when their licensed or assigned works are used by a third-party in the Metaverse.

IV. BUT WHERE'S THE PARTY FOR THE LITIGATORS?

The most critical and important issue for the owners of intellectual property in NFTs is regarding the enforcement of their IP rights. As discussed in the earlier sections, NFTs are not limited by territories and an NFT originating from India can be bought by a person in San Francisco, USA only to be further sold to someone in Amsterdam, Netherlands and so on. Things often get complicated if any of the users/current purchasers of the NFT use the same beyond the scope of rights granted under the smart contract or in a manner disparaging to the creator of the NFT. In addition to this, similar to the real world, there are "copycats" in the virtual world too wherein certain individuals/entities upload works, without ownership or authorization, for sale as NFTs and these "copycats" could be residing in any part of the world, therefore, making the hunt for the perpetrator of rights similar to looking for a needle in a haystack.

The underlying block chain technology of NFTs maintain a ledger of the owner of the NFT and the transfers that may have taken place. In such cases, the creator of the NFT may wish to initiate appropriate legal action against misuse of NFT or creation of illegal/unauthorized NFTs, but due to its global nature, enforcement of IP rights by the actual owner of the NFT is a concern. Recently, a court in China has decided a first of its kind NFT related IP dispute. A copyright infringement suit was filed by Shenzhen-based company Qice, against Hangzhou-based company BigVerse that operates an NFT marketplace in China ("BigVerse"), for allowing one of its users to sell an unauthorized artwork as an NFT through its platform. BigVerse contended that it was an intermediary and could not be held liable for the actions of one of its users. However, the court ruled that BigVerse was responsible for not checking the source and ownership of the NFT that was being sold on its platform.[29] BigVerse was also ordered to pay compensation to the complainant, Qice and to stop the NFT from further circulation so as to prevent further infringement of copyright. This decision of the court in China reposes the intermediary with a greater responsibility of conducting due diligence on the NFTs that are being sold through its platform. It will be interesting to see if it will be feasible in the long run to hold the intermediaries accountable for any misdeeds of its users.

[28] The Copyright Act, 1957, § 57, No. 14, Acts of Parliament, 1957(India).
[29] Gang Hu, *Takeaways from the first NFT infringement case in China*, WTR (Apr. 28, 2022), https://www.worldtrademarkreview.com/article/takeaways-the-first-nft-infringement-case-in-china.

Another significant legal development in the space for enforcement of IP right in NFTs has been heralded by UK's High Court in the case of Lavinia Deborah Osbourne v (1) Persons Unknown (2) Ozone Networks Inc[30] trading as OpenSea wherein it was held that NFTs are "legal property" over which an order for freezing the sale of the same can be enforced. In this case Ms. Lavinia alleged that two of her NFTs comprising unique digital artworks were stolen from her digital wallet. She further claimed to have found the NFTs in other digital wallets and sought an order of injunction from the High Court against the sale/circulation of these NFTs. The High Court accordingly passed an order of "freezing" the NFT by way of an order of injunction i.e., the NFTs could not be sold further, and directed OpenSea to share the information of the accounts that held the NFTs.[31]

V. THE WAY AHEAD

A common observation from the decisions of the courts in China and United Kingdom is regarding the role of the intermediary assuming greater significance when it comes to sale of NFTs. One may argue that given the large volume/traffic of work being sold as NFTs everyday it may not be feasible for NFT marketplace platforms to conduct due diligence for each NFT sold on its platform however, there can be necessary checks or undertaking to not infringe any third-party IP, that such platforms can procure from their users as is currently being done by various e-commerce players in the marketplace.

While the situation pertaining to infringement of IP rights in NFTs may appear to be overwhelming, it is important to recall that almost a decade ago the legal fraternity faced a similar issue regarding enforcement of IP rights in domain name infringement cases which also had a global overreach. Therefore, it may not be out of place to consider a dispute resolution mechanism akin to the Uniform Domain Name Dispute Resolution Platform (UDRP) wherein individuals/entities from across the globe can seek to enforce their IP rights against a domain name squatter. However, for creating a dispute resolution body like the UDRP, regulation of the NFT marketplace will be required i.e., NFT marketplaces will have to be licensed/certified by a globally recognized body (similar to WIPO) failing which they cannot be engaged in the business of sale of NFTs/provide platform for sale of NFTs. Only if the NFT marketplace platforms are regularized by an international body, will they be obligated to disclose the details of account holders of NFTs that infringe/disparage rights of the actual owners of IP. Establishing an international

[30] Lavinia Deborah Osbourne v (1) Persons Unknown (2) Ozone Networks Inc [2022] EWHC 1021.
[31] Riah Pryor, *NFTs recognised as 'legal property' in landmark case*, THE ART NEWSPAPER (Apr. 29, 2022), https://www.theartnewspaper.com/2022/04/29/nfts-recognised-as-legal-property-in-landmark-case.

forum of such nature will also result in governments of more countries opening up to the concept of NFTs and their sale/distribution etc. The skepticism surrounding NFTs can be addressed only if there are appropriate legal forums/organizations that have sound knowledge of the underlying technology and can address the concerns surrounding NFTs ably. Needless to say, the existing IP statutes will have to be amended /upgraded or expanded by way of judicial interpretation to encompass this technology.

It will not be out of place to say that NFTs have been a boon for artists and creators globally since it gives them an opportunity to showcase their talent/work to people all around the world. It has the potential of revolutionizing the arts and entertainment industry forever. It also remains to be seen whether the "NFT" actually becomes a significant commercializing mechanism or remains as a bubble waiting to burst when the mass euphoria dies down.

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ASSESSING THE COMPATIBILITY OF THE TRIPS COVID-19 WAIVER DECISION WITH INTERNATIONAL INVESTMENT LAW: AN INTERTEXTUAL PERSPECTIVE

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Abstract

This article assesses the compatibility of the TRIPS Covid-19 waiver decision (that was adopted in June 2022) with international investment law. It contends that the 'TRIPS Waiver' decision is largely compatible with international investment law. Host states relying on the waiver to issue compulsory licences will be shielded from liability for claims based on the fair and equitable treatment standard. They will also be shielded from liability for claims based on the expropriation standard where there is a carve-out clause that excludes measures relating to intellectual property rights from the scope of expropriation standard in the relevant investment treaty. However, where there is no such carve-out clause in the relevant investment treaty, this article recommends that an intertextual approach should be adopted to shield host states from liability for claims based on the expropriation standard.

I. INTRODUCTION

After several months of extensive negotiations and debates, a waiver decision with respect to the Trade-Related Aspects of Intellectual Property Rights ["TRIPS"] Agreement has now been adopted in response to the Covid-19 pandemic. On the 17th of June 2022, the members of the World Trade Organisation ["WTO"] finally reached an agreement on the details of the waiver decision during the 12th Ministerial Conference of the WTO.[1] The waiver decision is largely based on the outcome of informal quadrilateral negotiations between the United States of America, the European Union, India, and South Africa.[2] However, it is worth noting that the waiver decision is narrower in scope than the initial waiver proposal submitted by India and South Africa in 2020[3] (and later revised in 2021.[4]) Indeed, the crux of the waiver contained in the waiver decision centres around relaxing and clarifying some of the rules relating to compulsory licensing in the TRIPS Agreement and it only covers Covid-19 vaccines.

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[1] World Trade Organization, Ministerial Conference, Twelfth Session, *Draft Ministerial Decision on the TRIPS Agreement*, WTO Doc. WT/MIN(22)/W/15/Rev.2 (June 17, 2022) [hereinafter *TRIPS Waiver Decision*].
[2] Council for the Trade Related Aspects of Intellectual Property Rights, *Communication from the Chairperson*, WTO Doc. IP/C/W/688 (May 3, 2022).
[3] Council for the Trade Related Aspects of Intellectual Property Rights, *Communication from India and South Africa: Waiver from Certain Provisions of the TRIPS Agreement for the Prevention, Containment and Treatment of Covid-19*, WTO Doc. IP/C/W/669 (Oct. 2, 2020).
[4] Council for the Trade Related Aspects of Intellectual Property Rights, *Revised Decision Text: Waiver from Certain Provisions of the TRIPS Agreement for the Prevention, Containment and Treatment of Covid-19*, WTO Doc. IP/C/W/669/Rev.1 (May 25, 2021).

This article is not concerned with the merits or demerits of the TRIPS waiver decision.[5] The focus of this article is strictly to assess whether or not the waiver decision is compatible with the obligations of states under international investment law as expressed in various Bilateral Investment Treaties ["BITs"] and the investment chapters of Free Trade Agreements.[6] These treaties are collectively referred to in this article as 'investment treaties'. The question of compatibility is important because states attempting to rely on the waiver decision can still be sued by investors before investment tribunals (for example ICSID) via the Investor-State Dispute Settlement ["ISDS"] system.

The article is structured into three main sections. Section II provides an overview of the provisions of the TRIPS waiver decision and highlights those provisions that are relevant to the international investment law regime. Section III critically evaluates the compatibility of the TRIPS waiver decision with the fair and equitable treatment standard and the expropriation standard in international investment law. This section contends that the TRIPS waiver decision is largely compatible with international investment law.

Section IV focuses on investment treaties that do not contain carve-out clauses and exclude measures relating to intellectual property rights ["IPRs"] from the scope of the expropriation

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[5] *See* Reto Hilty et al., *Covid-19 and the Role of Intellectual Property: Position Statement of the Max Planck Institute for Innovation and Competition*, MAX PLANCK INSTITUTE FOR INNOVATION AND COMPETITION (May 7, 2021), https://pure.mpg.de/rest/items/item_3362041_2/component/file_3362042/content; Siva Thambisetty et al., *The TRIPS Intellectual Property Waiver Proposal: Creating the Right Incentives in Patent Law and Politics to end the COVID-19 Pandemic* (Law Soc'y. Econ. Legal Stud., Working Paper No. 06, 2021); Bryan Mercurio, *WTO Waiver from Intellectual Property Protection for COVID-19 Vaccines and Treatments: A Critical Review*, 62 VA. J. INT'L. L. 9 (2021); Peter Yu, *A Critical Appraisal of the COVID-19 TRIPS Waiver*, Texas A&M University School of Law Legal Studies Research Paper No. 21-32 (Oct. 19, 2021), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3945304; Emmanuel Oke, *The TRIPS Waiver Compromise Draft Text: A Preliminary Assessment*, AFRONOMICS LAW (Mar. 18, 2022), https://www.afronomicslaw.org/category/analysis/trips-waiver-compromise-draft-text-preliminary-assessment; Carlos Correa & Nirmalya Syam, *Analysis of the Outcome Text of the Informal Quadrilateral Discussions on the TRIPS COVID-19 Waiver*, *South Centre Policy Brief No. 110*, THE SOUTH CENTRE (May 5, 2022), https://www.southcentre.int/policy-brief-110-5-may-2022/; Siva Thambisetty et al., *The COVID-19 TRIPS Waiver Process in Critical Review: An Appraisal of the WTO DG Text (IP/C/W/688) and Recommendations for Minimum Modifications* (June 02, 2022), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4124497.

[6] For similar commentaries on earlier versions of the waiver prior to its adoption, *see*, *e.g.,* Carlos Correa, Nirmalya Syam & Daniel Uribe, *Implementation of a TRIPS Waiver for Health Technologies and Products for COVID-19: Preventing Claims under Free Trade and Investment Agreements'*, South Centre Research Paper No. 135 (Sept. 2021), https://www.southcentre.int/wp-content/uploads/2021/09/RP135_Implementation-of-a-TRIPS-Waiver-for-Health-Technologies-and-Products-for-COVID-19_EN.pdf; Cynthia Ho, *Potential Claims related to IP and Public Health in Investment Agreements: COVID-19, the Proposed TRIPS Waiver and Beyond*, South Centre Investment Policy Brief No. 24 (Dec. 9, 2021), https://www.southcentre.int/wp-content/uploads/2021/11/IPB24_Potential-Claims-related-to-IP-and-Public-Health-in-Investment-Agreements_EN.pdf; Henning Grosse Ruse-Khan & Federica Paddeu, *A TRIPS-COVID Waiver and Overlapping Commitments to Protect Intellectual Property Rights Under International IP and Investment Agreements*, South Centre Research Paper No. 144 (Jan. 27, 2022), https://www.southcentre.int/wp-content/uploads/2022/01/RP-144.pdf; Bryan Mercurio & Pratyush Nath Upreti, *The Legality of a TRIPS Waiver for Covid-19 Vaccines under International Investment Law,* 71(2) INT'L & COMP. L. Q. 323 (2022); Prabhash Ranjan, *Trade-Related Aspects of Intellectual Property Rights Waiver at the World Trade Organization: A BIT of a Challenge*, 56(3) J. WORLD TRADE 523 (2022).

standard in the relevant treaty. For such treaties, this article recommends the adoption of an intertextual approach that consists of two key elements: (i) the rules of international intellectual property law (which includes any TRIPS waiver) should be regarded as part of the applicable law in investment disputes involving intellectual property rights; and (ii) the rules of international intellectual property law should be taken into account when interpreting the terms and provisions of investment treaties in disputes involving intellectual property rights (in line with Article 31(3)(c) of the Vienna Convention on the Law of Treaties).

II. THE TRIPS WAIVER DECISION

The relevant paragraphs of the waiver decision that have implications for international investment law are highlighted below.

The first paragraph of the waiver decision makes it clear that the scope of the waiver is limited to compulsory licensing of the patented subject matter that is needed for the production and supply of Covid-19 vaccines, and it provides that:[7]

> *1. Notwithstanding the provision of patent rights under its domestic legislation, an eligible Member[1] may limit the rights provided for under Article 28.1 of the TRIPS Agreement (hereinafter "the Agreement") by authorizing the use of the subject matter of a patent[2] required for the production and supply of COVID-19 vaccines without the consent of the right holder to the extent necessary to address the COVID-19 pandemic, in accordance with the provisions of Article 31 of the Agreement, as clarified and waived in paragraphs 2 to 6 below.*
>
> *Footnote 1: For the purpose of this Decision, all developing country Members are eligible Members. Developing country Members with existing capacity to manufacture COVID-19 vaccines are encouraged to make a binding commitment not to avail themselves of this Decision. Such binding commitments include statements made by eligible Members to the General Council, such as those made at the General Council meeting on 10 May 2022, and will be recorded by the Council for TRIPS and will be compiled and published publicly on the WTO website.*
>
> *Footnote 2: For the purpose of this Decision, it is understood that the 'subject matter of a patent' includes ingredients and processes necessary for the manufacture of theCOVID-19 vaccine.*

The second paragraph of the waiver decision[8] further clarifies that a compulsory licence can be issued pursuant to the waiver decision via any instrument including, *inter alia*, executive orders, legislative acts, or judicial orders:

[7] *TRIPS Waiver Decision*, *supra* note 1, ¶ 1.
[8] *Id.,* ¶ 2.

> *2. For greater clarity, an eligible Member may authorize the use of the subject matter of a patent under Article 31 without the right holder's consent through any instrument available in the law of the Member such as executive orders, emergency decrees, government use authorizations, and judicial or administrative orders, whether or not a Member has a compulsory license regime in place. For the purpose of this Decision, the "law of a Member" referred to in Article 31 is not limited to legislative acts such as those laying down rules on compulsory licensing, but it also includes other acts, such as executive orders, emergency decrees, and judicial or administrative orders.*

The most significant waiver contained in the waiver decision can be found in its paragraph 3(b)[9] which essentially waives the requirements of Article 31(f) of the TRIPS Agreement and permits the exportation to any eligible member of any proportion of whatever is produced via a compulsory licence issued pursuant to the waiver. It provides that:

> *(b) An eligible Member may waive the requirement of Article 31(f) that authorized use under Article 31 be predominantly to supply its domestic market and may allow any proportion of the products manufactured under the authorization in accordance with this Decision to be exported to eligible Members, including through international or regional joint initiatives that aim to ensure the equitable access of eligible Members to the COVID-19 vaccine covered by the authorization.*

Another important provision in the waiver decision is paragraph 3(d)[10] which deals with remuneration, and it provides that:

> *(d) Determination of adequate remuneration under Article 31(h) may take account of the humanitarian and not-for-profit purpose of specific vaccine distribution programs aimed at providing equitable access to COVID-19 vaccines in order to support manufacturers in eligible Members to produce and supply these vaccines at affordable prices for eligible Members. In setting the adequate remuneration in these cases, eligible Members may take into consideration existing good practices in instances of national emergencies, pandemics, or similar circumstances.[4]*

*Footnote 4: This includes the remuneration aspects of the WHO-WIPO-WTO Study on Promoting Access to Medical Technologies and Innovation (2020), and the Remuneration Guidelines for Non-Voluntary Use of a Patent on Medical Technologies published by the WHO (WHO/TCM/2005.1).*In a sense, paragraph 3(d) confirms and elaborates on Article 31(h) of the

[9] *Id.,* ¶ 3(b).
[10] *Id.,* ¶ 3(d).

TRIPS Agreement which already provides that *"the right holder shall be paid adequate remuneration in the circumstances of each case, taking into account the economic value of the authorization"*.[11]

Having highlighted some of the key provisions of the waiver decision, it is now apposite to assess its compatibility with the international investment law regime. In other words, to what extent can a WTO member seeking to rely on the waiver to grant a compulsory licence for the production of Covid-19 vaccines successfully defend itself if its actions are challenged before an investment tribunal?

III. THE TRIPS WAIVER DECISION AND INTERNATIONAL INVESTMENT LAW

In the light of some of the recent high profile investment disputes involving intellectual property rights,[12] if there will be any challenge to the issuance of a compulsory licence pursuant to the waiver decision before an investment tribunal, it will most likely be on the grounds that the compulsory licence amounts to expropriation and/or a violation of the fair and equitable treatment standard. The host state has several options to respond to a challenge by the investor, assuming that the investor meets the jurisdictional threshold of having a patent right that can be defined as an 'investment'.[13] These options will be highlighted below.

Prior to discussing these options, it is important to distinguish between claims that may be brought on the grounds that the compulsory licence amounts to expropriation and those that constitutes a violation of the fair and equitable treatment standard.[14] This distinction is crucial because, while (as will be shown below) it is not uncommon for some investment treaties to specifically exclude measures relating to intellectual property rights (including compulsory licensing) from the scope of the expropriation standard, there is usually no such exclusion for the fair and equitable treatment standard.[15]

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[11] Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 31(h), Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299 [hereinafter TRIPS Agreement].

[12] Philip Morris Brands Sarl & Ors. v. Oriental Republic of Uruguay, ICSID Case No. ARB/10/7, International Investment Agreement (July 8, 2016); Eli Lilly v. Canada, Case No. UNCT/14/2, International Investment Agreement (Mar. 16, 2017); Bridgestone v. Panama, ICSID Case No. ARB/16/34, International Investment Agreement (Aug. 14, 2020).

[13] *See* EMMANUEL KOLAWOLE OKE, DEFINING INTELLECTUAL PROPERTY AS AN INVESTMENT IN THE FUTURE OF INTELLECTUAL PROPERTY: A TRIP INTELLECTUAL PROPERTY SERIES 81-104 (Daniel J. Gervais ed., 2021); EMMANUEL KOLAWOLE OKE, THE INTERFACE BETWEEN INTELLECTUAL PROPERTY AND INVESTMENT LAW: AN INTERTEXTUAL ANALYSIS 49-104 (2021).

[14] It is worth noting however that, in practice, investors usually challenge host state measures on several grounds simultaneously.

[15] Nevertheless, some investment treaties exclude measures relating to intellectual property rights from the scope of both the expropriation and fair and equitable treatment standards. For instance, Article 3.6(c) of the India-Brazil BIT of 2020 excludes measures relating to intellectual property rights from the scope of the BIT.

A. The Fair and Equitable Treatment Standard.[16]

In relation to the fair and equitable treatment standard, the host states can face claims based on some of the well-recognised elements of the fair and equitable treatment standard where measures relating to IPRs have not been specifically excluded from the scope of this standard under the relevant investment treaty. These elements include the protection of the investor's legitimate expectations; the prohibition of arbitrariness; the prohibition of discrimination; the prohibition of denial of justice; due process; and transparency. In this regard, an investor may, for instance, decide to challenge a compulsory licence issued pursuant to the waiver decision on the grounds that it amounts to a violation of its legitimate expectations and/or that it is arbitrary.

The recent decisions of investment tribunals in investment disputes involving IPRs indicate that it is highly unlikely that a challenge brought against a compulsory licence issued pursuant to the waiver decision on the grounds of a violation of legitimate expectations or arbitrariness will be successful. For instance, with regard to legitimate expectations, in *Philip Morris v. Uruguay*, concerning the claim that the two trademark-related measures implemented by Uruguay to curb the consumption of tobacco products violated the legitimate expectations of the claimants, the Tribunal held that legitimate expectations depend on specific undertakings and representations made by the host state to induce investors to make an investment.[17] Accordingly, the Tribunal noted that provisions of general legislation that apply to several people do not create legitimate expectation that the law will remain the same.[18] More importantly, the Tribunal noted that no undertaking or representation may have been grounded on trademark regulations that are in any case subject to the state's regulatory power in the public interest.[19]

Furthermore, in *Eli Lilly v. Canada*, the claimant alleged that it had a legitimate expectation that its patents would not be retroactively invalidated by Canadian courts based on Canada's promise utility doctrine.[20] In response, Canada contended, among other things, that the grant of a patent cannot be relied upon as a basis for legitimate expectations because patents are only presumptively

[16] *See* EMMANUEL KOLAWOLE OKE, THE INTERFACE BETWEEN INTELLECTUAL PROPERTY AND INVESTMENT LAW: AN INTERTEXTUAL ANALYSIS 105-149 (2021); *See also*, Emmanuel Kolawole Oke, *Fair and Equitable Treatment of Foreign Investments and Intellectual Property Rights*, *in* FAIRNESS, MORALITY AND ORDER PUBLIC IN INTELLECTUAL PROPERTY: ATRIP INTELLECTUAL PROPERTY SERIES 173-194 (Daniel Gervais ed., 2020).
[17] Philip Morris Brands Sarl & Ors. v. Uruguay, ICSID Case No. ARB/10/7, International Investment Agreement, 426 (July 8, 2016).
[18] *Id.*, ¶ 426.
[19] *Id.*, ¶ 431.
[20] Eli Lilly v. Canada, ICSID Case No. UNCT/14/2, International Investment Agreement (Mar. 16, 2017).

valid and subject to challenge and final determination by courts.[21] The Tribunal held that Eli Lilly's expectation that its patents would not be invalidated for failure to meet the utility requirement "cannot amount to a legitimate expectation".[22] The Tribunal equally noted that every patentee knows that their patents can be challenged before national courts on the grounds of a failure to satisfy patentability requirements.[23] Moreover, the Tribunal stated that Eli Lilly could and should have anticipated that the law would change over time as a result of judicial decision-making.[24] In this regard, the Tribunal's decision in *Eli Lilly* is similar to the Tribunal's decision in *Philip Morris* and both decisions are in accordance with the view that the grant of an intellectual property right should not give rise to any legitimate expectations that the intellectual property right would not be limited, regulated, or revoked.

In relation to claims of arbitrariness, in *Philip Morris*, the claimants had alleged that the two impugned measures implemented by Uruguay were arbitrary because they were adopted without scientific evidence of their effectiveness, without due consideration by public officials, and with no reasonable connection between the objective pursued by the state and the utility of the measures adopted.[25] The Tribunal was, however, divided over this issue. While the majority held that both the Single Presentation Requirement (SPR) and the 80/80 measures were not arbitrary, one of the arbitrators (Born) dissented and took the view that the SPR was an arbitrary measure.

In its decision, the majority of the Tribunal prefaced its analysis in this regard by invoking the doctrine of the margin of appreciation (a concept developed by the European Court of Human Rights) and held that it was applicable in this context.[26] According to the Tribunal, states have the responsibility for public health measures and "investment tribunals should pay great deference to governmental judgments of national need in matters such as the protection of public health".[27] In relation to the SPR, the majority of the Tribunal took the view that, while the SPR was a novel measure with no precedent, the rationale behind the measure was to address false and misleading advertising by those who sell cigarettes.[28] In this case, the majority leaned more in the direction of

[21] *Id.*, ¶ 303.
[22] *Id.*, ¶ 383-384.
[23] *Id.*, ¶ 382.
[24] *Id.*, ¶ 384.
[25] Philip Morris, *supra* note 17, ¶ 389.
[26] *Id.*, ¶ 398-399.
[27] *Id.*, ¶ 399.
[28] *Id.*, ¶ 404; (Arbitrator Born dissenting) (Born disagreed with the approach of the majority with regard to the SPR. He took the view that the doctrine of the margin of appreciation cannot be properly transplanted to the BIT or to questions of FET more generally. Instead of the margin of appreciation, Born advocated for the use of rationality and proportionality as benchmarks. In other words, according to Born, "[T]he Tribunal must assess whether, viewed in the context of a state's legislative and regulatory actions, a particular measure is rationally related and fairly proportionate to the state's articulated objectives.").

deferring to the state's regulatory discretion, and it was willing to overlook the fact that the SPR may not be having the effects intended by the state as long as it was an attempt to address a real public health concern.

In *Eli Lilly*, the claimant also contended that the promise utility doctrine was arbitrary because it was unpredictable, incoherent, and served no legitimate public purpose.[29] Canada, however, contended that the doctrine was aimed at, among other things, preventing the grant of patents based on bare speculation.[30] The Tribunal held that the decisions of the Canadian courts in relation to the promise utility doctrine were not arbitrary.[31] The Tribunal noted that Canada had shown a legitimate public policy for various elements of the promise utility doctrine such as encouraging accuracy while discouraging overstatement in patent disclosures;[32] preventing the grant of patents on the basis of speculation;[33] and ensuring that patentees disclose to the public the basis of the prediction of an invention's utility in exchange for obtaining a patent prior to demonstrating that the invention is useful.[34]

In sum, while the decisions of investment tribunals can be unpredictable and it is difficult to generalise in the context of international investment law, one could argue that it is highly unlikely that an investor would be able to successfully rely on the fair and equitable treatment standard to challenge a compulsory license issued pursuant to the waiver decision. This will be the case whether or not measures relating to intellectual property rights are specifically excluded from the scope of the fair and equitable treatment standard in the relevant investment treaty.

Crucially, in the limited cases available so far, tribunals have consistently held that the grant of an IPR (including a patent) cannot form the basis of a legitimate expectation that the intellectual property right cannot be limited, regulated, or revoked. Thus, it may be difficult for an investor to argue that it had a legitimate expectation that its patent rights would not be subject to a compulsory license. Moreover, it is also not unusual for investment tribunals to defer to and respect the policy choices made by host states, especially where it concerns measures implemented by host States to protect public health. Thus, it will not be easy for an investor to challenge a compulsory licence issued pursuant to the waiver decision on the grounds of arbitrariness.

[29] Eli Lilly, *supra* note 20, ¶ 390.
[30] *Id.*, ¶ 406.
[31] *Id.*, ¶ 418.
[32] *Id.*, ¶ 423.
[33] *Id.*, ¶ 425.
[34] *Id.*, ¶ 428.

B. The Expropriation Standard: When there is a carve-out clause

At the outset, it should be stressed here that by 'expropriation', this article means 'indirect' expropriation. As Ranjan correctly notes, when it comes to the issue of expropriation and measures relating to intellectual property rights, it is best to divide investment treaties into two main categories, i.e., those that contain carve-out clauses for measures relating to intellectual property rights and those that do not.[35] The situation is somewhat tricky and unpredictable with regard to investment treaties that do not contain carve-out clauses for measures relating to intellectual property rights and these types of treaties will be discussed below in section III-C of this article.

For investment treaties that do contain carve-out clauses for measures relating to intellectual property rights, the carve-out clauses can take different forms, but they should generally shield host States from liability arising from issuing a compulsory licence pursuant to the waiver decision. These carve-out clauses can be broadly classified into five different categories.

Firstly, some investment treaties contain broad carve-outs for measures relating to intellectual property rights. A good example in this regard is Article 3.6(c) of the India-Brazil BIT of 2020 which provides that:[36]

> *This Treaty shall not apply to:*
>
> …
>
> *(c) the issuance of compulsory licenses granted in relation to intellectual property rights, or to the revocation, limitation or creation of intellectual property rights, to the extent that such issuance, revocation, limitation or creation is consistent with the international obligations of Parties under the WTO Agreement*

This type of carve-out clause would protect host states from claims relating to both the expropriation standard and the fair and equitable treatment standard as it broadly excludes measures relating to intellectual property rights (including compulsory licences) from the scope of the treaty. Thus, if the compulsory licence issued by the host State is consistent with the TRIPS Agreement and/or the TRIPS waiver decision, an investor cannot rely on this treaty to successfully challenge the issuance of the compulsory licence. While this type of carve-out clause will not necessarily prevent a legal challenge from being brought before an investment tribunal, it can nevertheless shield states from liability if the measures they adopt are consistent with the TRIPS Agreement and any TRIPS waiver.

[35] Prabhash Ranjan, *supra* note 6.
[36] Investment Cooperation and Facilitation Treaty, Braz.-India., art. 3.6(c), Jan. 25, 2020.

Secondly, in some investment treaties, there are broad carve-outs that are specifically aimed at WTO waivers (including by implication, TRIPS waivers). For instance, Article 18(8) of the Canada-Serbia BIT that entered into force in 2015[37]provides that:

> *If a right or obligation in this Agreement duplicates one under the WTO Agreement, the Parties agree that a measure adopted by a Party in conformity with a waiver decision granted by the WTO pursuant to Article IX of the WTO Agreement is deemed to be also in conformity with the present Agreement. Such conforming measure of either Party may not give rise to a claim by an investor of one Party against the other under Section C of this Agreement.*

Thus, this type of clause can be used by host states to escape liability for the issuance of a compulsory licence pursuant to a TRIPS waiver as long as the compulsory licence is issued in conformity with the text of such a waiver.

Thirdly, some other investment treaties contain carve-out clauses that shield host state measures relating to IPRs (including compulsory licences) from only the expropriation standard. An example is Article 14.8(6) of the United States-Mexico-Canada Agreement (USMCA) which provides that Article 14.8 (which deals with expropriation) *"does not apply to the issuance of compulsory licenses granted in relation to intellectual property rights in accordance with the TRIPS Agreement, or to the revocation, limitation, or creation of intellectual property rights, to the extent that the issuance, revocation, limitation, or creation is consistent with Chapter 20 (Intellectual Property) and the TRIPS Agreement".*[38] A footnote to this provision further clarifies that, *"for greater certainty, the Parties recognize that, for the purposes of this Article, the term "revocation" of an intellectual property right includes the cancellation or nullification of that right, and the term "limitation" of an intellectual property right includes exceptions to that right."*[39] While this type of clause can shield a host state from liability with regard to the expropriation standard (as long as the compulsory licence is consistent with the TRIPS Agreement or the TRIPS waiver), it will not protect a host state from claims based on the fair and equitable treatment standard.

Fourthly, some investment treaties contain very narrow carve-out clauses that only apply to compulsory licences (and not other measures relating to IPRs) and only shield host States from liability for claims relating to the expropriation standard. In this regard, Article 5(6) of the Korea-Uzbekistan BIT of 2019[40] provides that:

[37] Agreement for the Promotion and Protection of Investments, Can.-Serb., art. 18(8), Apr. 27, 2015.
[38] Agreement between U.S.- Mex.-Can., art. 14.8(6), Nov. 30, 2018.
[39] *Id.,* at footnote 9.
[40] Agreement for the reciprocal promotion and protection of investments, Kor.-Uzb., art. 5(6), June 17, 1992.

> *This Article [on expropriation] does not apply to the issuance of compulsory licenses granted in relation to intellectual property rights in accordance with the Agreement on Trade-Related Aspects of Intellectual Property Rights (the "TRIPS Agreement").*

A clause like this will shield the host state from liability for any compulsory licence that is issued pursuant to the TRIPS waiver decision as long as the compulsory licence is in accordance with the text of the TRIPS waiver. However, this type of carve-out clause will only protect host states from claims based on the expropriation standard but not from claims based on the fair and equitable treatment standard.

Fifthly, some investment treaties contain clauses that can be regarded as a codification of the 'police powers' doctrine which exempts regulatory measures adopted by states for a public purpose (such as the protection of public health) from liability even if these measures result in an expropriation. For example, subparagraph 2(b) of Annex 10B of the Regional Comprehensive Economic Partnership ["RCEP"] Agreement[41] defines indirect expropriation as a situation "where an action or a series of related actions by a Party has an effect equivalent to direct expropriation without formal transfer of title or outright seizure." Thereafter, paragraph 4 of Annex 10B of the RCEP provides that:

> *Non-discriminatory regulatory actions by a Party that are designed and applied to achieve legitimate public welfare objectives, such as the protection of public health, safety, public morals, the environment, and real estate price stabilisation, do not constitute expropriation of the type referred to in subparagraph 2(b).*

Crucially, where an investment treaty expressly codifies the police powers doctrine, then one can reasonably conclude that Tribunals have no choice but to apply this doctrine whenever they need to draw a distinction between legitimate regulation and regulatory expropriation.[42] Importantly, in relation to claims based on the expropriation standard, a host state can rely on such codification of the police powers doctrine in the relevant investment treaty to shield itself from any challenges to its issuance of a compulsory licence pursuant to the TRIPS waiver decision. In this regard, the issuance of a compulsory licence for the production and supply of Covid-19 vaccines can be

[41] Regional Comprehensive Economic Partnership, Annex 10B, ¶ 2(b), Nov. 15, 2020.

[42] Thus, faced with a codification of the police powers doctrine in paragraph 4(b) of Annex 10-B of the US-Oman Free Trade Agreement (FTA) of 2006, the Tribunal in Al Tamimi v. Oman stated that: 'Any claim for indirect expropriation based on the Respondent's actions after 17 February 2009 would also have to confront the express stipulation in Annex 10-B.4(b) of the US-Oman FTA that non-discriminatory regulatory actions by a State designed and applied to protect legitimate public welfare objectives, including protection of the environment – and, the Tribunal infers, the enforcement of Omani private property laws – do not constitute indirect expropriations.' *See*, Al Tamimi v. Oman, ICSID Case No. ARB/11/33, International Investment Agreement, Award, ¶ 368 (Nov. 3, 2015).

regarded as a regulatory action designed and applied to achieve a legitimate public welfare objective i.e., the protection of public health.

C. The Expropriation Standard: When there is no carve-out clause

As noted in Section III-A above, whether or not measures relating to intellectual property rights are specifically excluded from the scope of the fair and equitable treatment standard in the relevant investment treaty, it is highly unlikely that an investor will be able to successfully rely on the fair and equitable treatment standard to challenge a compulsory licence issued pursuant to the waiver decision. Furthermore, as explained in section III-B above, where there is a carve-out clause, host states can rely on this to shield themselves from liability with regard to claims based on the expropriation standard. However, what happens if there is no carve-out clause that excludes measures relating to intellectual property rights (including compulsory licensing) from the scope of the expropriation standard in the relevant treaty? This question is important because several older investment treaties do not contain any carve-out clauses that exclude measures relating to intellectual property rights from the scope of the expropriation standard. As Ranjan correctly observes:[43]

> *…most first-generation BITs i.e., the BITs that [were] signed during the 1980s, 1990s, and early 2000s contained scant provisions preserving the host States' regulatory space. These BITs were largely one-sided with a focus exclusively on investment protection. In other words, in these BITs … there is no mention of IP-related regulatory measures being excluded either from the scope of the BIT or specific provisions … [Therefore,] in these treaties, the ISDS Tribunal will not be under an obligation to accord a higher normative value to the TRIPS agreement over the BIT. Consequently, in case a foreign investor challenges any IP-related regulatory measure that a host State adopts to implement the TRIPS waiver, the ISDS Tribunal will adjudicate this claim without any BIT textual support for IP-related regulatory measures.*

In response to this question, a number of measures and mechanisms have been suggested that may provide some protection for host States even in the absence of a carve-out clause that excludes measures relating to IPRs from the scope of the expropriation standard in the relevant investment treaty. Some of these suggestions are critically evaluated below.

Firstly, it has been suggested that host states can rely on clauses in investment treaties that permit states to adopt Non-Precluded Measures ["NPM clauses"].[44] Ranjan defines this type of clause as "a clause that allows host states to adopt measures for the protection of certain public policy

[43] Ranjan, *supra* note 35, at 538.
[44] *Id.*

concerns like health, environment, etc., that may otherwise constitute a violation of the treaty".[45] NPM clauses can take different forms. Some NPM clauses contain a list of permissible objectives (such as the protection of public health) with a relaxed nexus requirement (i.e., no requirement that the measures adopted be 'necessary' to achieve the permissible objective). For instance, a good example in this regard is Article 11 of the Pakistan-Singapore BIT of 1995[46] which provides that:

> *The provisions of this Agreement shall not in any way limit the right of either Contracting Party to apply prohibitions or restrictions of any kind or take any other action which is directed to the protection of its essential security interests, or to the protection of public health or the prevention of diseases and pests in animals or plants.*

However, some NPM clauses (such as those inspired by Article XX of the General Agreement on Tariffs and Trade (GATT)) contain both, a list of permissible objectives, and a strict nexus requirement. For instance, Article 13 of the Japan-Iran BIT of 2016[47] provides in part that:

> *Subject to the requirement that such measures are not applied by a Contracting Party in a manner which would constitute a means of arbitrary or unjustifiable discrimination against, or a disguised restriction on investors of the other Contracting Party and their investments in the Territory of the former Contracting Party, nothing in this Agreement shall be construed so as to prevent the former Contracting Party from adopting or enforcing measures:*
>
> *(a) necessary to protect human, animal or plant life or health…*

Irrespective of the type of NPM clause, and though there is some debate regarding the meaning of the term 'necessary' contained in those NPM clauses with a strict nexus requirement,[48] host

[45] *Id.*
[46] Agreement on the Promotion and Protection of Investments, Pak.-Sing., art. 11, March 8, 1995.
[47] Agreement on Reciprocal Promotion and Protection of Investment, Iran-Japan., art. 13, Feb. 5, 2006.
[48] Some Tribunals have conflated the 'necessary' requirement in some NPM clauses with the doctrine of necessity under customary international law. *See* Dilini Pathirana & Mark McLaughlin, *Non-precluded Measures Clauses: Regime, Trends, and Practice, in* HANDBOOK OF INTERNATIONAL INVESTMENT LAW AND POLICY 495 (Julien Chaisse et. al. eds., 2021). ("The "necessary" requirement was most famously at the center of several ISDS cases resulting from Argentina's economic crisis. This has been the subject of considerable scholarly comment. The tribunals in *CMS v Argentina*, *Sempra v Argentina*, and *Enron v Argentina* sought to interpret the term "necessary" by having recourse to Article 25 of the ILC Articles on State Responsibility, considered to be a codification of the customary international law doctrine of necessity. As such, these tribunals considered inseparable the "nexus" requirement provided for in the BIT and the necessity defense under customary international law. Resultantly, these tribunals set a very high bar to clear in order that measures taken by Argentina in the economic crisis would be considered as exceptions under the bilateral investment treaty. However, the tribunals did not take account of hierarchical relationship between the provisions contained in the BITs and the customary international law definition of necessity. Invocation of the "necessity" defense requires the consideration of an internationally wrongful act (as determined by primary rules) and consideration of the relationship nexus by which the home State can be held responsible for this act (the purpose of the secondary rules). Neither of these conditions were satisfied in this case. As such, there is no normative justification for the use of the ILC Articles to interpret "necessary" as "necessity" in this context. As such the standards contained in the BIT and the necessity defense are entirely incongruent. Indeed, a preferable approach was followed in the cases of *LG&E v. Argentina and Continental Casualty v Argentina*. Both of these Tribunals declined to conflate the customary

states will likely be able to rely on such clauses if the issuance of a compulsory licence pursuant to the waiver decision is challenged before an investment Tribunal.[49] Nevertheless, it should be noted that not all investment treaties contain an NPM clause. As pointed out by Dilini Pathirana and Mark McLaughlin,

> *"…although NPM clauses are becoming more widespread, [international investment agreements] in which they are expressly included remain a small minority in the context of the international investment regime overall. Indeed, those NPM clauses which apply to the entire treaty, as opposed to being merely limited to certain standards of investment protection, are rarer still. Their inclusion is somewhat scattered and inconsistent in the treaty practice of many States, with NPM clauses inserted into some BITs but absent from others."*[50]

Secondly, it has also been suggested that the host states could rely on the police powers doctrine under customary international law.[51] Thus, even where the police powers doctrine is not codified in the relevant investment treaty, it is still possible for host states to invoke this doctrine to justify the issuance of a compulsory licence pursuant to the TRIPS waiver decision. Indeed, the Tribunal in *Philip Morris*[52] recognised the police powers doctrine as forming part of customary international law. Thus, even though the police powers doctrine is not codified in the Switzerland-Uruguay BIT (i.e., the BIT relevant to the dispute), the Tribunal still applied the doctrine to the facts of the case.

In *Philip Morris*, the Tribunal noted that Article 5(1) of the Switzerland-Uruguay BIT which deals with expropriation had to be interpreted in the light of "any relevant rules of international law applicable to the relations between the parties" as required by Article 31(3)(c) of the Vienna Convention on the Law of Treaties (VCLT).[53] According to the Tribunal, this reference to the relevant rules of international law includes customary international as they have evolved.[54] It then noted that *"[p]rotecting public health has since long been recognized as an essential manifestation of the State's police power"*.[55] In support of its view that the police powers doctrine formed part of customary international law, the Tribunal cited several sources including Article 10(5) of the 1961 Harvard

international law norm with the treaty provision, instead applying Article XI of the BIT as a separate and distinct legal test.").

[49] *See also*, Ranjan, *supra* note 35, at 540.

[50] Pathirana & McLaughlin, *supra* note 48, at 483, 487-488.

[51] Ranjan, *supra* note 35, at 541 (referring to this as 'the police powers doctrine in international law').

[52] Philip Morris, *supra* note 17, ¶ 290.

[53] Vienna Convention on the Law of Treaties art. 31(3)(c), *opened for signature* May 23, 1969, 1155 U.N.T.S. 331 [hereinafter VCLT].

[54] *Id.*

[55] *Id.*, at 291.

Draft Convention on the International Responsibility of States for Injuries to Aliens and the Third Restatement of the Foreign Relations Law of the United States of 1987.[56]

Nevertheless, the precise scope of the police powers doctrine under customary international law is amorphous and ambiguous.[57] Furthermore, some investment tribunals are not favourably disposed towards adopting the police powers doctrine.[58] Thus, unless it is expressly codified in the relevant investment treaty, there is no guarantee that a host state can successfully invoke the police powers doctrine under customary international law to shield itself from liability for claims brought by investors claiming that the grant of a compulsory licence pursuant to the TRIPS waiver decision amounts to expropriation.

Thirdly, it has equally been suggested that "Article 31(3)(c) of the VCLT can be employed to bring the TRIPS waiver into the BIT's interpretative matrix".[59] In this regard, it is worth noting that Article 31(3)(c) of the VCLT provides that "any relevant rules of international law applicable in the relations between the parties" should be "taken into account, together with the context" when interpreting a treaty. Article 31(3)(c) of the VCLT equally applies to investment treaties.[60] As Ranjan rightly notes, the TRIPS waiver will fall within the scope of Article 31(3)(c) of the VCLT because the TRIPS waiver "is a rule of international law, which is both 'relevant' and 'applicable' in the relations between the parties."[61]

What is the implication of the TRIPS waiver decision falling within the scope of Article 31(3)(c) of the VCLT? Ranjan contends that this implies that "the TRIPS waiver will be used to clarify the content of the provision being interpreted" but "not to limit the treaty provision to the scope and content of the admissible rule".[62] According to this view, an investment Tribunal "cannot import

[56] *Id*., at 292-293.
[57] Ranjan, *supra* note 35, at 542; Prabhash Ranjan, *Police Powers, Indirect Expropriation in International Investment Law and Article 31(3)(c) of the VCLT: A Critique of Philip Morris v. Uruguay*, 9 ASIAN J. INT'L. L. 98 (2019).
[58] *See*, *e.g,* Azurix v. Argentina, ICSID Case No. ARB/01/12, International Investment Agreement, 310 (July 14, 2006) ("For the Tribunal, the issue is not so much whether the measure concerned is legitimate and serves a public purpose, but whether it is a measure that, being legitimate and serving a public purpose, should give rise to a compensation claim."); Compañiá de Aguas del Aconquija S.A. and Vivendi Universal S.A. v. Argentina, ICSID Case No. ARB/97/3, International Investment Agreement, ¶ 7.5.21 (Aug. 20, 2007) ("the structure of Article 5(2) of the Treaty directs the Tribunal first to consider whether the challenged measures are expropriatory, and only then to ask whether they can comply with certain conditions, i.e., public purpose, non-discriminatory, specific commitments, et cetera. If we conclude that the challenged measures are expropriatory, there will be violation of Article 5(2) of the Treaty, even if the measures might be for a public purpose and non-discriminatory, because no compensation has been paid. Respondent's public purpose arguments suggest that state acts causing loss of property cannot be classified as expropriatory. If public purpose automatically immunises the measure from being found to be expropriatory, then there would never be a compensable taking for a public purpose.").
[59] Ranjan, *supra* note 35, at 542.
[60] VCLT, *supra* note 53.
[61] Ranjan, *supra* note 35, at 542.
[62] *Id*., at 545.

the TRIPS waiver into the BIT and apply it directly to the facts at hand."[63] Ultimately, according to this approach, "although the TRIPS waiver will be admissible in the interpretation of the relevant BIT provision, the interpretative weight that will be bestowed to it will depend on the ISDS Tribunal."[64] However, as will be further explained in Section IV-B below, it is suggested here that Article 31(3)(c) of the VCLT can potentially play a more prominent role in ensuring that the rules of international intellectual property law (including the TRIPS waiver decision) are taken into account in any investment dispute relating to the issuance of a compulsory licence pursuant to the TRIPS waiver decision.

IV. THE TRIPS WAIVER DECISION AND INTERNATIONAL INVESTMENT LAW: AN INTERTEXTUAL PERSPECTIVE

The analysis in Section III above has shown that, to a large extent, the TRIPS waiver decision is compatible with the international investment law regime. With regard to the fair and equitable treatment standard, whether or not there is a carve-out clause that excludes measures relating to intellectual property rights from the scope of the fair and equitable treatment standard in the relevant investment treaty, investors are highly unlikely to succeed if they seek to challenge the issuance of a compulsory licence pursuant to the waiver decision. In relation to the expropriation standard, one can state with a high level of certainty that investment treaties with carve-out clauses that exclude measures relating to intellectual property rights (including compulsory licensing) from the scope of the expropriation standard can shield host states from liability for the issuance of compulsory licences pursuant to the waiver decision.

Nevertheless, for investment treaties with no carve-out clauses that exclude measures relating to intellectual property rights from the scope of the expropriation standard, host States are still potentially exposed to liability for claims based on the expropriation standard if they issue a compulsory licence pursuant to the waiver decision. As noted in Section III-C above, not all investment treaties contain NPM clauses and not all investment Tribunals adopt the police powers doctrine. It is therefore necessary to explore alternative options for these types of investment treaties with no carve-out clauses that exclude measures relating to intellectual property rights from the scope of the expropriation standard.

In this regard, this article suggests that an intertextual perspective may be helpful in shielding host states from liability for claims based on the expropriation standard. This intertextual perspective requires that the rules of international intellectual property law (which includes the TRIPS waiver

[63] *Id.*
[64] *Id.*

decision) should be regarded as part of the applicable law in investment disputes involving intellectual property rights. Additionally, this approach requires that the aforementioned rules be taken into account while interpreting the terms and provisions of investment treaties in investment disputes involving intellectual property rights (in line with Article 31(3)(c) of the VCLT).

If this intertextual approach is followed, then as long as a compulsory licence is issued in accordance with the waiver decision, host states will be shielded from liability for claims based on the expropriation standard even if there are no carve-out clauses for measures relating to intellectual property rights in the relevant treaty. The rest of this section will be used to elaborate and explain how this intertextual approach should be applied in resolving investment disputes involving intellectual property rights.[65]

A. International Intellectual Property Law as Applicable Law in Investment Disputes.[66]

It is primarily up to the contracting State parties to an investment treaty to decide the law that should be applied to investment disputes that arise from the treaty.[67] In this regard, some investment treaties do contain provisions on applicable law which investment Tribunals are required to apply when resolving investment disputes. However, where the relevant investment treaty does not contain any provisions on applicable law, the provision on the applicable law in the arbitration rules of the forum chosen for resolving the dispute will determine which law should apply.[68]

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[65] *See generally* EMMANUEL KOLAWOLE OKE, THE INTERFACE BETWEEN INTELLECTUAL PROPERTY AND INVESTMENT LAW: AN INTERTEXTUAL ANALYSIS (2021) (for a more extensive discussion of this intertextual perspective on the interface between intellectual property law and investment law).

[66] *Id*., at 26-33.

[67] *See* Yas Banifatemi, *The Law Applicable in Investment Treaty Arbitration*, *in* ARBITRATION UNDER INTERNATIONAL INVESTMENT AGREEMENTS: A GUIDE TO THE KEY ISSUES (Katia Yannaca-Small ed., 2010) ("Given the fundamental principle of party autonomy in international arbitration, the arbitrators' inquiry is primarily guided by the determination of whether the parties themselves have chosen the law governing their dispute. It is only in the absence of such choice that the arbitrators must determine the law that will apply to the dispute."), 194-195 (As investors are not typically contracting parties to investment treaties, an investor that files a request for arbitration based on an investment treaty is deemed to have accepted the applicable law as determined in the treaty;. *see also* Antoine Goetz v. Burundi, ICSID Case No. ARB/95/3, International Investment Agreement, ¶ 94 (Feb. 10, 1999).

[68] *See* ERIC DE BRABANDERE, INVESTMENT TREATY ARBITRATION AS PUBLIC INTERNATIONAL LAW: PROCEDURAL ASPECTS AND IMPLICATIONS 123-124 (James Crawford & John S. Bell eds., 2014)("In principle, the legal instrument providing for the competence of an arbitral Tribunal to settle the dispute determines the legal rules to be applied for the settlement of the dispute. If the instrument contains no specific provision in relation to the applicable law, the procedural rules chosen by the parties will often contain a clause which will enable the Tribunal to determine the law it should apply".).

Thus, for investment disputes that are submitted to the International Centre for Settlement of Investment Disputes (ICSID) for arbitration and where there is no provision on applicable law in the relevant treaty, Article 42(1) of the ICSID Convention[69] provides that:

> *The Tribunal shall decide a dispute in accordance with such rules of law as may be agreed by the parties. In the absence of such agreement, the Tribunal shall apply the law of the Contracting State party to the dispute (including its rules on the conflict of laws) and such rules of international law as may be applicable.*

A similar (but not precisely the same) approach is contained in the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL). Article 35(1) of the UNCITRAL Arbitration Rules[70] provides that:

> *The arbitral tribunal shall apply the rules of law designated by the parties as applicable to the substance of the dispute. Failing such designation by the parties, the arbitral tribunal shall apply the law which it determines to be appropriate.*

In the same vein, Article 21(1) of the International Chamber of Commerce (ICC) Rules of Arbitration[71] provides that:

> *The parties shall be free to agree upon the rules of law to be applied by the arbitral tribunal to the merits of the dispute. In the absence of any such agreement, the arbitral tribunal shall apply the rules of law which it determines to be appropriate.*

Thus, in the absence of an agreement between the contracting parties on the applicable law, both the UNCITRAL and ICC arbitration rules empower the Tribunal to apply the law that it deems appropriate. However, under the ICSID Convention, the Tribunal is required to apply the law of the host state (including the host state's rules on conflict of laws) and the rules of international law that may be applicable.

Scholars in the field of international investment law have observed that the majority of investment treaties do not contain rules on applicable law.[72] In addition, for those investment treaties that do contain a provision on the applicable law, these provisions are worded in different ways. Thus, in the category of investment treaties that contain a provision on the applicable law to the effect that

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[69] Convention on the Settlement of Investment Disputes between States and Nationals of other States, art. 42(1) March 18, 1965, 575 UNTS 159 [hereinafter ICSID Convention].
[70] UNCITRAL Arbitration Rules, art. 35, G.A. Res. 68/109, (Dec. 16, 2013).
[71] Int'l Chambers of Commerce [ICC], *Rules of Arbitration of the International Chamber of Commerce*, art. 21(1), *available at* https://iccwbo.org/content/uploads/sites/3/2020/12/icc-2021-arbitration-rules-2014-mediation-rules-english-version.pdf.
[72] Christoph Schreuer, *Jurisdiction and Applicable Law in Investment Treaty Arbitration*, 1(1) MJDR1, 12 (2014); Yas Banifatemi, *The Law Applicable in Investment Treaty Arbitration*, *in* ARBITRATION UNDER INTERNATIONAL INVESTMENT AGREEMENTS: A GUIDE TO THE KEY ISSUES 197 (Katia Yannaca-Small ed., 2010).

the applicable law is the treaty itself and applicable rules of international law, there is, for instance, Article 33(1) of the Canada-Guinea BIT of 2015 which provides that: "An Arbitral Tribunal established under this Section shall decide the issues in dispute consistently with this Agreement and applicable rules of international law."[73] Moreover, Article 8.31(1) of the Comprehensive Economic and Trade Agreement (CETA) between the European Union and Canada of 2016[74] provides that:

> *When rendering its decision, the Tribunal established under this Section shall apply this Agreement as interpreted in accordance with the Vienna Convention on the Law of Treaties, and other rules and principles of international law applicable between the Parties.*

In addition, some investment treaties do contain elaborate provisions on the applicable law. In this category, for instance, Article 9(7) of the Argentina-Thailand BIT of 2000[75] provides in relation to the applicable law that:

> *The arbitration Tribunal shall decide in accordance with the provisions of this Agreement, the laws of the Contracting Party involved in the dispute, including its rules on conflict of law, the terms of any specific agreement concluded in relation to such an investment and the relevant principles of international law.*

Therefore, a common element with regard to the applicable law both in investment treaties that contain a provision on applicable law and investment treaties that do not (and where arbitrators have to rely on the default rule in, for instance, Article 42(1) of the ICSID Convention[76]) is a reference to international law as part of the applicable law. Investment Tribunals have however adopted different approaches to the interpretation of what it means for international law to be part of the applicable law in an investment dispute. As Schreuer notes:

> *Since all variants of the clauses on applicable law include international law, its applicability appears unproblematic, in principle. An open question is the meaning of applicable rules of international law. Under a wide interpretation this could mean any rules of international law that are invoked in the course of the arbitration and which are significant to the claims put forward. Apart from the treaty conferring jurisdiction, this includes multilateral treaties governing a variety of aspects of international law like UNESCO Conventions, conventions for the protection of the environment, the United Nations Convention against corruption and human rights treaties. Under a narrow interpretation the applicable rules would be*

[73] Agreement for the Promotion and Reciprocal Protection of Investments Can.-Guinea, art. 33(1), May 27, 2015.
[74] Comprehensive Economic and Trade Agreement, Can.-E.U., art. 8.31(1), Oct. 30, 2016.
[75] Agreement for the Promotion and Reciprocal Protection of Investments, Arg.-Thai., art. 9(7), Feb. 18, 2000.
[76] ICSID Convention, *supra* note 69.

> *only those that have a direct* bearing *on investment law. This would exclude the application of treaties protecting human rights.*[77]

Thus, in a number of cases, some investment Tribunals have adopted a broad approach with regard to the applicability of the rules of international law to the resolution of the investment disputes brought before them and they have considered and applied multilateral treaties drawn from different parts of international law.[78] However, a number of Tribunals have been reluctant to apply certain treaties, especially human rights treaties, to the disputes before them.[79]

It is however suggested here that there is no reason why an investment Tribunal that is faced with an investment dispute involving intellectual property rights should not consider the rules of international intellectual property law as codified in the multilateral intellectual property treaties (such as the TRIPS Agreement) as part of the applicable rules of international law. This should be the case where the state parties to the relevant investment treaty are also parties to the relevant intellectual property treaties such as the TRIPS Agreement.

This should also be the case in investment disputes involving intellectual property rights, particularly in disputes involving the policy space available to states under international intellectual property law because in such cases intellectual property treaties (especially the TRIPS Agreement) do have a direct bearing on investment law. Thus, an intertextual approach should therefore be

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[77] Christoph Schreuer, *Jurisdiction and Applicable Law in Investment Treaty Arbitration*, 1(1) MCGILL J. DISP. RES. 1, 16-17 (2014).

[78] *See*, *e.g.,* the application of the UN Convention against Corruption of 2003 in World Duty Free Company Limited v. Kenya, ICSID Case No. ARB/00/7, Contract, 145 (Oct. 4, 2006). (The Tribunal stated that: 'In light of domestic laws and international conventions relating to corruption, and in light of the decisions taken in this matter by courts and arbitral Tribunals, this Tribunal is convinced that bribery is contrary to the international public policy of most, if not all, States or, to use another formula, to transnational public policy. Thus, claims based on contracts of corruption or on contracts obtained by corruption cannot be upheld by this Arbitral Tribunal.'). For investment Tribunals relying on the UNESCO Convention Concerning the Protection of the World Cultural and Natural Heritage, *see*: Southern Pacific Properties (Middle East) Ltd. v. Egypt, ICSID Case No. ARB/84/3, Foreign Investment Law, (May 20,1992); Parkerings-Compagniet AS v. Lithuania, ICSID Case No. ARB/05/8, International Investment Agreement (Sept. 11, 2007). For reliance on the International Covenant on Civil and Political Rights, *see,* Toto Costruzioni Generali SpA v. Republic of Lebanon, ICSID Case No ARB/07/12, Decision on Jurisdiction, ¶¶ 157-160 (Sept. 11, 2009).

[79] In this regard, *see*: Biloune and Marine Drive Complex Ltd v. Ghana, Ad Hoc UNCITRAL, Award on Jurisdiction and Liability, (Oct. 27, 1989) 95 ILR 183, 203 (stating that: 'Long-established customary international law requires that a state accord foreign nationals within its territory a standard of treatment no less than that prescribed by international law. Moreover, contemporary international law recognizes that all individuals, regardless of nationality, are entitled to fundamental human rights (which, in the view of the Tribunal, include property as well as personal rights), which no government may violate. Nevertheless, it does not follow that this Tribunal is competent to pass upon every type of departure from the minimum standard to which foreign nationals are entitled, or that this Tribunal is authorized to deal with allegations of violations of fundamental human rights. This Tribunal's competence is limited to commercial disputes arising under a contract entered into in the context of Ghana's Investment Code. As noted, the Government agreed to arbitrate only disputes "in respect of" the foreign investment. Thus, other matters —however compelling the claim or wrongful the alleged act—are outside this Tribunal's jurisdiction. Under the facts of this cases, it must be concluded that, while the acts alleged to violate the international human rights of Mr Biloune may be relevant in considering the investment dispute under arbitration, this Tribunal lacks jurisdiction to address, as an independent cause of action, a claim of violation of human rights.'). *See* also, Bernhard von Pezold v. Zimbabwe, ICSID Case No. ARB/10/15, International Investment Agreement (June 26, 2012).

applied in such cases to ensure that the decision of the Tribunal is consistent with the rules of international intellectual property law.

An excellent example of an investment tribunal that employed an intertextual approach in a dispute involving intellectual property rights is the Tribunal in *Philip Morris v Uruguay*.[80] In this case when deciding whether or not a trademark confers a right to use or only a right to protect against use by others, the Tribunal took into account the rules of international intellectual property law as contained in both the Paris Convention and the TRIPS Agreement and it stated that:

> *…there is nothing in the Paris Convention that states expressly that a mark gives a positive right to use, although it is clear that a trademark can be cancelled where it has not been used for a reasonable period.*
>
> *The Claimants rely on Article 20 of the TRIPS Agreement which seems to imply "a right to use" a trademark by prohibiting WTO Member States from unjustifiably imposing "special requirements" on trademarks used in the course of trade. They rely on Professor Gibson's Opinion holding that "if there is no right or legitimate interest in use, there is no need… for Article 20."*
>
> *However, to imply a right to use from a provision that prohibits WTO Member States to encumber the use of trademarks would elevate to a "right to use" a provision that does no more than simply acknowledging that trademarks have some form of use in the course of trade which should not be "unjustifiably" encumbered by special requirements. In any case, nowhere does the TRIPS Agreement, assuming its applicability, provide for a right to use. Its Article 16, dealing with "Rights Conferred," provides only for the exclusive right of the owner of a registered trademark to prevent third parties from using the same mark in the course of trade.*[81]

This example demonstrates that investment Tribunals can, and should, take the rules of international intellectual property law into account as applicable law when resolving investment disputes involving intellectual property rights (including any disputes that may arise from the issuance of a compulsory licence pursuant to the waiver decision).

B. The Rules of International Intellectual Property Law as an Interpretive Tool in Investment Disputes

[80] Philip Morris v. Uruguay, ICSID Case No. ARB/10/7, International Investment Agreement (July 8, 2016).
[81] *Id.*, at 260-262; (It should be noted that, in its Award, the Tribunal had questioned the applicability of the TRIPS Agreement in this case because it incorrectly stated that Switzerland, one of the parties to the Switzerland-Uruguay BIT, was not a party to the TRIPS Agreement. In footnote 334 to para 262, the Tribunal had incorrectly noted that 'Switzerland is not a party to this Agreement, which makes its applicability to the present dispute questionable.' This is however incorrect because Switzerland is a member of the WTO and thus a party to the TRIPS Agreement. The Tribunal subsequently issued a decision on rectification of the award where it corrected this mistake by deleting the quoted sentence.) *See*, Philip Morris v. Uruguay, ICSID Case No. ARB/10/7, Decision on Rectification, 29 (Sept. 26, 2016).

Based on Article 31(3)(c) of the VCLT, Tribunals can take into account the rules of international intellectual property law when they are interpreting the provision on expropriation in an investment dispute.[82] This is especially so where the state parties to the investment treaty being interpreted are also parties to the relevant multilateral intellectual property treaties such as the TRIPS Agreement. This would be quite similar to what some tribunals, such as the tribunal in *Philip Morris*, do when they invoke the police powers doctrine (via Article 31(3)(c) of the VCLT) as a rule of customary international law even in the absence of an express codification of the police powers doctrine in the investment treaty being interpreted.

Thus, tribunals can play a role in preserving the intellectual property policy space of states by engaging in an intertextual analysis that takes the rules of international intellectual property law into account in investment disputes involving intellectual property rights. This can be done even in the absence of a carve-out clause for measures relating to intellectual property rights in the relevant investment treaty. This intertextual approach can shield host states from liability if they choose to issue a compulsory licence pursuant to the waiver decision as long as the compulsory licence is consistent with the text of the waiver decision.

V. CONCLUSION

This article has assessed the compatibility of the TRIPS waiver decision with international investment law. It finds that the TRIPS waiver decision is largely compatible with international investment law. Importantly, host states relying on the waiver decision to issue compulsory licences will be shielded from liability for claims based on the fair and equitable treatment standard. They will also be shielded from liability for claims based on the expropriation standard where there is a carve-out clause that excludes measures relating to intellectual property rights from the scope of the expropriation standard in the relevant investment treaty.

However, where there is no such carve-out clause in the relevant investment treaty, this article has suggested that an intertextual approach should be adopted to shield host states from liability for claims based on the expropriation standard. This intertextual approach entails two key elements: one, the rules of international intellectual property law (which includes the TRIPS waiver decision) should be regarded as part of the applicable law in investment disputes involving intellectual property rights; two, the rules of international intellectual property law should be taken into

[82] For a similar approach in a different context, *see*, Oil Platforms (Iran v. US*)*, Judgment, 2003 I.C.J Rep. 161, 41 (Nov. 6, 2003).

account when interpreting the terms and provisions of investment treaties in disputes involving intellectual property rights (in line with Article 31(3)(c) of the VCLT).

The relevance of the intertextual approach that is being suggested here transcends the TRIPS waiver decision for the Covid-19 pandemic. Crucially, the intertextual approach that is being recommended here can help to ensure that there is some level of coherence between the international intellectual property law regime and the international investment law regime. This coherence will in turn help to secure and preserve the intellectual property policy space of host States in the context of investment disputes involving intellectual property rights.

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THE POTENTIAL ROLE OF 3D PRINTING TECHNOLOGY IN ENABLING LOCAL ENTREPRENEURSHIP: TO WHAT EXTENT PATENT LAW POSES A BARRIER

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Abstract

3D printing or additive manufacturing allows the rapid conversion of information from pre-designed digital 3D models or computer-aided design ["CAD"] files into physical objects through the continual addition of layers of material. This approach is in contrast with conventional manufacturing processes in which physical shapes emerge either by removing material, as in machining, or changing the shape of a set volume of material. This modern method of manufacturing does away with the time-consuming and costly tooling and machining requirements. The cost of failure is low in 3D printing and it allows flexibility in manufacturing. It is cost-effective in many other ways because there is no need of warehousing or far-off transportation. The advancements in 3D printing technology offer a new hope to the less privileged and under-resourced people with brilliant entrepreneurial ideas. With advances in material science and affordable availability of portable 3D printers, this disruptive technology is rapidly maturing to a level to support local entrepreneurship. This study undertakes an analysis of the potential of 3D printing in enabling local entrepreneurship and actual or potential challenges posed by patent laws. Part II of this paper evaluates the unique benefits of this revolutionary technology with a key focus on harnessing the potential of 3D printing in enabling local entrepreneurship. Part III examines to what extent patent exclusive rights possibly become a hurdle in using the full potential of 3D printing technology.

I. INTRODUCTION

The term 3D printing is used to describe 'any process of creating a physical object through the continual addition of layers of material – in contrast with conventional manufacturing processes in which physical shapes emerge either by removing material, as in machining, or changing the shape of a set volume of material, as in injection moulding of plastics or casting of metals.'[1] 3D printing is a revolutionary technology because of its enabling role in turning ideas into tangible objects. As noted by the former President of United States of America, Barack Obama, in his 2013 State of the Union Address, 3D printing technology has 'the potential to revolutionize the way we make almost everything.'[2]

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[1] KLAUS SCHWAB & NICHOLAS DAVIS, SHAPING THE FOURTH INDUSTRIAL REVOLUTION (2018). [hereinafter 'Davis'].

[2] Office of the Press Secretary, *Remarks by the President in the State of the Union Address*, THE WHITEHOUSE PRESIDENT BARACK OBAMA (Feb. 12, 2013), https://obamawhitehouse.archives.gov/the-press-office/2013/02/12/remarks-president-state-union-address.

The advancement in 3D printing technology offers a new hope to the less fortunate people who have brilliant entrepreneurial ideas but do not have adequate resources. With advances in material science and affordable availability of portable 3D printers, this progressive technology is rapidly maturing to a level to support local entrepreneurship. This unique method of manufacturing is well-suited to help creative individuals harness their entrepreneurial potential. Entrepreneurial activity is defined as 'enterprising human action in pursuit of the generation of value through the creation or expansion of economic activity, by identifying and exploring new products, processes or markets.'[3] 3D printing, which enables on-demand manufacturing of customized or personalized products in a timely and risk-free manner, is uniquely well positioned to support new business ideas. 3D printing service bureaus and online markets further add to an enabling ecosystem for entrepreneurship based on digital fabrication.

This study undertakes an analysis of the potential of 3D printing in enabling local entrepreneurship and actual or potential challenges posed by patent laws. This analysis, with respect to practical and legal aspects, draws upon a wide range of sources including statutes, peer-reviewed publications, blogs, quotations from stakeholders, media reports, and real-world examples. Part II of this paper evaluates the unique benefits of this revolutionary technology with a key focus on harnessing the potential of 3D printing in enabling local entrepreneurship. Part III examines to what extent patent exclusive rights possibly become a hurdle in using the full potential of 3D printing.

Although there are some significant jurisdictional differences, the discussion in this study, with limited scope, is confined to the patent laws in the European Union (EU). It aims to answer the following legal questions: What is patent infringement liability of entrepreneurs who use 3D printing as a business strategy? What is patent infringement liability of intermediaries storing and distributing CAD files? What is liability of physical suppliers of 3D printers and filaments/ printing material? What is liability of 3D printing service bureaus? What defenses are available to all these potential infringers of patent rights? These legal questions are important in determining the future of 3D printing as an enabler of local entrepreneurship. This study will help policymakers at national and international levels by contributing to the debate over intellectual property and the scope of 3D printing in enhancing social and economic welfare of communities across the globe.

II. THE UNIQUE BENEFITS OF 3D PRINTING FOR ENTREPRENEURS

Because of its several disruptive features, the concept of 3D printing has initiated an entrepreneurial "maker" movement giving masses the opportunity to build something from

[3] Marie Lavoie & James L. Addis, *Harnessing the potential of additive manufacturing technologies: Challenges and opportunities for entrepreneurial strategies*, 2 INT'L J. INNOVATION STUD. 123–36 (2018) [hereinafter 'Lavoie & Addis'].

ground zero.[4] This section evaluates the unique benefits of this revolutionary technology with a key focus on harnessing the potential of 3D printing in enabling local entrepreneurship.

A. Cost-Effectiveness

With the help of 3D printing, the complexities in manufacturing are exponentially reduced. If we are using traditional methods of manufacturing, the cost is higher if the shape of an object is complicated. On the other hand, if we are using 3D printing technology, manufacturing complex objects costs almost the same as manufacturing simple objects[5] It is hard to make complex products by using traditional manufacturing techniques because multiple parts need to be made and assembled. It is impossible to produce some very complex geometries through traditional methods. Traditional manufacturing technologies are efficient when we are dealing with simple curves and straight lines[6] Computer-aided designing has enhanced our capability to think beyond traditional geometry. 3D printing allows us to not only imagine but also build complex and innovative mathematical forms.[7]

3D printing enables fabrication of 'customized products with complex shapes according to customer preferences'[8] at little or no additional cost. Nearly any geometry can be produced as 'there are no limitations in the digital representation of real-world objects, at least conceptually.'[9] The freedom of designing and manufacturing assembly-free complex and innovative objects cost-effectively opens up new and exciting possibilities for entrepreneurship. Moreover, complex shapes can be produced using less material, because of additive processes, as compared to traditional methods of manufacturing.[10] This method does not waste materials because 'instead of starting with a solid block of material and cutting it down to a shape, an object is built by adding one layer of material at a time.'[11] Self-assembled complex objects can be fabricated in one build by using this method, which reduces cost by cutting out manufacturing steps, labour, and machinery.[12]

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[4] LUCAS S. OSBORN, 3D PRINTING AND INTELLECTUAL PROPERTY (2020) [hereinafter 'OSBORN'].
[5] Hod Lipson & Melba Kurman, *The Ten Principles of 3D Printing*, BIG THINK, https://bigthink.com/experts-corner/the-ten-principles-of-3d-printing (*last visited Nov. 23, 2020*).
[6] Matthew Connell et al., *Out of Hand: Materialising the Digital*, GREEN MAGAZINE, https://greenmagazine.com.au/out-of-hand/ (*last visited Nov. 24, 2020*).
[7] *Id.*
[8] Aamer Nazir et al., *The rise of 3D Printing entangled with smart computer aided design during COVID-19 era*, 60 J. MANUFACTURING SYS. 774 (2020).
[9] Lavoie & Addis, *supra* note 3.
[10] Laxitha Mundhra, *From Face Shields to Ventilators and Nasal Swabs, 3D Printing is changing the Medical Scenario,* CIOL (Apr. 8, 2020), ciol.com/face-shields-ventilators-nasal-swab-3d-printing-changing-medical-scenario/) [hereinafter 'Mundhra'].
[11] Lesley M. Cano, *Basics of 3D Modeling and Printing*, *in* 3D PRINTING: A POWERFUL NEW CURRICULUM TOOL FOR YOUR SCHOOL LIBRARY (2015) [hereinafter 'Cano'].
[12] R WARNIER et al., PRINTING THINGS. VISIONS AND ESSENTIALS FOR 3D PRINTING (2014).

The cost of prototyping is a significant factor in determining the cost of bringing a product to market.[13] 3D printing is important for entrepreneurs because prospects for acquiring outside funding and making early sales increase if the costs of prototyping is reduced.[14] 3D printing also reduces the time and effort involved in prototyping. When using a traditional manufacturing method, expertise in manufacturing engineering and a large-knowledge base is required in terms of analysing the geometry of the design and planning the tools and processes accordingly. On the other hand, when using a 3D printing method, time and effort is saved because you just need to know about the different printing materials, and understand the basic mechanisms of 3D printing methods. There is no need of expertise in manufacturing engineering or a large knowledge-base.[15]

3D printing technology enables start-ups to get off the ground sooner, without incurring prohibitively high costs. Building prototypes is cheaper and easier with 3D printing tools. It is possible not only to increase the number of iterations but also to decrease the time between iterations.[16] Without this technology, prototyping is both expensive and time-consuming. It may take weeks to complete if the design is complicated.[17]

B. Low Infrastructural Needs

3D printing can be an enabler of a fundamental shift in how products are designed, manufactured and distributed. To become a manufacturer, one does not need to own a factory or start a company. Anyone having creative ideas and access to digital manufacturing tools and skills can potentially become a manufacturer. This technology substantially reduces financial barriers to market entry. Low-cost entry is possible for individuals or start-ups that understand 3D printing and the market and have access to the right equipment. Objects can be designed by using freely available and easy to learn open-source 3D modelling software tools, like Tinkercad.[18] Creating design drawings without this technology is a cumbersome process. As noted by Lucas Osborn, "individuals might have needed to hire a draftsperson to create technical drawings. They also would have needed to take those drawings to a manufacturing intermediary who would facilitate prototype construction."[19]

[13] Eric Joseph Van Holm, *Makerspaces and Contributions to Entrepreneurship*, 195 PROCEDIA - SOC. BEHAV. SCI. 24–31 (2015) [hereinafter 'Holm'].
[14] *Id.*
[15] Ho Nam Chan et al., *Point-of-care testing: Applications of 3D printing*, 17 LAB CHIP 2713 (2017).
[16] DALE DOUGHERTY, FREE TO MAKE: HOW THE MAKER MOVEMENT IS CHANGING OUR SCHOOLS, OUR JOBS, AND OUR MINDS (2016).
[17] OSBORN, *supra* note 4.
[18] Mundhra, *supra* note 10.
[19] OSBORN, *supra* note 4.

Scanning is another way to procure designs (of the existing objects). 3D scanners and certain smartphone applications make it possible to get a digital 3D photocopy of an object. The digitized object can be 3D printed as it is or modifications can be made in the digital file before printing a tangible object. Some websites like Thingiverse, GrabCAD, and YouMagine offer a plethora of accessible digital designs. These can be downloaded free of cost or at low cost. [20]

After content creation, the next phase is production, for which one needs access to 3D printers. 3D printers are becoming increasingly affordable.[21] A wide range of sources are used for producing filaments (printing material) for 3D printers. The price varies depending on the base material. The price of a filament is generally not exorbitant. According to a 2018 study, "a kilogram of 1.75 mm ABS filament reel costs around $30 on Amazon."[22] Variety is free because roughly the same technological infrastructure can be used to fabricate diverse objects that may substantially differ in shape or design.[23]

One does not require warehousing because there is no need to keep stock of intangible objects. Digitized objects can be delivered or distributed virtually without requiring additional infrastructural or transportation costs. The digitized files can be downloaded from the comfort of one's desktop and 3D printed into physical goods. In case of meeting the demand for already printed physical objects, there is no need to produce products in huge quantities. Products can be 3D printed and shipped or mailed as per demand. The costs and risks[24] are substantially reduced as a number of logistical requirements and external factors become irrelevant in the supply chain management.

Low infrastructural needs for 3D printing contribute to the development of more user innovations and the creation of new enterprises by attracting more people into product design and development.[25] Many innovative individuals may actually become entrepreneurs if they find that there is a market for their creative user solutions.[26] Such accidental entrepreneurship is not hypothetical. There are many instances where lead users primarily developed products to solve their own problems before realizing that the product resulting from their innovative problem-

[20] Dana Mahr & Sascha Dickel, *Rethinking intellectual property rights and commons-based peer production in times of crisis: The case of COVID-19 and 3D printed medical devices*, 15 J. INTELL. PROP. L. PRAC. 711–717 (2020) [hereinafter 'Mahr and Dickel'].
[21] Shardha Rajam & Adya Jha, *3D Printing – An Analysis of Liabilities and Potential Benefits Within the Indian Legal Framework,* 11 NUJS L. REV. 361 (2018); Simon Bradshaw, Adrian Bowyer & Patrick Haufe, *The Intellectual Property Implications Of Low-Cost 3D Printing,* 7 SCRIPTED 5 (2020).
[22] Bruno Borralho Gobbato, *Setting Up Your Own Home 3D Printing "Plant" in* 3D PRINTING IN ORTHOPAEDIC SURGERY 195–208 (2018) [hereinafter 'Bruno Borralho Gobbato'].
[23] Mahr & Dickel, *supra* note 20.
[24] Thomas Birtchnell & William Hoyle, *The 3D4D Challenge*, *in* 3D PRINTING FOR DEVELOPMENT IN THE GLOBAL SOUTH (2014) [hereinafter 'Birtchnell and Hoyle'].
[25] Holm, *supra* note 13.
[26] *Id.* 24.

solving can have a potential market. So, many firms are started based on innovative solutions to personal problems.[27]

C. Personalized and On-Demand Manufacturing

3D printing can be an enabler of new consumer centric business models. With 3D printing tools, 'design changes can be made quickly and easily with little or no additional cost.'[28] Mass customization is feasible with 3D printing because 'each item is created individually, rather than from a single mould, each can be made slightly differently at almost no extra cost.'[29] Convenient and cost-effective customization in 3D manufacturing increases the role of consumers in shaping the demand for unique and personalized products. Users can also choose base materials for 3D printing as per their individual preferences.[30]

New features can be added to the existing designs by iterating the CAD files according to any specific demands of individual consumers.[31] This personalized component distinguishes 3D printing from other manufacturing techniques. Other manufacturing methods 'require significant investment for the research, development, and production of tools, after which the design is pretty much locked.'[32] The ability to develop and deliver customised and personalized products via 3D printing offers a great value to entrepreneurs as they can build their business around such products. Xiaowei Xu and others rightly noted that:

"With the improvement of people's material living standards, consumers' user needs tend to be personalised, and more and more people are pursuing personalised customisation. The characteristics of 3D printing technology make it can meet the needs of consumers infinitely."[33]

The availability of digital fabrication tools can have a transformational impact as these tools 'allow the physical world to be more mouldable, and therefore, more similar to the digital one.'[34] As the design is available in the digital form, modifications and adjustments can be made depending on what is working well and what improvements can be made. It allows entrepreneurs freedom to imagine things that do not exist but may be useful if such imagination is conveniently reduced to tangible objects. 3D printing, therefore, has an empowering role in making the world a better place.

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[27] Holm, *supra* note 13.
[28] Cano, *supra* note 11.
[29] Lavoie & Addis, *supra* note 3.
[30] Xiaowei Xu et al., *Research on 3D printing service model for innovation, entrepreneurship, and universal applications*, 2020 J. ENG. 466 (2020) [hereinafter 'Xu et al.'].
[31] DOUGHERTY, *supra* note 16.
[32] Tobias Mueller et al., *Eight Weeks Later — The Unprecedented Rise of 3D Printing during the COVID-19 Pandemic — A Case Study , Lessons Learned , and Implications on the Future of Global Decentralized Manufacturing*, 10 APPL. SCI. 4135 (2020).
[33] Xu et al., *supra* note 30.
[34] Holm, *supra* note 13.

On-demand manufacturing is possible with 3D printing because manufacturers do not have to worry about the minimum order or economies of scale. As set up costs and efforts are negligible, making a single object is as financially and practically viable as making a thousand objects. Neil Gershenfeld rightly noted that 3D printing process is capable of 'producing products for a market of one person.'[35] This unique feature offers a huge advantage to entrepreneurs or small start-ups as traditional methods of manufacturing that involve complex processes like moulding, forming, casting, and machining or subtractive methods are prohibitively costly and cumbersome for low-volume production.[36]

Traditional methods do not support on-demand manufacturing because the per piece production cost will be too high to afford if there is no economy of scale.[37] Because of large upfront costs in terms of tooling and customized labour, manufacturing by using traditional methods is a risky proposition. It is hard to determine how many copies of the product need to be manufactured because market demand cannot be foreseen with any precision. There is an issue of sunk cost resulting from unsold or unused products. 3D printing avoids upfront costs as well as irretrievable sunk costs because products can be manufactured on a need basis according to the demand.[38]

D. An Enabling Ecosystem

Using a 3D printer is not as simple as a click of a button. One needs to learn the required technical skills to make proper use of 3D printing tools. It is important to understand how materials interact with a 3D printer. It is also important to know the design software and acquire CAD modelling skills to design objects. Similarly, the idea of scanning physical objects and 3D printing digitized objects may seem simplistic, but "the scanned models generally require a lot of tweaking before they can be used to print objects."[39] Acquiring new technical skills has become relatively simpler for entrepreneurs because of the availability of wide-ranging tutorials on the internet which address almost every detail and every problem that one might face in using 3D printing tools.[40]

There are hundreds of makerspaces around the globe.[41] Fab labs or makerspaces primarily empower people to create by enhancing access to tools for producing new products. Makerspaces

[35] Neil Gershenfeld, *How to make almost anything-The Digital Fabrication Revolution*, 91 FOREIGN AFF. 43 (2012).
[36] ROSA MARIA BALLARDINI ET AL., 3D PRINTING, INTELLECTUAL PROPERTY AND INNOVATION: INSIGHTS FROM LAW AND TECHNOLOGY 90 (Wolters Kluwer, 2017).
[37] Mostapha Tarfaoui et al., *Materials 3D Printing to Support the Shortage in Personal Protective Equipment Caused by COVID-19 Pandemic*, 13 MATERIALS (BASEL)(2020).
[38] OSBORN, *supra* note 4.
[39] Bruno Borralho Gobbato, *supra* note 22.
[40] 3D Now, *The Ultimate Beginner's Guide to 3D Printing – Part 1,* YOUTUBE (Mar. 11, 2017), https://www.youtube.com/watch?v=3LBTkLsjHGQ; *Tutorials*, SHAPEWAYS, https://support.shapeways.com/hc/en-us/categories/360001855814-Tutorials.
[41] HACKERSPACE, https://hackerspaces.org (last visited 16 June 2022).

'commonly hold over $100,000 (USD) in equipment, a cost that would be prohibitive for an individual but is manageable when spread throughout the membership.'[42] More importantly, these spaces are 'designed to accommodate creative people and entrepreneurs who are trying to break the barrier of isolation and find a pleasant work environment that favours the development of partnerships.'[43] Makerspaces and Fab labs 'not only provide access to equipment and materials, but also to the expertise of the mentors and the internal/external network that comes with working in such facilities.'[44] Members from diverse backgrounds share their knowledge, skills, and ideas with peers to create a conducive and supportive environment for creativity and innovation.[45] Some makerspaces, like TechShop,[46] also play a role in building capacities by offering classes to help familiarise the members with the technical skills required.[47]

The enabling ecosystem for 3D printing includes viable mechanisms to reduce the start-up costs for entrepreneurs. Access to 3D printers can be possible without actually buying one. There are a variety of 3D printing service providers that print and deliver objects.[48] Many of these service centres are available on the internet, making it convenient for users to upload designs, get an instant quote, and get the printed objects shipped.[49] More familiar examples include Shapeways,[50] Voodoo Manufacturing,[51] and 3DHubs.[52] These online services charge fee for printing digital designs submitted to them and shipping the objects to the given address.[53] Potential manufacturers, who do not have financial capacity to have their own infrastructure, can use these services to deliver items to their clients. It is, therefore, possible to launch businesses without shouldering the costs of infrastructure.

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[42] Holm, *supra* note 13.
[43] R Mitoula et al., *Co-working spaces in Greece after Covid 19 era*, ONLINE SYMP. CIRC. ECON. SUSTAIN. 2012–13 (2020).
[44] Rigoberto C. Advincula et al., *Additive manufacturing for COVID-19: devices, materials, prospects, and challenges*, 10 MRS COMM. 413 (2020).
[45] Holm, *supra* note 13.
[46] Alan Gershenfeld & Joel Cutcher Neil Gershenfeld, DESIGNING REALITY: HOW TO SURVIVE AND THRIVE IN THE THIRD DIGITAL REVOLUTION (2017); MARK R. HATCH, THE MAKER REVOLUTION: BUILDING A FUTURE ON CREATIVITY AND INNOVATION IN AN EXPONENTIAL WORLD (2017).
[47] TAKE CLASSES, https://web.archive.org/web/20171012125351/http://www.techshop.ws/take_classes.html.
[48] Bruno Borralho Gobbato, *supra* note 22; *See* more Josef Drexl, Anselm Kamperman Sanders & Nari Lee, *Intellectual property rights and open innovation in 3D printing: a different form of exclusivity*, *in* THE INNOVATION SOCIETY AND INTELLECTUAL PROPERTY 231–60 (2019).
[49] Birtchnell and Hoyle, *supra* note 24.
[50] SHAPEWAYS, https://www.shapeways.com.
[51] VOODO, https://www.voodoomfg.com.
[52] HUBS, https://www.3dhubs.com; Hubs, *3D Hubs – focus on creating great products,* YOUTUBE *(*Dec. 9, 2020), https://www.youtube.com/watch?v=QOhG35sUMKs.
[53] Kelsey Wilbanks, *The Challenges of 3D Printing to the Repair-Reconstruction Doctrine in Patent Law*, 20 GEO. MASON L. REV. 1147 (2013) [hereinafter 'Wilbanks'].

Market access and having knowledge about the available markets are key factors in the potential growth of any enterprise.[54] Market access and awareness should not be a concern for entrepreneurs who leverage unique capabilities of 3D printing. All they need is a browser and an internet connection to sell their products through online marketplaces like Shapeways.[55] They can make their designs available for sale directly from Shapeways. They have an option to set their own shop up in the virtual space through signing up to Shapeways and start accepting and fulfilling orders from across the globe without expensive investments in marketing their products to the global audience.[56]

III. LIABILITY OF STAKEHOLDERS UNDER PATENT LAW

The advancements in 3D printing tools and their affordable availability bring new challenges for the patent law system because of the very realistic possibility of large-scale patent infringement. Anyone who has access to a 3D printer can be a potential manufacturer. The digital design files are easily accessible on the Internet and allow for a product to be replicated. 3D scanning applications are available on the smart phones. A combination of these tools provides a functional ecosystem to digitize and fabricate patent-protected objects without approval.

The advent of 3D printing benefits the society in general and entrepreneurs in particular, however, it raises serious concerns with regard to the commercial interests of patent holders and other stakeholders in the traditional manufacturing and supply chain model. Conventionally, before products become available to consumers either at bricks-and-mortar retail outlets or online stores, they are manufactured in large factories and then shipped to different countries across the globe.[57] Because of distributed manufacturing, empowered by 3D printing tools, manufacturers may lose extensive control over the products they make and sell. Likewise, patent holders (and other right holders) may lose control of their intellectual property because of the possibility of widespread unlawful and unlicensed violation of their exclusive rights. This section examines the threats posed by 3D printing to patent law and how patent exclusive rights can become a hurdle in using the full potential of 3D printing to support local entrepreneurship. Because of its limited scope, this section does not cover the other forms of intellectual property like copyright and trademark.

[54] Marsha A. Tongel, *The feminine paradigm of entrepreneurship in the informal economy in* ENTREPRENEURSHIP IN THE INFORMAL ECONOMY 177–91 (2013).
[55] SHAPEWAYS MARKETPLACE, https://www.shapeways.com/marketplace.
[56] SHAPEWAYS, https://www.shapeways.com/business/e-commerce-integrations/; HATCH, *supra* note 46.
[57] Maya M Eckstein, *Let's look closer at 3D printing and IP issues*, INSIDE COUNSEL (Feb. 09, 2016) [hereinafter 'Eckstein'].

A. Liability of Direct Infringers

Direct patent infringement 'arises when someone, without authorization makes, uses, sells, offers to sell, or imports the patented invention.'[58] Infringing activity undermines the commercial interests of patent holders because 'each printed copy of an invention is a lost potential sale to the patent holder.'[59] 3D printing of patent-protected objects for entrepreneurial purposes will not be covered under private non-commercial use exception provided in the EU and many other jurisdictions.[60] Liability for direct infringement is regardless of an infringer's knowledge of the underlying patent or intention to infringe upon the patentee's rights.

3D printing tools foster direct patent infringement by making it possible to digitize physical products and share replicable digital designs on virtual platforms for download and direct print or manipulation via software tools. Imitation is also possible if one uses a computer drafting program to create a digital file of a product from scratch after studying it carefully.[61] Large-scale infringing activity can be possible at individual levels because '3D printing allows consumers to independently use a creation process that was once cost-prohibitive and limited to high-investment manufacturing plants.'[62]

A lot of direct patent infringement, via digital fabrication tools, takes place behind the curtain. Patent holders find it hard to enforce their exclusive rights because they are generally unaware of any infringement taking place in the privacy of someone's home or garage or within a small-scale business. Such unidentifiable infringing activity is hard to control because patent holders cannot stop something from happening if they cannot see it happening.

It is possible to learn who is printing what, but it is both overwhelming in scale and technologically difficult.[63] It might be both difficult and expensive to track direct infringement at individual level. This is particularly challenging because CAD files can be distributed uncontrollably over the Internet.[64] Tracking and suing countless individual infringers is an unattractive and inefficient business strategy because individuals generally have limited resources to pay monetary damages.[65] It defeats one of the main purposes of the lawsuit if individuals or small businesses are unable to

[58] Rosa Maria Ballardini, Marcus Norrgård & Timo Minssen, *Enforcing patents in the era of 3D printing*, 10 J. INTELL. PROP. L. PRAC. 850 (2015) [hereinafter 'Ballardini, Norrgård, and Minssen'].
[59] Shardha Rajam & Adya Jha, *supra* note 21.
[60] The Patents Act 1977, c. 37, §60(5)(a)(UK).
[61] OSBORN, *supra* note 4.
[62] Wilbanks, *supra* note 53.
[63] OSBORN, *supra* note 4.
[64] Ballardini, Norrgård, and Minssen, *supra* note 58.
[65] Stefan Bechtold, *3D Printing, Intellectual Property and Innovation Policy*, 47 IIC INT. REV. INTELL. PROP. COMPETITION L. 517–36 (2016) [hereinafter 'Bechtold'].

pay for damages.[66] Such fruitless lawsuits may also expose the right holder to the public ire and reputational harm.[67]

Patent law still potentially poses a barrier to some extent because a certain amount of infringing activity via 3D printing may be identifiable and actionable when start-ups grow and become known. Entrepreneurs cannot simply disregard their liability under patent law presuming that their infringing activity will remain anonymous. Some patent holders will inevitably discover online postings of items infringing their patents. They may sue individuals or small businesses for infringing reconstruction if they are too strict about the enforcement of their patent rights.[68]

B. Liability of Intermediaries Storing and Distributing CAD Files

Making CAD files available online, to enable distributed manufacturing away from control of the right holder, may have legal implications because the accessible files can be modified via software tools and 3D printed without right holder's approval. Holding CAD file sharing platforms or services, like Thingiverse, liable for indirect infringement may seem an attractive option to right holders because the alternate approach of suing direct infringers is costly and cumbersome.[69] Patent holders, under most patent laws, can sue any centralized facilitators for indirect infringement who provide means to enable infringement of their patent.

In the EU, under Art. 26(1) of the European Community Patent Convention 1989 (CPC), third parties or intermediaries can be held liable for indirect infringement if they, 'supply or offer to supply within the territories of the Contracting States a person, other than a party entitled to exploit the patented invention, with means, relating to an essential element of that invention, for putting it into effect therein, when the third party knows, or it is obvious in the circumstances, that these means are suitable and intended for putting that invention into effect.'[70]

It is unclear whether CAD files qualify as a 'means' for the purpose of indirect infringement. Some scholars see CAD files as 'a powerful tool that, in a world of ubiquitous 3D printers, renders the possessor of the file just as satisfied as if he [or she] possessed the physical object itself.'[71] Despite being a powerful tool, CAD files may not qualify as 'means' in the legal sense. In the absence of a

[66] Lucas S. Osborn, *Primer on Intellectual Property Law*, *in* 3D *Printing and Intellectual Property* 42–59 (2019); *See* more Lucas S. Osborn, *Patents – Direct Infringement, Individual Infringement, and "Digital" Infringement*, *in* 3D PRINTING AND INTELLECTUAL PROPERTY 82–103 (2020) [hereinafter 'Osborn'].
[67] Id.
[68] Wilbanks, *supra* note 55.
[69] Bechtold, *supra* note 65.
[70] Council of Europe, *Agreement relating to Community patents - Done at Luxembourg, 15 December 1989.*, 30/12/1989 89/695/EEC, OFF. J. L 401 (1989), https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:41989A0695%2801%29:EN:HTML [hereinafter 'Europe'].
[71] Timothy R. Holbrook & Lucas S. Osborn, *Digital Patent Infringement in an Era of 3D Printing*, 48 UC DAVIS L. REV. 1319 (2015).

clear definition, it remains questionable what constitutes 'means.' Historically, there has been an emphasis on the physical or tangible nature of means, which excludes abstract instructions, plans, or drawings from the definition of this term.[72] CAD files, being purely digital entities, are neither physical nor tangible.[73]

It is important to consider whether the CAD file is related to an essential element of the invention. It is a very fundamental concept in patent law that 'one only infringes what is claimed in the patent. It does not matter what the inventor thinks the invention is, or what is described in the patent's other text – the patent claims govern whether someone infringes or not.'[74] The CAD file or digital version of the invention is generally not mentioned in the patent claims. In almost every case, 'a patent holder has a patent only on the physical device, not a digital version of it.'[75] The CAD file is merely a blueprint or a set of technical instructions which is 'neither part of nor embedded in the physical device.'[76] The digital representation of the object continues to exist independently even after the physical object is printed out.[77]

It is also important to consider whether the supplied means are suitable and intended to exploit the invention. It is a requirement under Art. 26(1) of the CPC 'that these means are suitable and intended for putting that invention into effect.'[78] Access to the CAD file does not necessarily enable one to wrongfully put the invention into effect. As noted by Rosa Maria Ballardini and others, 'the accurate materialization of the physical object from the digital CAD file is not a simple click of a button but implies considerable technical expertise.'[79]

Knowledge and specific intent are also important because liability for indirect infringement arises, under Art. 26(1) of the CPC, 'when the third party knows, or it is obvious in the circumstances, that these means are suitable and intended for putting that invention into effect.'[80] In the context of 3D printing, knowledge refers to whether the digital file's supplier knew or 'whether it would have been obvious from the circumstances, that such a CAD file would be intended to be used in an infringing way by the person downloading that file.'[81] This highly subjective element makes it extremely difficult to prove indirect infringement in a court of law. Knowledge and specific intent

[72] Ballardini, Norrgård, and Minssen, *supra* note 58.
[73] *Id.*
[74] Osborn, *supra* note 66.
[75] Lucas Osborn, *3D Printing as Indirect Patent Infringement Amid COVID-19*, LAW 360 (Mar. 20, 2020), https://www.law360.com/articles/1255547/3d-printing-as-indirect-patent-infringement-amid-covid-19.
[76] Ballardini, Norrgård, and Minssen, *supra* note 58.
[77] *Id.*
[78] Europe, *supra* note 70.
[79] Ballardini, Norrgård, and Minssen, *supra* note 58.
[80] Europe, *supra* note 70.
[81] Ballardini, Norrgård, and Minssen, *supra* note 58.

are hard to prove in court litigation because 'one must prove knowledge of the specific patent at issue, not merely knowledge that the 3D printed product may be covered by various patents.'[82] As noted by Lucas Osborn:

"Indirect infringement is analogous to aiding and abetting a crime. It is more difficult to prove than direct infringement because the law typically requires the rights holder to prove that the indirect infringer knew of the IP [intellectual property] right and, in some sense, understood that there was infringement. In other words, innocent indirect infringement, even on a massive scale, is not actionable in most cases."[83]

In most jurisdictions, the court will also consider whether or not a recipient of a CAD file actually 3D printed the digital file.[84] Patent holders may find it extremely difficult to prove such infringing activity, especially if it is performed from the privacy of one's home. As patent laws are territorial in nature, complex questions may arise if the infringing activity takes place outside the country of protection or the granting jurisdiction.[85] Such a situation, resulting from cross-border transmission of digital data, is very much possible because the CAD files are shared across the globe over the Internet.[86] Realistically, the option of suing CAD file sharing intermediaries for indirect infringement is not as attractive as it may appear before undertaking detailed analysis of its practical and legal implications.

C. Liability of Physical Suppliers of Printers and Cartridges

Another approach to control infringing activity may be to 'target the problem further up the chain' by suing the manufacturers and/or suppliers of 3D printers and cartridges.[87] In order to be able to 3D print a digital file, access to a 3D printer and printing materials is a basic requirement. A broader range of infringing activity cannot be possible without an intermediary role of these actors. As a business strategy, it is profitable to sue such actors as they are likely to have financial resources to pay monetary damages.

Liability of suppliers of printers and cartridges will depend on the specific facts of each individual case. Infringement is not inevitable from the use of a 3D printer as 'a printer could be used entirely legitimately, for example by a designer to print his own design.'[88] 3D printers are generic machines. They are not designed or intended to print infringing items. They 'print whatever the CAD file

[82] Eckstein, *supra* note 57.
[83] Osborn, *supra* note 66.
[84] Osborn, *supra* note 75.
[85] Rosa Maria Ballardini et al., *3D Printing, Intellectual Property and Innovation: Insights from Law and Technology* (Wolters Kluwer, 2017) 70.
[86] Davis, *supra* note 1.
[87] Iona Silverman, *Optimising protection: IP rights in 3D printing*, 38 EUR. INTEL. PROP. REV. 5–10 (2016).
[88] *Id.*

tells them to print, including staple products.'[89] It is important to note here that staple commercial products are exempted from indirect infringement under Art. 26(2) of the CPC.[90] Actions against suppliers of printers and cartridges may also fail 'through lack of the required knowledge and intention.'[91] These actors have no obligation to possess knowledge of underlying patents. They are less likely to know if a particular product is patented because searching for patents and interpreting patent claims are highly specialized tasks which require significant legal knowledge.[92] These actors cannot be expected to bear this additional burden in the absence of any binding obligation to do so.

It would be an absurd idea to hold different actors liable for indirect infringement. It is not in the public interest to broaden the scope of liability without limits. As noted by Lucas Osborn:

"The hallmark of indirect infringement is assisting others in infringing. 'Assistance' could theoretically encompass a potentially large amount of activity. Anyone who sells a 3D printer has in one sense assisted a buyer who printed an infringing article. So too has the 3D printing 'ink' maker, the electricity provider that helped power the 3D printer, and the shipping company that transported the 3D printer from the manufacturer."[93]

The public interest may be undermined, and technological development may be hampered if liability is imposed on a broad range of actors for infringing use of technologies, that have clear non-infringing uses, especially if such actors have no means to control the infringing activity.[94]

D. Liability of 3D Printing Service Bureaus

3D printing service bureaus are commercial facilities that own 3D printing tools and provide printing services at a certain cost.[95] If a 3D printing service bureau prints an infringing item on demand, it may be held liable for direct infringement. 'Making' the patented object is an exclusive right of the patent holder. 3D printing service bureaus directly infringe upon this exclusive right by actually printing out the tangible object. In case of primary liability claims, the patent holder does not need to prove that the 3D printing service bureau knew that the printing job would

[89] Ballardini, Norrgård, and Minssen, *supra* note 58.
[90] Europe, *supra* note 70.
[91] Ballardini, Norrgård, and Minssen, *supra* note 58.
[92] OSBORN, *supra* note 4.
[93] *Id.*
[94] *Id.*
[95] Ballardini et al., *supra* note 36, at 183.

violate the patent holder's rights. As these service providers charge fee and do not print privately, the exception of private non-commercial use is unlikely to apply to them.[96]

Society may lose the benefit of 3D printing service bureaus if providers of this valuable service are pushed out of the business because of exposure to patent infringement suits and excessive costs of patent litigation. In order to retain this service for society's benefit, 'the law should provide a safe harbor framework … [to] insulate 3D print shops from liability for printing when they did not know – and, perhaps, had no reason to know – that the items were patented.'[97]

Even if 3D print shops or service bureaus struggle to continue their business model because of strict liability under patent law, it should be a concern only for those entrepreneurs who cannot afford to buy their own 3D printers and rely on these services to fulfil their orders. Not as many entrepreneurs will be impacted if such services go out of business in a worst-case scenario. The costs of 3D printers and printing materials are already affordable and are further dropping over time.

IV. CONCLUSION

3D printing is a disruptive enabling or empowering technology. This unique method of manufacturing is well-suited to help creative individuals harness their entrepreneurial potentials. 3D printing offers many benefits to entrepreneurs in terms of expanding the scope of possibilities and lowering the costs of market entry. It opens up new exciting possibilities because of its potential for personalized and on-demand manufacturing. With low infrastructural needs and a growing enabling ecosystem, this technology enables start-ups to get off the ground quickly without incurring prohibitively high costs.

The patent law system is not well-equipped to deal with the challenges posed by 3D printing. Large-scale patent infringement can be possible because protected products can be replicated by using digital design files either created with the help of 3D scanning applications or accessed on the Internet. What is particularly concerning for patent holders is that a lot of patent infringement, via digital fabrication tools, happens away from control. It is hard for patent owners to know who is printing what. Even if they develop tools to track infringement, suing countless individual infringers is an unattractive and inefficient business strategy because individuals generally have limited resources to pay monetary damages.[98]

[96] OSBORN, *supra* note 4.
[97] *Id.*
[98] Bechtold, *supra* note 65.

It can be foreseen that there will be calls for new legislation that provides broader protection to safeguard commercial interests of patent owners. Patent holders will seek more legal tools to control the creation and dissemination of digital files. While reforming patent laws and policies, it is important to ensure that enforcement of patent laws and policies does not prevent entrepreneurs from making full use of the unique capabilities of 3D printing. The primary objective must be to make this revolutionary technology available to society. As argued by Rosa Maria Ballardini and others, 'from a policy perspective, it may be important to try to develop legal tools that would exempt these suppliers [of the CAD files and 3D printing services] from liability in order for 3D printing technology to be diffused.'[99] Stringent patent laws and costly patent litigation should not be allowed to harm the growth potential of 3D printing technology.

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[99] Ballardini et al., *supra* note 36, at 183.

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COPYRIGHT AND THE PRINCIPLE OF EXHAUSTION IN THE CONTEXT OF ACCESS TO KNOWLEDGE

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Abstract

There has been an increasing overlap and conflict surrounding the principles governing Intellectual Property ["IP"] Law and Human Rights ["HR"]. Through this paper, the author contends that the IP regime should be used as a facilitative tool to achieve broader HR objectives, such as access to knowledge and educational resources. To that end, this paper will specifically look at the principle of exhaustion as an essential tool for increasing access to educational material across the world. The paper will first look at how different international IP and HR treaties and Declarations are interpreted, with regard to access to educational material and the doctrine of exhaustion. It will also look at how different courts, both globally and domestically, have interpreted this doctrine, specifically with respect to educational books and publications. It argues that a universal doctrine of exhaustion, especially pertaining to educational material, should be implemented because the people involved in most cases are students and academicians. This argument is then looked at from the perspective of the digital realm and how this doctrine is applied to e-books, e-libraries etc. Finally, the paper argues for permitting the operation of shadow libraries such as Sci-Hub and Lib-Gen so as to increase access to articles and books, which are usually restricted on account of expensive pay-walls.

I. INTRODUCTION

One of the most contentious debates in the copyright regime is the question of balancing two interests – the rights of copyright holders and the general public's access to knowledge resources. The underlying theory supporting the premise of copyright is based on the "incentive" granted to the creators of different works, to ensure there is constant innovation and contribution in and to society. It is also necessary to draw the line between overprotecting the rights of the author and ensuring access of these works by people.[1] Article 7 of the Trade-Related Aspects of Intellectual Property Rights ["TRIPS"] stipulates explicitly that the protection of Intellectual Property ["IP"] should *balance* different interests for the overall public welfare.[2] It thus becomes important to

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[1] George H. Pike, *An Update on Orphan Works,* 24(7) INFO. TODAY 1 (2007).

[2] Agreement on Trade-Related Aspects of Intellectual Property Rights, Article 7, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1C, 1869 U.N.T.S. 299, 33 I.L.M. 1197 [hereinafter TRIPS].

balance the right to access knowledge on one hand and the rights of the copyright owners on the other hand.

The Doctrine of Exhaustion is an important principle that needs to be looked at in the context of copyright law and access to knowledge, especially in developing countries and from students' perspective. It implies that the owner of a piece of work would lose control over the distribution of its copy once it has been legitimately sold.[3] A subsequent phenomenon resulting from this doctrine is 'parallel importation', often recognised as 'grey market' trade.[4] Parallel importation is when an "original copyright product (i.e., produced by or with the permission of the copyright owner in the manufacturing country) placed on the market of one country, is subsequently imported into a second country without the permission of the copyright owner in the second country."[5] While this practice is not looked upon favourably by copyright owners, previous instances have proved that it provides people with different alternatives to a product and ensures economic feasibility in availing books and other essential products.

To that end, the *second* part of the paper will look at the recognition of Access to Knowledge and the Doctrine of Exhaustion in international IP and human rights treaties and their interpretations. The *third* part of the paper will look at the significant developments and important judicial opinions on this principle, specifically relating to access to books and informational material. It will also look at the expansion of this principle in the digital context and the need to rethink its contours. It will look at the challenges facing this application and the recent movements towards combating them as well as the need for a uniform doctrine of exhaustion. The *fourth* and final part of the paper will look at how the exception of fair dealing has been applied to increase accessibility and how it could be further modified to eliminate the existing hindrances in the regime.

II. ACCESS TO KNOWLEDGE VIS-À-VIS INTELLECTUAL PROPERTY RIGHTS

The underlying motivation driving copyright law while discussing academic works is considerably distinct compared to other IP fields. Specifically, the primary incentives behind producing scholarly works are not solely based on monetary compensation, but instead thrive on reputation, dissemination and creating awareness, increasing scientific development, professional advancement, etc.[6] As such, copyright plays a fundamental role in the promotion of knowledge,

[3] Enrico Bonadio, *Parallel Imports in a Global Market. Should a Generalized International Exhaustion be the Next Step?,* 33 EUR. INTELL. PROP. REV. 153 (2011).
[4] Christopher Heath, *Parallel Imports and International Trade*, WORLD INTELLECTUAL PROPERTY ORGANISATION, https://www.wipo.int/edocs/mdocs/sme/en/atrip_gva_99/atrip_gva_99_6.pdf (last visited May 24, 2022).
[5] COPYRIGHT AND ACCESS TO KNOWLEDGE: POLICY RECOMMENDATIONS ON FLEXIBILITIES IN COPYRIGHT LAWS 23 (Consumers Int'l. 2006).
[6] PETER SUBER, OPEN ACCESS 3-4 (MIT Press 2012).

and the regulation of the system directly correlates with the overall well-being and advancement of society.

A. International Human Rights Treaties

Several international treaties and declarations have recognised the right to knowledge and access to resources as a Human Right ["HR"]. Firstly, the Universal Declaration of Human Rights ["UDHR"] lays down that the right to education should be compulsory, free and equally accessible to all individuals.[7] This right is not restricted to education only in the normative sense but would also include the dissemination of knowledge and the right to access resources and technologies for availing such education.[8] It also provides the right to equally participate in cultural life and utilise the benefits of scientific developments made in society.[9] Secondly, the International Covenant on Economic Social and Cultural Rights ["ICESCR"] recognises the rights of an individual to "enjoy the benefits of scientific progress" in society while also ensuring protection to the creators of scientific, literary or artistic works.[10] These provisions point out that the mere availability of resources would be insufficient. Rather, States must take active steps to make resources more accessible and affordable. This also portrays the 'capabilities approach' as propounded by Amartya Sen, which assesses social arrangements based on the freedoms that people have to utilise them,[11] rather than the mere availability of a particular right.

B. International Intellectual Property Rights Treaties

A brief analysis of the various IPR treaties will point out that copyright acts as a functional tool in facilitating other inherent rights as mentioned above.[12] For instance, the TRIPS agreement under Article 7 states that the IPR regime should contribute to "technological innovation and to the transfer and dissemination of technology", balancing the advantage of both the creators as well as the end-users and done in a manner beneficial to the overall "social and economic welfare" of

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[7] Universal Declaration of Human Rights, Article 26.1, G.A. Res. 217 (III) A, U.N. Doc. A/RES/217(III) (Dec. 10, 1948) [hereinafter UDHR].

[8] United Nations Educational, Scientific, and Cultural Organisation, *Recommendation concerning Education for International Understanding, Co-operation and Peace and Education relating to Human Rights and Fundamental* Freedoms (Nov. 19, 1974*),* https://www.ohchr.org/en/resources/educators/human-rights-education-training/3-recommendation-concerning-education-international-understanding-co-operation-and-peace-and.

[9] UDHR, *supra* note 7, art. 25.1.

[10] International Covenant on Economic, Social and Cultural Rightsart. 15, Dec. 16, 1966, 6 I.L.M. 360 (1967), 993 U.N.T.S 3.

[11] Sabina Alkire, *The Capability Approach and Human Development*, OXFORD POVERTY AND HUMAN DVEELOPMENT INITIATIVE, *avcailable at* https://www.ophi.org.uk/wp-content/uploads/OPHI-HDCA-SS11-Intro-to-the-Capability-Approach-SA.pdf (last visited Oct. 18, 2021).

[12] Uchenna Felicia Ugwu, *Reconciling the Right to Learn with Copyright Protection in the Digital Age: Limitations of Contemporary Copyright Treaties*, 12 L. DEV. &REV. 41 (2019); U.N., UN Economic and Social Council, Committee on Economic, Social and Cultural Rights, The right of everyone to benefit from the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he or she is the author (article 15, paragraph 1 (c), of the Covenant), General Comment No. 17 (2005) dated Jan, 12, 2006 , U.N.Doc. E/C.12/GC/17 (2006).

society.[13] Similarly, Article 8 provides that while formulating IPR law, states should also keep in mind the promotion of public interest, specifically in sectors of vital importance and for the overall development of society.[14] These two provisions of the TRIPs agreement can be seen as the interpretive provisions for the treaty, indicating that copyright law does not exist to merely grant protection to the authors. It should also be balanced adequately with the rights that people hold to access such works for the overall welfare of society.[15] The TRIPS also specifies the importance of reducing the impediments to free trade.[16]

The Berne Convention on the Law of Copyright provides for an exception in using protected work while teaching or for educational purposes.[17] However, this right to access does not exist as an independent right and continues to be enforced as an exception, which poses its own problems. Apart from the risk of uncertainty and excessive discretion, implementing a right as an exception would negate the importance of such a right in the first place.[18] In a positive step towards expanding the accessibility of resources, the international community has taken active measures to reduce accessibility barriers for visually impaired and disabled individuals. For instance, the Marrakesh Treaty lists down the obligations on states for making copyrighted as well as other works accessibly to visually impaired individuals,[19] rather than enforcing them as exceptions under the Berne Convention. However, there hasn't been commensurate progress with respect to making educational and academic material accessible to the general public. This theme also becomes important in the context of the digital spectrum, where there haven't been adequate steps taken to expand the principles of both Access to Knowledge and copyright law while dealing with technological resources and online education. This will specifically be looked at in the final part of the paper.

III. UNDERSTANDING THE DOCTRINE OF EXHAUSTION IN THE CONTEXT OF ACCESS TO KNOWLEDGE

A. Doctrine of Exhaustion

The TRIPs Agreement leaves the enforcement of the principle of exhaustion upon each member state, and as such, one would have to look at the respective domestic laws to ascertain what its

[13] TRIPS, *supra* note 2.
[14] TRIPS, *supra* note 2, art. 8.
[15] Ugwu, *supra* note 12, at 47.
[16] TRIPS, *supra* note 2, Preamble.
[17] Berne Convention for the Protection of Literary and Artistic Works, Article 10, Sept. 9, 1886, 828 U.N.T.S. 221.
[18] David Nimmer, *"Fairest of Them All" and Other Fairy Tales of Fair Use,* 66 L. & CONTEMP. PROBS. 263, 28 (2003).
[19] Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled, June 27, 2013, 52 I.L.M. 1312.

scope and applicability would be.[20] This principle impedes the complete enforcement of IPR and provides an important tool for improving access to resources across boundaries. As the discretion about the enforceability of this principle is left upon the respective states, there exists considerable confusion on this matter. Opinions backed by differing movements have upheld the importance of this principle towards granting better access to resources.[21] Broadly, there are three different types of exhaustion, i.e., national, regional, and international exhaustion.[22] National exhaustion provides the utmost protection to the owner of IP as it stipulates that once a product is sold, the copyright owner would cease to have control over the work within the domestic boundaries of the country. On the other hand, regional and international exhaustion provides for broader geographic markets and narrower protection to the owners. International exhaustion would mean that the copyright owner would cease to have control once their work is sold in any part of the world, while regional exhaustion includes within its ambit a broad geographical region such as the European Union. A system of international exhaustion would thus provide for more accessibility across different countries.

An interpretation of the provisions of the Indian Copyright Act ["the Act"] would point towards the fact that it follows the system of "international exhaustion". Section 14(a)(ii) of the Act, while providing the owner of a Copyright with the right to distribute their works, also lays down the limitation that it would not extend to copies that are "already in circulation."[23] The wording of the provision is such that the nature of exhaustion cannot be ascertained. One might argue that since the wording does not stipulate copies already in circulation 'in India' explicitly, it should be interpreted to mean that the country would follow the principle of international exhaustion. The argument supporting the interpretation as national exhaustion is that the Act is applicable only in India, and, therefore, this provision would have to be interpreted within the domestic boundaries of the country.[24] This argument, however, fails – by recognising a copy already in circulation outside the territory of India, it cannot be said that the Copyright Act has extra-territorial application.

[20] TRIPS, s*upra* note 2, art. 6.
[21] NAT'L COUNCIL OF APPLIED ECON. RESEARCH, THE IMPACT OF PARALLEL IMPORTS OF BOOKS, FILMS / MUSIC AND SOFTWARE ON THE INDIAN ECONOMY WITH SPECIAL REFERENCE TO STUDENTS (NCAER 2014).
[22] Vincent Chiappetta, *The Desirability of Agreeing to Disagree: The WTO, Trips, International IPR Exhaustion and a Few Other Things*, 21 MICH. J. INT'L L. 333 (2000).
[23] The Copyright Act, 1957, §14(a)(ii), No. 14, Acts of Parliament, 1957 (India).
[24] Raman Mittal, *Whether Indian Law Allows Parallel Imports of Copyrighted Works: An Investigation*, 55 J. INDIAN L. INST. 504 (2013).

Section 14, read along with section 51 of the Act, establishes that the import of copyrighted work into India would be illegal only in those cases where the product was an infringing copy. Thus, as long as the import and the channel of trade is legitimate, there can be no obstacles to such import.

However, judicial opinions have not always upheld the principle of international exhaustion and have prioritised territorial exhaustion in copyrighted works. Further, there has been no explicit discussion on the validity of parallel imports in the context of section 14 of the Act. In the 1985 case of *Penguin Books Ltd v. M/s India Books Distributers,*[25] the court held that the importation, publication and distribution of books from different countries (the USA in this case) would amount to the importation of infringing copies of the product. However, the rationale behind restricting parallel importation would not remain relevant to the current analysis since, at the time, section 14 of the Act granted owners of Copyright an "exclusive right to publish" their works without other restrictions. After the TRIPs negotiation in 1994, section 14(a)(ii) was amended to its present version, which does not grant owners the right to control works that are "already in circulation". However, even after the amendment to section 14 of the Act, the courts have prohibited the parallel import of books. For instance, in *Eurokids International Pvt Ltd v. India Book Distributors,* the court in 2005 held that importing books from an American publisher into India would amount to an infringement, given that there existed a licensed publisher of the books in the Indian territory.[26] They looked at the contractual agreement between the parties and relied on the decision laid down in the *Penguin Books* case, even though the law had changed during this time. Therefore, it should be held to be *per incuriam*.[27]

The previous precedent in the case of *John Wiley and Sons Inc v. Prabhat Chander Kumar* points to the fact that parallel exports is not permitted in those cases where books are priced and sold exclusively in certain jurisdictions.[28] In the given case, the defendants purchased books legitimately at a substantially cheaper rate in India and put them up for sale in territories outside what was explicitly permitted. While this does not answer the question of the validity of parallel imports, it unambiguously states that such trade would not be permissible. However, even this decision is flawed. Once a book is legitimately purchased within the country, matters relating to export into other countries and whether they would constitute infringing copies should be determined by the

[25] Penguin Books Ltd v. M/s India Books Distributers, AIR 1985 Del. 29.
[26] Eurokids International Pvt. Ltd. v. India Book Distributors Egmont Books Ltd., (2005) 6 Bom CR 198.
[27] Pranesh Prakash, *Exhaustion: Imports, Exports, and the Doctrine of First Sale in Indian Copyright Law*, 5 NUJS L. REV. 635 (2012).
[28] John Wiley & Sons Inc. v. Prabhat Chander Kumar Jain, ILR (2010) 5 Del 510.

courts of that territory. This highlights the fact that the lack of uniform enforceability regarding doctrines that have conflicting international applications would lead to ambiguity.[29]

B. Digital Exhaustion

The digital arena poses its unique set of challenges in applying the doctrine of exhaustion. Technology has made the dissemination and distribution of works effortless, thus, giving just cause for concern to the owners of copyrighted works.[30] It becomes important to examine the applicability of this principle in light of recent developments in this sphere, including the emergence of e-books, music streaming platforms such as sound-cloud as well as the open access movement, including platforms such as Sci-Hub and Lib-Gen and even digital libraries.

The WIPO Treaty on Copyright ["WTC"] firstly provides that adequate protection must be provided to the creators of work against the circumvention of effective technological measures implemented to protect the work.[31] This has been implemented in several countries, including the USA, parts of Europe and South Africa to a certain extent.[32]

The Indian Copyright Act today provides for the doctrine of exhaustion in the context of literary, dramatic and musical works, excluding software. There has been no expansion to accommodate the advancements made in technology.[33] Further, the courts have resorted to a narrow interpretation of this provision and have restricted their understanding to only those works which have been explicitly covered. For instance, the court in the case of *Warner Brothers Entertainment Inc. v. Santosh V.G* stated that the principle could not be expanded to cinematographic films or other mediums of expression.[34] This narrow reading of the doctrine would curtail the accessibility of resources even in the educational sphere, especially with the shift to an online mode of education.

In December 2020, a group of publishers filed a case in the Delhi High Court against sci-hub and Lib-Gen. They contended that Indian ISP providers should block these sites, as they served as a means to bypass the paywall required to access these materials. This is not the first time that lawsuits have been filed against these websites, which has also led to a ban on these pages in different countries. Even though these websites provide important research and academic resources to academicians and students in developing countries, they might not be protected under the exception of fair use or the right of first sale. In this scenario, academic works are not

[29] Bonadio, *supra* note 3.
[30] Eric Fleischmann, *The Impact of Digital Technology on Copyright Law,* 8 Computer L. J. 1 (1987) 23.
[31] WIPO Copyright Treaty, art. 11, Dec. 20, 1996, 2186 U.N.T.S. 121.
[32] Tana Pistorius, *Copyright in the Information Age: The catch-22 of digital technology,* 20 CRITICAL ARTS, no. 1, 2006.
[33] The Copyright Act, 1957, No. 14, Acts of Parliament, 1957 (India).
[34] Warner Bros. Entertainment Inc. v. Santosh V.G., 2009 SCC OnLine Del 835.

legitimately purchased in the first instance but are instead pirated and accessed through illegal means. However, there is a need to provide for alternative platforms through which individuals can access resources as several students, academicians, and researchers rely on these services. There is a growing movement pushing towards legitimising the operations of these platforms to improve accessibility across the globe.

This needs to be contrasted with the development of the e-books market. While there has been no Indian case dealing with the issue, the Court of Justice of the European Union has distinguished between physical books and e-books.[35] It held that e-books would be considered "communication to the public" as opposed to the sale of physical books classified as "distribution". It was held in the case that the sale and purchase of e-books would not be hit by the right of first sale, and the ultimate buyer would not have the right to control the further use and distribution of the book. Even in the Indian scenario, conditions restrict the end-users from further transferring the copies. This becomes problematic to the extent that there is increasing demand on libraries to provide e-books instead of physical books. Without the right to lend e-books, the scope of accessibility to resources decreases.[36] The position in the USA is similar and was discussed in the case of *Capital Records v. Re. Digi,* where it was held that the sale of used digital music files bought through iTunes would not be covered under the doctrine of first sale and would amount to an infringement of Copyright. What is contentious in this decision is that the court did not consider that for every transfer of a song, the original file was deleted and still considered this transmission as reproduction.[37]

Devices such as kindle merely license books to the end-users and do not sell the product, like a physical book.[38] At first glance, this provision seeks to protect Copyright owners, however, it is often perceived as 'extra-copyright law', as it is a loophole being used outside the scope of the copyright regime.[39] This limits the end user's rights from further transmission of the work and restricts the creation of a legitimate, secondary digital market.

A positive advancement in this direction was the establishment of the 'National Emergency Library' in the middle of the pandemic. It operated on the premise of simultaneous, time-bound lending and the maintenance of an "owned to loaned ratio". However, during the pandemic, they

[35] Case C-263/18, Nederlands Uitgeversverbond v. Tom Kabinet Internet BV,ECLI:EU:C:2019:1111
[36] Balu Nair, *Publisher Restrictions On Ebooks & Impact In India - Spicy IP,* MEDIANAMA (Oct. 19, 2021), https://www.medianama.com/2016/07/223-publisher-restrictions-ebooks-impact-india-spicyip/.
[37] Capitol Records, LLC v. ReDigi Inc., 934 F. Supp. 2d 640 (2d Cir. 2018).
[38] *Kindle Store Terms of Use*, AMAZON, https://www.amazon.com/gp/help/customer/display.html?nodeId=200771440 (last updated Mar. 15, 2016).
[39] *Growth of A Digital First Sale Doctrine – An Assessment of US and Indian Laws*, ROSTRUM'S L. REV., (Mar. 25, 2016) https://journal.rostrumlegal.com/growth-of-a-digital-first-sale-doctrine-an-assessment-of-us-and-indian-laws).

did not adhere to this premise and made books available simultaneously worldwide, thus violating and severely threatening the author's copyright over the work.[40] Even India's 'national digital libraries' opened up books on the digital platform.[41] Permitting the lending and borrowing of e-books, similar to the operating of a library, where a validly purchased e-copy would be made available to only one person at a time, would further strengthen access in an increasingly digitised world.

Though there is no clarity regarding digital exhaustion, even in international treaties, the "agreed statements concerning the disposition related to distributed rights and exhaustions" adopted on the same day as the WTC stipulated that the term "copies" would be restricted to tangible copies that could be put in circulation only.[42]

C. Need for a Uniform Doctrine of Exhaustion

Thus, there is a need to lay down the provisions for digital exhaustion of rights in the international and domestic context to increase accessibility even in this realm. Recognising this principle would enable the creation of an alternate market in the digital spectrum and would grant people equal opportunity to access resources.[43] Keeping in mind the need to balance the rights of the public and the rights of the owner, the author suggests creating a uniform system of exhaustion while dealing with the transfer of digital works. Keeping in mind the possibility of excessive and easy reproduction, it is important to implement certain technological measures, which have been adopted in the past for digital libraries. Among other things, digital exhaustion of e-books, movies, music etc. should be accompanied by a "delete and forward" feature which would ensure that there is no reproduction. Among other measures, a ratio of bought and borrowed products and encryption should be adopted. By ensuring that anti-circumvention measures are also implemented, one can ensure that such technical protections for copyright are not misused. It is thus possible to ensure that access to resources on the digital platform is enhanced by recognising digital exhaustion, while also taking adequate steps to protect the owner's rights.

[40] *Internet Archive Continues To Harm Authors,* COPYRIGHT ALLIANCE, https://copyrightalliance.org/trending-topics/internet-archive-harms-authors/ (last visited Oct. 19, 2021).
[41] Joydeep Thakur, *National Digital Library opens up its digital contents; builds Covid-19 research repository*, HINDUSTAN TIMES, https://www.hindustantimes.com/education/national-digital-library-opens-up-its-digital-contents-builds-covid-19-research-repository/story-36M8asvDd9GSMiKXTMDN4H.html (last updated Apr. 26, 2021).
[42] WIPO, AGREED STATEMENTS CONCERNING THE WIPO COPYRIGHT TREATY, 2-3(1996).
[43] Agata Drzewińska, *Digital Exhaustion in European Union* (Unpublished Thesis, Uppsala Universitet 2019), https://www.diva-portal.org/smash/get/diva2:1325173/FULLTEXT01.pdf.

IV. FAIR DEALING

While access to educational material is usually protected under the head of fair dealing,[44] it becomes important to establish a bright-line rule for access to all resources. A case-by-case determination would leave it to the judges' discretion to determine what would constitute educational materials, thereby bringing in the risk of bias and prejudice. Further, the fair dealing exception has not explicitly dealt with digital courses, MOOCs, distance learning etc. In these scenarios, granting a uniform, international exhaustion of rights would reduce the ambiguity prevalent in the field. This principle is widely used in libraries and universities, which enables the distribution of the legitimately procured copy.

In a landmark case, decided in the Supreme Court of the United States of America,[45] Kirtsaeng, a student studying at Cornell imported copies of textbooks manufactured in Thailand from his relatives. These were available at a cheaper rate, and he made a profit by subsequently selling these books in the USA at a slightly higher margin. John Wiley then bought a case against him, and finally, the court held that section 602(1)(a) of the Copyright Act of 1790, which required importers to take prior permission of the owner of the Copyright would also be subject to the Doctrine of First Sale. Thus, any copy legitimately sold, even outside the territory of the USA, could be imported into the country without prior permission of the owner of the work. This makes different options available for purchase and also improves accessibility to books. Uniform application of this principle thus would allow individuals worldwide to access books at rates feasible for them. However, one major criticism which has been put up against this decision is that, by allowing parallel import of books, publishers would resort to increasing the prices of books, even in developing countries, so as to maintain uniformity in their sales and not forgo profits from countries such as the USA. However, market forces in the respective countries would ensure that the prices are adjusted accordingly, thus ensuring that books are easily accessible.[46]

The *Kirstaeng* case most importantly highlights the problems of not recognising the 'right of first sale' in the context of libraries and museums. Not recognising international exhaustion would imply that libraries might have to ask the author's permission before lending the book each time.[47]

[44] The Copyright Act, 1957, § 52(1)(i), No. 14, Acts of Parliament, 1957 (India); The Chancellor, Masters & Scholars of the University of Oxford and Ors. v. Rameshwari Photocopy Services and Ors, 2016 SCC OnLine Del 6713.
[45] Kirstaeng v. John Wiley & Sons, Inc., 568 U.S. 519 (2013).
[46] Ariel Katz, *Copyright, Exhaustion, and the Role of Libraries in the Ecosystem of Knowledge*, 13 ISJLP 81, 88-95 (2016).
[47] R. Anthony Reese, *The First Sale Doctrine in the Era of Digital Networks*, 44 B.C. L. REV. 577, 590 (2002).

It is thus important to recognise the validity of parallel importation for the functioning of a free market, improving trade between countries and for cheaper access to copyrighted material.[48]

A. National Perspective

While the Berne convention contains an exception for teaching purposes, the national IP laws of certain countries also include exceptions for private research and studies, educational purposes etc. Accordingly, one needs to look at these exceptions while analysing the issues surrounding Shadow Libraries. Three publishing houses have recently filed a suit for copyright infringement against Sci-Hub and Lib-Gen in the Delhi High Court. The plaintiffs, in this case, have requested the court to grant a dynamic injunction in their favour, blocking the websites providing access to these platforms.[49] A similar issue was raised in the case of the *University of Oxford v. Rameshwari Photocopy Case,*[50] in the context of unauthorised photocopying of copyrighted, academic material. The court, in this case, had permitted the reproduction of these works to any extent as long as they were produced for educational purposes.

A fair-use analysis includes a four-prong test which courts have often applied in different jurisdictions, especially the USA.[51] The *first* part of the test looks at the 'character' or 'purpose' of the use and whether it has been used for a commercial purpose. Shadow Libraries' primary objective is to improve access to knowledge, and they make no profit in their operations. Further, the purpose for which it is used, i.e., education, usually comes under the broad contours of the fair-use exception listed under domestic laws.[52] The *second* prong of this analysis looks at the 'nature of use'. Works utilised for creative purposes would usually not fall under this exception, while informational and educational content would.[53] As Shadow Libraries provide access to paywalled, published academic works, their operations would likely be exempted.[54] While the *third* factor, i.e., the extent of copying, would probably go against Shadow Libraries, several cases have upheld that reproduction and copying for educational purposes might still be categorised as fair use. For instance, in the *DU Photocopy case,* Justice Pradeep Nadrajog emphasised the "extent justified by the purpose" as a measure to look at this prong. Thus, copying for educational purposes was held to be fair use. The *fourth* and final factor looks at the "effect of the use upon the potential market".

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[48] Aaron Perzanowki & Jason Schultz, *Digital Exhaustion,* 58 UCLA L. REV. 889, 894 (2010).
[49] Anushka Jain, *Case Leaning Against Sci-hub, Says Delhi High Court,* MEDIANAMA (May 18, 2022), https://www.medianama.com/2022/05/223-sci-hub-publishers-lawsuit-hearing-delhi-high-court/.
[50] University of Oxford v. Rameshwari Photocopy Case, 235(2016) DLT 409.
[51] Copyright Act of 1790, 17 U.S.C. §107 (2021).
[52] The Copyright Act, 1957, § 52(1)(i), No. 14, Acts of Parliament, 1957 (India).
[53] Sony Corporation of America v. Universal City Studios, Inc., 464 U.S. 417 (1984).
[54] *Fair Use,* UNIVERSITY OF CALIFORNIA, https://copyright.universityofcalifornia.edu/use/fair-use.html (last visited Nov. 25, 2021).

It is interesting to note that Shadow Libraries have existed for several years, and despite that, publishing houses continue to report profits.[55] As such, there is no discernible impact on the operations of publishing houses as their primary services cater to universities, research centres and other organisations via a subscription fee. Shadow Libraries, on the other hand, seek to disseminate information to students and researchers who do not have such institutional access or whose universities do not have the requisite funding to avail such resources. [56]

Most importantly, looking at the exception carved out in the *DU Photocopy case,* the courts have rightly held that, irrespective of the extent of infringement, it would be permissible if it is done for educational purposes. This creates a strong argument supporting the operation of Shadow Libraries.

Legalising Shadow Libraries would not only provide an impetus in the enforcement of HRs but would also help overcome the existing norm, which expects only *developed* countries to improve access in *developing* countries. It reduces the prevalent biases and provides an equal opportunity to all worldwide, to access free resources without any of the prevailing obstacles. [57]

B. Copyright Issues in the Context of Shadow Libraries

Shadow libraries are a product of digital innovation, and they host pirated and digital copies of academic resources and books, providing free access to people across the world.[58] They were primarily created to respond to economic and political conditions that restricted access to academic resources. [59] Aleksandra Elbakyan, the founder of Sci-Hub, was a Master's Neuroscience student when she began her thesis on biometric scanning. Sci-Hub was a product of personal struggle by Aleksandra as a student and has now turned out to be one of the most significant movements towards open access.[60] Lib-Gen, on the other hand, is a copyright-infringing digital collection of textbooks, scholarly books etc., accessible easily through a straightforward interface.[61] Both Lib-Gen and Sci-Hub have been declared as copyright infringers in a few courts,[62] and their

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[55] Katherine Cowdrey, *Elsevier profits up 3% despite 'steeper' print declines*, THE BOOKSELLER (Feb. 23, 2017), https://www.thebookseller.com/news/elsevier-profits-3-despite-steeper-print-declines-493781.
[56] John Bohannon, *Who's downloading pirated papers? Everyone*, SCIENCE (Apr. 29, 2016), https://www.science.org/doi/10.1126/science.352.6285.508.
[57] B.S Chimni, *Third World Approaches to International Law: A Manifesto,* 8 INT'L CMTY L. REV. 3 (2006).
[58] Joe Karaganis, *Introduction: Access from Above, Access from Below,* SHADOW LIBRARIES: ACCESS TO KNOWLEDGE IN GLOBAL HIGHER EDUCATION 1 (Joe Karaganis ed., 2018).
[59] BALAZS BODO ET. AL., OPEN ACCESS IS NOT A PANACEA, EVEN IF IT'S RADICAL – AN EMPIRICAL STUDY ON THE ROLE OF SHADOW LIBRARIES IN CLOSING THE INEQUALITY OF KNOWLEDGE ACCESS, (University of Amsterdam 2020).
[60] Karaganis, *supra* note 58.
[61] Balazs Bodó, Library Genesis in Numbers: Mapping the Underground Flow of Knowledge*, in* SHADOW LIBRARIES: ACCESS TO KNOWLEDGE IN GLOBAL HIGHER EDUCATION53-55 (Joe Karaganis ed., 2018).
[62] Elsevier Inc. et al v. Sci-Hub et al, No. 1:15-CV-04282l; American Chemical Society v. Sci-Hubd/b/a www.sci-hub.cc, John Doe 1-99, 2017, 1:17-cv-00726-LMB-JFA.

administrators do not oppose this fact. However, there is an almost unanimous moral consensus in the academic sphere about the acceptability of shadow libraries.They represent a bottom-up approach to accessing resources because it is sourced by mutual cooperation between academics, scholars, volunteers, etc., in resistance to the excessive pricing models charged by publishers.[63] Without dwelling into the specifics of how the current publishing system works, it is important to note that the establishment is skewed towards publishing houses as opposed to the authors, and many agreements between the author and publishing house transfer several rights, including copyright, to the publishers.[64] In this light, the author will examine the copyright infringement that shadow libraries engage in against the publishing houses and in some cases, the author.

Article 9 of the Berne Convention lays down the rights granted to authors (the publisher in this case) and includes the exclusive right to authorise reproduction. Shadow libraries transcend paywalls and provide pirated copies of academic works to users, thus infringing the right of the publisher to allow reproduction. Most importantly, article 9(2) permits the union to authorise reproduction in certain situations, as long as it does not "prejudice the legitimate interests" of the author. It has been argued that the operation of shadow libraries has a detrimental impact on the copyright holders as they provide an exhaustive alternative to the authorised works. The Berne Convention provides an exception that is restricted to teaching purposes, not encompassing the broad contours of education transmitted through shadow libraries.

V. CONCLUSION

Throughout this paper, one can see that the doctrine of exhaustion in the realm of copyright plays a fundamental role in increasing accessibility. It is important to provide clarity in this field, both physically and in the digital realm. A uniform regime of exhaustion of rights would benefit the overall society, as price discrimination based on an individual's country or region is now contentious. The distinction between the "first-world" and the "third-world" has blurred. There is a group of financially strong individuals even in developing, third-world countries, and there is an entire group of below-poverty line individuals in first-world countries such as the USA.[65] This group also extends to students and academicians worldwide who cannot afford the high ranged books. Thus, exhaustion of rights creates a secondary market and provides every individual with the equal opportunity to avail resources in any part of the world. This movement towards accessibility would be furthered with the expansion of the principle to the digital realm and

[63] TRIPS, *supra* note 2.
[64] *Understanding Publishing Agreements,* THE UNIVERSITY OF MELBOURNE, https://copyright.unimelb.edu.au/information/copyright-and-research/understanding-publishing-agreements (last visited Oct. 21, 2021)
[65] *Id.*

adequate safeguards for the owners. Digital exhaustion of rights would make books and other material accessible to all individuals at economically feasible rates. Also, with the introduction and increasing popularity of Shadow Libraries, several students and academicians would have the opportunity to access resources that would otherwise be outside their reach, thus contributing to society's overall development and progress.