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## Assessing the Potential Involuntary Effects of New Copyright Laws: A Techno-legal Analysis Based on the Impact of Web 3.0 on Copyright Protection

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# **Assessing the Potential Involuntary Effects of New Copyright Laws: A Techno-legal Analysis Based on the Impact of Web 3.0 on Copyright Protection**

Alvin Hung

## Abstract

As Internet technology evolves, legal professionals and academics must stay current and adapt to these inevitable technological changes. This article investigates the extensive influence of the latest version of the World Wide Web (the Web)—Web 3.0—on copyright laws based on a techno-legal analysis that considers the opportunities and challenges of this new technology. The principal version of copyright laws, the Digital Millennium Copyright Act (DMCA), was enacted in 1998 during the Web 1.0 era, signifying an impending need for appropriate updates in the new Web 3.0 era. This article traces the historical development of U.S. copyright laws by positing it has undergone three phases: illegalization, institutionalization, and criminalization. The article then explores the possible development of new legal frameworks to address the unique challenges of Web 3.0 and the formulation of novel technical solutions in the new phase of decentralization. The article also assesses the possible involuntary effects of new copyright laws that can detrimentally impact privacy, freedom of speech, and fair competition on the Internet. Finally, this article provides recommendations for establishing new copyright laws' parameters in the forthcoming decentralization phase.

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## I. INTRODUCTION

In recent years, many lawyers and law professors have struggled to stay apprised of new trends of the ever-evolving Internet. Before they can fully comprehend the status quo of the Internet, such as Web 2.0, another new trend—Web 3.0—is emerging and starting to perpetuate.<sup>1</sup> This article provides an opportunity to understand why Web 3.0 is the future of Internet trends and how it will influence copyright protection and legislation pertaining to the Internet.

Web 3.0 is expected to bring about a significant change in the way copyrights are managed and protected on the Internet.<sup>2</sup> The decentralized and user-centric nature of Web 3.0 will likely create new challenges for copyright laws and require new legal and technical solutions to address these challenges. Web 3.0 can potentially provide significant changes for legal systems, regulations, and processes. One of the main challenges Web 3.0 will likely pose for copyright laws is the issue of decentralization, especially in the new era of the Internet.<sup>3</sup> Web 3.0 is expected to build on blockchain and other distributed ledger technologies, allowing users to create and share content in a more decentralized manner. This will make it more difficult for copyright owners to track and enforce their rights, as the content may be spread across many different nodes in the network.<sup>4</sup> Another possible challenge Web 3.0 will likely pose for copyright laws is the issue of smart contracts, which are self-executing contracts encoded on the blockchain and can automatically enforce the terms of the contract.<sup>5</sup> This could create new challenges for copyright laws, as smart contracts could be used to automate the licensing and distribution of copyrighted content.<sup>6</sup>

Despite these challenges, Web 3.0 will likely create new opportunities for copyright laws. For example, blockchain and other distributed ledger technologies can create more efficient and transparent systems for managing copyright ownership and licensing. This can help reduce the administrative costs associated with copyright management and make it easier for small content creators to protect their rights.<sup>7</sup> However, a new copyright act may have possible involutory effects, such as

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<sup>1</sup> Faten Adel Alabdulwahhab, *Web 3.0: the decentralized web blockchain networks and protocol innovation*, (2018) 1ST INT'L CONF. ON COMPUT. APPLICATIONS & INFORMATION SECURITY (ICCAIS) IEEE.

<sup>2</sup> Riaan Rudman, and Rikus Bruwer, *Defining Web 3.0: opportunities and challenges*, THE ELECTRONIC LIBRARY (2016).

<sup>3</sup> Nick Vogel, *The great decentralization: How web 3.0 will weaken copyrights*, 15 J. MARSHALL REV. INTELL. PROP. L. 136, 157-159 (2015).

<sup>4</sup> MASSIMO RAGNEDDA, AND GIUSEPPE DESTEFANIS, *BLOCKCHAIN AND WEB 3.0.*, pp. 15-29 (London: Routledge, Taylor and Francis Group, 2019).

<sup>5</sup> Leo Bergquist Meneil, *Blockchains, smart contracts, and stablecoins as a global payment system: The rise of web 3.0.*, 7-12, (2022).

<sup>6</sup> Andreas Bogner, Mathieu Chanson, and Arne Meeuw, *A decentralised sharing app running a smart contract on the ethereum blockchain*, pp. 177-178, PROCEEDINGS OF THE 6TH INTERNATIONAL CONFERENCE ON THE INTERNET OF THINGS (2016).

<sup>7</sup> Abeba N. Turi, and Abeba N. Turi., *Technologies for Modern Digital Entrepreneurship: Understanding Emerging Tech at the Cutting-Edge of the Web 3.0 Economy*, 155, 160-163, CURRENCY UNDER THE WEB 3.0 ECONOMY (2020).

restricting access to information, containing creativity and innovation, stifling competition, and limiting freedom of expression, thereby creating legal uncertainties. Involution, according to the Merriam-Webster Dictionary, is the act or instance of enfolding or entangling, often leading to shrinking or returning to the original state.<sup>8</sup> This preeminent legal issue has to be handled meticulously and with a proper technical understanding of the new technology.

This article looks into the extensive influence of Web 3.0 on copyright laws through a techno-legal analysis that considers both the opportunities and challenges that this new technology poses. It traces the historical development of U.S. copyright laws by positing that they have undergone at least three phases: illegalization, criminalization, and institutionalization. It explores the possible development of new legal frameworks specifically designed to address the unique challenges of Web 3.0, as well as the development of new technical solutions that can help enforce copyright laws in a more decentralized and user-friendly environment. As the new phase of decentralization is emerging, there is a need to assess the possible involutionary effects of the new copyright law that can bring undesirable and detrimental impacts on privacy, freedom of speech, and opportunities for fair competition on the Internet.

Part I of this article introduces the characteristics and evolution of Web 1.0 to Web 3.0. Part II describes the various impacts of Web 3.0 on copyright protection. Part III discusses the development of new copyright laws, focusing on the involutionary effects of these laws, and includes recommendations for setting up the parameters of copyright laws to meet the challenges of Web 3.0.

## II. WEB 3.0 IS COMING

The terms “Internet” and “World Wide Web” (the Web) are closely related and often used interchangeably, but they are not synonymous. The Internet is a global network of interconnected data-processing devices such as computers and smartphones.<sup>9</sup> Meanwhile, the Web is a system of hypertext documents accessed and processed through the Internet.<sup>10</sup> The Web is just one of the mechanisms or services built on the Internet’s underlying infrastructure, along with other Internet services such as emails and online messaging.

The Web started from a simple “read-only” platform, which is now described as Web 1.0.<sup>11</sup> Web 2.0 is the second generation of the

<sup>8</sup> *Involution*, MERRIAM-WEBSTER DICTIONARY, <https://www.merriam-webster.com/dictionary/involution> [<https://perma.cc/4Q22-G398>] (last visited Dec. 10, 2023).

<sup>9</sup> The Internet was first introduced in the late 1960s by the United States Department of Defense. This is based on the explanation provided by The Guardians. Ben Tarnoff, *How the internet was invented*, THE GUARDIAN (Jul. 15, 2016), <https://www.theguardian.com/technology/2016/jul/15/how-the-internet-was-invented-1976-arpa-kahn-cerf> [<https://perma.cc/6BBF-UDRA>].

<sup>10</sup> World Wide Web (WWW), or simply called the Web, is a system of interconnected hypertext documents accessed through the Internet. It was first introduced in 1989 by using a protocol called HTTP (Hypertext Transfer Protocol) to transfer data, with the corresponding locations identified by URLs (Uniform Resource Locators) to allow users to access and retrieve information stored on web servers. This is based on the definition provided by techtarget.com. Rahul Awati, *World Wide Web*, TECHTARGET (Jan. 2023), <https://www.techtarget.com/whatis/definition/World-Wide-Web> [<https://perma.cc/R3KN-823S>].

<sup>11</sup> Chhaya A. Khanzode, and Ravindra D. Sarode, *Evolution of the world wide web: from web 1.0 to 6.0.*, 6 INT’L J OF DIGITAL LIBRARY SERVICES 1, 2 (2016).

internet, emphasizing user-generated content, interactivity, social media, and collaboration through platforms like blogs, social media, and interactive applications.<sup>12</sup> Web 3.0 is a new Internet generation that promises to bring a more intelligent, dynamic, connected, and decentralized Web than Web 2.0. Web 3.0 is built on top of the distributed registry,<sup>13</sup> such as blockchain technology,<sup>14</sup> as well as artificial intelligence (AI),<sup>15</sup> such as machine learning,<sup>16</sup> with possible changes to the course of ownership, protection, jurisdiction, and distribution on the Internet that ensure decentralization.<sup>17</sup> Web 3.0 presents new opportunities and challenges for copyright laws.

#### A. *Web 1.0 and Web 2.0*

Web 1.0 and Web 2.0 are two distinct versions of the Web, representing different phases of the Web's development, each characterized by different attributes and functionalities. It is worth noting that the distinction between Web 1.0 and Web 2.0 is not always clear-cut, and there are varying definitions and interpretations of these terms.

The first phase of the Web is commonly known as Web 1.0, which was introduced in the early to mid-1990s, when the World Wide Web first

<sup>12</sup> TIM O'REILLY, WHAT IS WEB 2.0. 3 (O'Reilly Media, Inc. 2007).

<sup>13</sup> A distributed registry is a decentralized database that maintains a continuously growing list of records across a network of computers or nodes. It provides increased security, transparency, and reliability, as every node has access to the same information. The blockchain is a popular example of a distributed registry that uses cryptographic techniques to ensure the integrity and security of data. This is based on the definition provided by Investopia. Scott Nevel, *Distributed Ledger Technology (DLT): Definition and How It Works*, INVESTOPEDIA (May 31, 2023), <https://www.investopedia.com/terms/d/distributed-ledger-technology-dlt.asp> [<https://perma.cc/3S67-RC52>].

<sup>14</sup> Blockchain technology is a decentralized digital ledger that records and verifies transactions without the need for a central authority. It uses cryptographic algorithms to secure and validate data, ensuring transparency, immutability, and trust among participants. This is based on the definition provided by Synopsis. *Blockchain: Six considerations for securing your software supply chain*, SNYOPSYS <https://www.synopsys.com/glossary/what-is-blockchain.html> [<https://perma.cc/S6WC-NFCC>] (last visited Dec. 10, 2023).

<sup>15</sup> Artificial Intelligence (AI) refers to the development of computer systems that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation. This involves the development of algorithms and models that can learn from data, make predictions, and continuously improve performance through experience. It has numerous applications in areas such as natural language processing, computer vision, robotics, and autonomous systems. This is based on the definition provided by Science Direct. Ida Joiner, *Artificial Intelligence*, SCIENCE DIRECT, <https://www.sciencedirect.com/topics/social-sciences/artificial-intelligence> [<https://perma.cc/CJR8-RYME>] (last visited Dec. 10, 2023).

<sup>16</sup> Machine learning is a type of artificial intelligence that allows machines to learn from data and improve their performance without being explicitly programmed. The process involves feeding large amounts of data into a computer algorithm, which then uses statistical models and algorithms to identify patterns and relationships. The machine then uses this knowledge to make predictions or take actions based on new data it encounters. It is a rapidly evolving field with applications in various industries, including finance, manufacturing, healthcare, and marketing. This is based on the definition provided by Techtargget.com. Linda Tucci, *What is machine learning and how does it work? In-depth guide*, TECHTARGET, <https://www.techtargget.com/searchenterpriseai/definition/machine-learning-ML> [<https://perma.cc/77FL-9QDB>] (last visited Dec. 10, 2023).

<sup>17</sup> Kenneth Nwanua Oheii, and Roelien Brink, *Web 3.0 and web 2.0 technologies in higher educational institute: Methodological concept towards a framework development for adoption*, 12.1 INT'L J. FOR INFONOMICS (IJ), 1841-1853, (2019).

became accessible to the public.<sup>18</sup> It refers to the early days when most web pages were static, text-based, and “read-only,” which were used primarily for information sharing, with limited user-generated content opportunities.<sup>19</sup> The second phase, Web 2.0, sometimes referred to as the “read-write” Web, marked a significant shift from the read-only feature of Web 1.0 towards user-generated content and increased interactivity.<sup>20</sup> The concept of Web 2.0 emerged in the mid-2000s and has continued to evolve over time, with ongoing advancements in web technologies and user behavior shaping the current state of the Internet. It introduced technologies and platforms that could allow users to actively participate and collaborate on the Web, enhancing interactivity, collaboration, and user-generated content. It also facilitates the growth of social media, blogging, e-commerce, and other various types of online platforms. Web 2.0 represents a more dynamic and participatory web experience compared to the static and one-way communication of Web 1.0. It continues to evolve and significantly impacts the global market and communication system. Examples of Web 2.0 technologies include blogging platforms like WordPress, collaborative platforms like Wikipedia, social media platforms like Facebook, and user-generated content platforms like YouTube. Web 2.0 uses JavaScript,<sup>21</sup> CSS,<sup>22</sup> and other technologies to create more interactive and engaging user experiences. E-commerce and online transactions became more prevalent during this phase, with the growth of online marketplaces and payment gateways.

### B. *Web 3.0 and Web3*

Web 3.0 is a term used to describe the new and evolving generation of the Web beyond Web 2.0.<sup>23</sup> It is often referred to as the “Semantic Web” because it aims to make the Internet more intelligent and able to understand content in a human-like way.<sup>24</sup> This is achieved by adopting technologies such as Natural Language Processing (NLP),<sup>25</sup>

<sup>18</sup> Sareh Aghaei., Mohammad Ali Nematbakhsh, and Hadi Khosravi Farsani, *Evolution of the world wide web: From WEB 1.0 TO WEB 4.0.*, 3.1 INT’L J. OF WEB & SEMANTIC TECH. 1, 2-4 (2012).

<sup>19</sup> Tobias Kollmann, Carina Lomberg, and Anika Peschl, *Web 1.0, Web 2.0, and Web 3.0: The development of e-business*, Encyclopedia of e-commerce development, implementation, and management, 1139, 1141-1143, IGI GLOBAL (2016).

<sup>20</sup> Bryan Alexander, and Alan Levine. "Web 2.0 storytelling: Emergence of a new genre." 43.6 *EDUCAU.S.E Review* 40, 42-44 (2008).

<sup>21</sup> JavaScript is a programming language used to create dynamic and interactive web pages used to add functionality to a website, such as form validation, animations, and pop-ups. JavaScript is often used in conjunction with HTML and CSS to create rich web applications. This is based on the definition provided by Itonlinelearning.com. *HTML, CCS, and JavaScript: Your Guide to Understanding Fundamental Front-End Languages*, IT ONLINE LEARNING (May 11, 2017), <https://www.itonlinelearning.com/blog/html-css-and-javascript-your-guide-to-understanding-fundamental-front-end-languages/> [https://perma.cc/QU2K-UNYG].

<sup>22</sup> CSS, or Cascading Style Sheets, is a language used to describe the visual presentation of a web page. It provides a way to style HTML elements by specifying properties such as color, font size, positioning, and layout. This is based on the definition provided by Developer.mozilla.org. *CCS: Cascading Style Sheets*, MDN WEB DOCS (Jul. 21, 2023), <https://developer.mozilla.org/en-US/docs/Web/CSS> [https://perma.cc/G24D-P7DJ].

<sup>23</sup> See Leeway Hertz, *Web3 versus Web 3.0: The Basic Concepts and Differences*, MEDIUM (Jul. 21, 2022), <https://productcoalition.com/web3-versus-web-3-0-the-basic-concepts-and-differences-e25f7f05ca33?gi=1cb42699f186> [https://perma.cc/4DXT-8W6F].

<sup>24</sup> Calaresu, Michael, and Ali Shiri, *Understanding semantic web: A conceptual model*, 64.1/2 LIBRARY REV. 82, 91-95 (2015).

<sup>25</sup> Natural Language Processing (NLP) is a subfield of AI that focuses on enabling machines to understand, interpret, and generate human language. NLP involves the development of algorithms and models that can

machine learning, and blockchain technology.<sup>26</sup> Web 3.0 is still in the development process and will soon become the new generation of the World Wide Web (WWW) that aims to become decentralized, secure, and transparent, encompassing a broader vision for the future of the Internet.

There is another apparently similar term called “Web3,”<sup>27</sup> which allows the control of data and services by a decentralized network of nodes rather than centralized entities in Web 2.0.<sup>28</sup> Web3, also known as the blockchain-based web, is rooted in the vision of a decentralized web that empowers users to take control of their own data and digital identities without the need for third-party intermediaries such as social media platforms, search engines, or cloud storage providers.<sup>29</sup> This new paradigm represents a radical departure from the centralized web, Web 2.0, that has dominated the Internet for the past two decades. It is characterized by the use of decentralized applications (dApps),<sup>30</sup> blockchain technology, and smart contracts, particularly for exchanging and storing cryptocurrencies.<sup>31</sup>

Web3 and Web 3.0 are often used interchangeably but do not refer to the same concept.<sup>32</sup> Web3 is based primarily on blockchain technology, which enables the Web to be decentralized.<sup>33</sup> In simple words, Web3 refers to the decentralized blockchain-based web, which is built on the networks of Web 2.0, while Web 3.0 refers to the new generation of the linked or semantic web.<sup>34</sup> In addition to the adopted technologies, the main

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process and analyze large volumes of text data, recognize patterns and trends, and extract meaning from unstructured data. Applications of NLP include language translation, sentiment analysis, chatbots, and speech recognition, among others. NLP is becoming increasingly important as more data is generated through digital channels and the need for automated processing of this data grows.

<sup>26</sup> See e.g., SIMON STOKES, *DIGITAL COPYRIGHT: LAW AND PRACTICE*, (Bloomsbury Publishing, 2019).

<sup>27</sup> Adrian Ma, *The next phase of the internet is coming: Here's what you need to know about Web3*, THECONVERSATION.COM, (Feb. 27, 2023) <https://theconversation.com/the-next-phase-of-the-internet-is-coming-heres-what-you-need-to-know-about-web3-192919> [<https://perma.cc/6CYY-BY72>].

<sup>28</sup> See Henrique Centieiro & Bee Lee, *Web3 vs. Web 3.0: They are NOT the same!*, MEDIUM (Dec. 21, 2022) <https://medium.datadriveninvestor.com/web3-vs-web-3-0-they-are-not-the-same-b88d65dba6e8?gi=535e75981da1> [<https://perma.cc/AEG6-QU7S>].

<sup>29</sup> DON TAPSCOTT & ALEX TAPSCOTT, *BLOCKCHAIN REVOLUTION: HOW THE TECHNOLOGY BEHIND BITCOIN IS CHANGING MONEY, BUSINESS, AND THE WORLD*, (Penguin, 2016).

<sup>30</sup> DApps, or Decentralized Applications, are software applications that run on a blockchain network or a peer-to-peer (P2P) network of computers. Unlike traditional applications that are hosted on centralized servers, DApps use the distributed ledger technology (DLT) to store and manage data, and operate in a decentralized manner. It can be used for a wide range of purposes, such as digital currencies, supply chain management, social networking, voting systems, and more. They are often designed to be more secure, transparent, and resilient than traditional applications, and they can potentially offer more privacy, data ownership, and control to See Jake Frankenfield, *Decentralized Applications (dApps): Definition, Uses, Pros and Cons*, INVESTOPEDIA (April 16, 2023), <https://www.investopedia.com/terms/d/decentralized-applications-dapps.asp> users [<https://perma.cc/3XGM-HJ4V>].

<sup>31</sup> Wilma Clark, K. Logan, R. Luckin, A. Mee, & M. Oliver, *Beyond Web 2.0: Mapping the technology landscapes of young learners*, 25 J. OF COMPUT. ASSISTED LEARNING 1, 56-69 (2009).

<sup>32</sup> Centieiro & Lee, *supra* note 28.

<sup>33</sup> Siobhan Fagan, *Why Web3 and Web 3.0 Are Not the Same*, INFORMATION MANAGEMENT (Mar. 24, 2022), <https://www.reworked.co/information-management/why-web3-and-web-3-0-are-not-the-same/> [<https://perma.cc/R47N-G3NK>].

<sup>34</sup> Centieiro & Lee, *supra* note 28.



differences between Web 3.0 and Web3 are their focus and scope.<sup>35</sup> Web 3.0 focuses on creating a more intelligent and personalized internet that uses Machine Learning, NLP, and other technologies to interconnect data and create intelligent agents. In simple words, while Web3 is a new vision for a decentralized Internet using blockchain technology,<sup>36</sup> Web 3.0 is a broader term that encompasses a variety of technologies and approaches to revolutionize the Internet.<sup>37</sup>

### C. *Web 3.0 and Techno-legal Analysis*

The analysis of the impact of Web 3.0 on copyright laws requires important concepts about the relationship between law and technology, therefore, it is essential to adopt a techno-legal approach to provide this analysis effectively. Techno-legal analysis is the process of examining the legal implications and consequences of technological developments or innovations.<sup>38</sup> It involves analyzing how existing laws and regulations apply to new technology and how they may need to be updated or reinterpreted to address emerging issues.<sup>39</sup> The analysis requires a combination of technical expertise and legal knowledge. It can be applied to a wide range of fields, including cybersecurity, data privacy, intellectual property, and e-commerce. The techno-legal analysis ensures that new technologies are developed and used consistently with legal and ethical standards while promoting innovation and progress.<sup>40</sup> It is an increasingly important field as technology continues to advance at a rapid pace, and new legal issues arise in response to these changes.

Based on a techno-legal analysis, it is important that the discussion of Web 3.0 involves analyzing its impact on legal systems, regulations, and processes. Web 3.0 is built on blockchain technology and smart contracts, which are inherently decentralized, implying that its governance models must be decentralized, and decision-making can be distributed among stakeholders.<sup>41</sup> Web 3.0 can potentially change how intellectual property is managed and may impact copyright and patent laws by bringing more transparency and accountability to legal systems.<sup>42</sup> One of the key features of Web 3.0 is smart contracts, which are self-executing contracts with the

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<sup>35</sup> See *Web3 vs Web 3.0: The difference between the Decentralised Web and the Semantic Web*, THEBUSINESSANECNOTE.COM (May 6, 2023), <https://www.thebusinessanecdote.com/post/web3-vs-web-3-0-the-difference-between-the-decentralised-web-and-the-semantic-web> [https://perma.cc/K8KL-59S8].

<sup>36</sup> V. BUTERIN, A NEXT-GENERATION SMART CONTRACT AND DECENTRALIZED APPLICATION PLATFORM, 33-34 (Ethereum White Paper, 2014).

<sup>37</sup> See Akash Takyar, *Web3 Vs Web 3.0: How are they different?*, LEEWAY HERTZ, <https://www.leewayhertz.com/web3-vs-web3-0/#:~:text=keep%20and%20manage.-,Difference%20between%20web3%20and%20web%203.0,data%20and%20identity%20to%20users> [https://perma.cc/LM5M-CC9L] (last visited Dec. 10, 2023).

<sup>38</sup> Christian Kurtz, F. Wittner, M. Semmann, W. Schulz, & T. Böhmman, *Accountability of platform providers for unlawful personal data processing in their ecosystems—A socio-techno-legal analysis of Facebook and Apple's iOS according to GDPR*, 9 J. OF RESPONSIBLE TECH 100018 (2022).

<sup>39</sup> Pompeu Casanovas, *The Future of Law: Relational Justice and Next Generation of Web Services*, 2 EUR. J. LEGAL STUD. 119 (2008).

<sup>40</sup> Francesco Gualdi & Antonio Cordella, *Techno-legal entanglements as new actors in the policy-making process*, 1 TECHNOLOGY 4 (2022).

<sup>41</sup> Faten Adel Alabdulwahhab, *Web 3.0: the decentralized web blockchain networks and protocol innovation*, 2018 1ST INTERNATIONAL CONFERENCE ON COMPUTER APPLICATIONS & INFORMATION SECURITY (ICCAIS), IEEE, (2018).

<sup>42</sup> *Id.*

terms of the agreement directly written into code.<sup>43</sup> These contracts can be enforced without the need for intermediaries. This can potentially change how contracts are designed, executed, and enforced. Web 3.0 can provide better data privacy and security to contracting parties. With blockchain technology, data can be stored, decentralized, and encrypted, making it more difficult to hack or steal.<sup>44</sup> This has the potential to change the way data privacy laws are enforced. Web 3.0 also has the potential to bring better identity verification systems. With blockchain technology, individuals can have a self-sovereign identity verified by a decentralized network. This can change how identity verification is done and may impact the transactional relationship between content providers and users.<sup>45</sup>

Web 3.0 presents significant opportunities for content creators and copyright holders to distribute and monetize their works in the absence of intermediaries. Policymakers and lawmakers need to understand these challenges and exploit opportunities presented by this new technology to ensure a fair, equitable, and efficient copyright regime with appropriate laws and regulations that strike a balance between creativity and equity.

### III. THE WEB AND COPYRIGHT LAWS

In recent years, American copyright laws have been shaped by a variety of factors, including advances in technology, changes in the publishing industry, and influence from international treaties and agreements.<sup>46</sup> The issues inherent in copyright laws remains a vital area of legal practice, as authors, artists, and content creators continue to rely on the protections afforded by these laws to protect their creative works.

Web 1.0 was characterized by static web pages and a one-way flow of information from publisher to reader, whereas Web 2.0 introduced dynamic web pages and user-generated content, enabling more user interaction and collaboration.<sup>47</sup> Both Web 1.0 and Web 2.0 have significant implications for copyright laws but in different ways. Web 1.0 provided the opportunity for online information-sharing, while Web 2.0 brought a new focus on user-generated content and the challenges of enforcing copyright in a digital age.<sup>48</sup> Web 3.0 builds on new technologies substantially different from the previous two Internet generations. It offers

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<sup>43</sup> Voshmgir Shermin, *Disrupting governance with blockchains and smart contracts*, 26.5 STRATEGIC CHANGE, 499-509. P. 502, (2017).

<sup>44</sup> David Kreps & Kai Kimppa, *Theorising Web 3.0: ICTs in a changing society*, 28.4 INFORMATION TECHNOLOGY & PEOPLE 726, 730 (2015).

<sup>45</sup> Bahar Houtan, Abdelhakim Senhaji Hafid, & Dimitrios Makrakis, *A survey on blockchain-based self-sovereign patient identity in healthcare*, 8 IEEE ACCESS 90478, 90490-90492 (2022).

<sup>46</sup> CRAIG JOYCE, TYLER T. OCHOA, & MICHAEL W. CARROLL, COPYRIGHT LAW, (Carolina Academic Press, 2020).

<sup>47</sup> Asaad Khaleel Ibrahim, *Evolution of the Web: from Web 1.0 to 4.0.*, 1.3 QUBAHAN ACADEMIC J. 20-28 (2021).

<sup>48</sup> YUN-HSUAN HUANG, INTERNET-BASED IMMERSIVE LEARNING (IIL): APPLYING UBIQUITOUS WEB 1.0 AND WEB 2.0 RESOURCES IN EFL LEARNING, LEARNING TECHNOLOGY FOR EDUCATION CHALLENGES: 8TH INTERNATIONAL WORKSHOP (Springer International Publishing, 2019).

new opportunities for copyright protection through decentralized systems and new technologies, but at the same time, it poses challenges to new legislation to protect copyrights.<sup>49</sup>

### A. *Web 1.0 and Copyrights*

Web 1.0 significantly impacted copyright laws. It facilitated the widespread digital reproduction and distribution of copyrighted works. This raised serious copyright issues as websites could easily reproduce and distribute text, images, and other copyrighted materials without obtaining proper permissions or licenses from the copyright holders.<sup>50</sup> This led to legal challenges related to online infringement and copyright enforcement.<sup>51</sup>

Web 1.0 enabled users to copy and link to content from other websites easily. This raised questions about whether linking to copyrighted content without permission constituted copyright infringement or whether it fell under fair use or other exceptions.<sup>52</sup> Courts had to grapple with these issues and develop appropriate legal doctrines to determine the legality of linking and copying content on the Web. With the emergence of Web 1.0, copyright holders and content creators started using licensing and contractual agreements to grant permissions and impose restrictions on using their copyrighted works on the Web.<sup>53</sup> These agreements included terms and conditions for using copyrighted website materials, such as click-wrap licenses and service agreements.<sup>54</sup> These contractual agreements often played a critical role in shaping copyright laws.

The predominance of Web 1.0 led to the passage of the Digital Millennium Copyright Act (DMCA) in the U.S. in 1998, which established legal protections and limitations for online service providers (OSPs)<sup>55</sup> and copyright holders, including notice-and-takedown provisions, requiring OSPs to remove infringing content upon receiving a valid copyright infringement notice.<sup>56</sup> The DMCA created a legal framework to address online copyright infringement, which was becoming

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<sup>49</sup> Keshab Nath, Sourish Dhar, & Subhash Basishtha, *Web 1.0 to Web 3.0-Evolution of the Web and its various challenges*, 2014 INTERNATIONAL CONFERENCE ON RELIABILITY OPTIMIZATION AND INFORMATION TECHNOLOGY (ICROIT), IEEE, (2014).

<sup>50</sup> Matt Jackson, *Linking Copyright to Homepages*, 49 FED. COMM. LAW J. 731, 732 (1996).

<sup>51</sup> Sareh Aghaei, Mohammad Ali Nematbakhsh, & Hadi Khosravi Farsani, *Evolution of the world wide web: From WEB 1.0 TO WEB 4.0.*, 3.1 INT'L J. OF WEB & SEMANTIC TECHNOLOGY 1-10 (2012).

<sup>52</sup> PIET KOMMERS, PEDRO ISAIAS, & KOMMERS ISSA, *THE EVOLUTION OF THE INTERNET IN THE BUSINESS SECTOR: WEB 1.0 TO WEB 3.0.*, (IGI GLOBAL, 2014).

<sup>53</sup> Tanya Woods, *Working toward spontaneous copyright licensing: A simple solution for a complex problem.*, 11 VAND. J. ENT. & TECH. L. 1141, 1148-1149 (2008).

<sup>54</sup> Francis M. Buono & Jonathan A. Friedman, *Maximizing the Enforceability of Click-Wrap Agreements*, 4 *J. Tech. L. & Pol'y* 245 (1999).

<sup>55</sup> Online Service Providers (OSP) are companies that offer internet-based services such as email, social media, cloud storage, and video streaming. They provide users with access to their services through websites or mobile applications. These companies typically generate revenue through advertising or subscription fees. OSPs have become essential in modern-day life, enabling people to communicate, collaborate, and consume information and entertainment from anywhere in the world. See Yeong-Woo Oh, et al., *A Study on the Copyright Protection Liability of Online Service Provider and Filtering Measure*, 20.6 J. of the Korea Institute of Information Security & Cryptology 97, 98-100 (2010).

<sup>56</sup> Jerome H. Reichman, Graeme B. Dinwoodie, & Pamela Samuelson, *A Reverse Notice and Takedown Regime to Enable Public Interest Uses of Technically Protected Copyrighted Works*, 22 BERKELEY TECH. LAW J. 981, 984-990 (2007).

rampant during the Web 1.0 era. The law provides copyright holders with a mechanism to have infringing content removed from websites or online services, and it also provides legal protections for online service providers that comply with certain requirements, such as promptly removing infringing content when notified by a copyright holder.<sup>57</sup>

In general, the most important impact of Web 1.0 on copyright laws in the U.S. is closely related to the enactment of the DMCA, which was specifically designed to address copyright infringement on the Internet and to provide legal protections for online service providers that host or transmit user-generated content, including music, movies, and software.<sup>58</sup>

### B. *Web 2.0 and Copyrights*

Web 2.0, which emerged in the mid-2000s, is characterized by the rise of user-generated content, social media platforms, and the democratization of content creation and sharing.<sup>59</sup> This led to a significant shift in copyright laws, focusing on user-generated content and the need to balance the rights of copyright owners and users.<sup>60</sup> Platforms like YouTube and Facebook became responsible for monitoring user-generated content for potential copyright infringement, leading to the development of automated content generation and recognition systems.<sup>61</sup>

With the rise of Web 2.0 technologies such as social media, video-sharing platforms, and user-generated content, copyright issues have become more complex and contentious than ever before.<sup>62</sup> Web 2.0 has affected copyright laws in the U.S. in many ways.<sup>63</sup>

First, while the Digital Millennium Copyright Act (DMCA) was enacted in 1998 during the Web 1.0 era, it continues to be relevant in the current era of Web 2.0.<sup>64</sup> Many high-profile copyright disputes in recent

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<sup>57</sup> Jason Sheets, *Copyright Misused: The Impact of the DMCA Anti-Circumvention Measures on Fair & (and) Innovative Markets*, 23 HASTINGS COMM. & ENT. LAW J., 1, 3-10 (2000).

<sup>58</sup> ANNEMARIE BRIDY, COPYRIGHT'S DIGITAL DEPUTIES: DMCA-PLUS ENFORCEMENT BY INTERNET INTERMEDIARIES, RESEARCH HANDBOOK ON ELECTRONIC COMMERCE LAW, (Edward Elgar, 2016).

<sup>59</sup> Joan Richradson, et al., *In what ways does policy on academic integrity, copyright and privacy need to respond in order to accommodate assessment with Web 2.0 tools*, SSRN (Dec. 5, 2012), [https://perma.cc/7UZU-RDGL](https://deliverypdf.ssrn.com/delivery.php?ID=461066073114088015101009098123127091008015017028038094113069113074127007081022096074103048019058055025035126000026120127096088014040049011076124070090126120126003085026056082027020086019124116003097112075122074082025118105112064031121064077091093067&EXT=pdf&INDEX=TRUE)].

<sup>60</sup> Anna May Wyatt & Susan E. Hahn, *Copyright concerns triggered by web 2.0 uses*, 39.2 REFERENCE SERVICES REVIEW 303, 306-307 (2011).

<sup>61</sup> Branwen Buckley, *SueTube: Web 2.0 and copyright infringement*, 31 COLUM. JL & ARTS 235, 237 (2007).

<sup>62</sup> Graham Cormode & Balachander Krishnamurthy, *Key differences between Web 1.0 and Web 2.0.*, FIRSTMONDAY.ORG, <https://firstmonday.org/ojs/index.php/fm/article/download/2125/1972> [<https://perma.cc/LVM3-LJL5>].

<sup>63</sup> Wyatt & Hann, *supra* note 60.

<sup>64</sup> Niva Elkin-Koren, *Making Room for Consumers under the DMCA*, 22 BERKELEY TECH. LAW J. 1119, 1121-1123 (2005).

years have involved Web 2.0 platforms, such as YouTube and Twitter, which are subject to the DMCA's outdated provisions.<sup>65</sup>

Second, with the proliferation of digital content and the ability to share it easily and quickly over the Internet, it has become easier for users to infringe on the copyright of others without even realizing it. For example, reposting a copyrighted image or video on social media without permission could constitute copyright infringement.<sup>66</sup>

Third, Web 2.0 has enabled ordinary users to create and share their own content on a massive scale, leading to new challenges for copyright laws.<sup>67</sup> For example, when users upload videos or photos that include copyrighted material, such as music or images, it can be difficult to determine whether they have obtained the necessary licenses or permissions.<sup>68</sup>

Fourth, Web 2.0 has also given rise to new approaches to copyright licensing, such as Creative Commons, which provides a flexible framework for creators to share their work with others while still retaining some control over how it is used.<sup>69</sup>

Fifth, the ease with which digital content can be copied and shared has put pressure on traditional copyright models, such as the sale of physical copies of books or music.<sup>70</sup> This has led to new business models, such as subscription-based streaming services, which provide users with access to vast libraries of content without necessarily owning it outright.<sup>71</sup>

The impact of Web 2.0 on copyright laws in the U.S. has been significant and has led to new challenges and opportunities for creators, users, and policymakers alike.<sup>72</sup> As the Internet continues to evolve and new technologies emerge, copyright laws will likely continue to be shaped by the changing landscape of digital content and online communication.

### C. *Web 3.0 and Copyrights*

Web 3.0 refers to a vision of the future Internet where data is interconnected and machine-readable, allowing computers to understand and interpret it more accurately.<sup>73</sup> The development of Web 3.0 has been driven by a number of technological advancements, including the growth of AI, the Internet of Things (IoT),<sup>74</sup> NLP, and blockchain technology.

<sup>65</sup> Some examples of these legal disputes include: (1) *Viacom International, Inc. v. YouTube, Inc.*, 676 F.3d 19 (2nd Cir., 2012); (2) *Universal Music Group v. Veoh Networks, Inc.* (2007-2012) CV 07-5744AHM (AJWx) (C.D. Cal. May. 5, 2009); and (3) *Lenz v. Universal Music Corp.*, 801 F.3d 1126 (9th Cir. 2015).

<sup>66</sup> Daniel Yue Zhang, et al., *Crowdsourcing-based copyright infringement detection in live video streams*, 2018 IEEE/ACM INTERNATIONAL CONFERENCE ON ADVANCES IN SOCIAL NETWORKS ANALYSIS AND MINING (ASONAM), IEEE, (2018).

<sup>67</sup> Edward Lee, *Decoding the DMCA Safe Harbors*, 32 COLUM. J.L. & ARTS 233, 234-237 (2008).

<sup>68</sup> Giorgos Cheliotis, *From open source to open content: Organization, licensing and decision processes in open cultural production*, 47.3 DECISION SUPPORT SYSTEMS 229, 230-232 (2009).

<sup>69</sup> Melody Herr, *The interpretation of Creative Commons licenses by US federal courts*, 47.1 THE J. OF ACADEMIC LIBRARIANSHIP 102227 (2021).

<sup>70</sup> Miquel Peguera, *Secondary liability for copyright infringement in the web 2.0 environment: Some reflections on Viacom v. Youtube*, 6 J. INTL COM. L. & TECH. 18, 20-22 (2011).

<sup>71</sup> Brandon Brown, *Fortifying the safe harbors: Reevaluating the DMCA in a web 2.0 world*, 23 BERKELEY TECH. LJ 437 (2008).

<sup>72</sup> Wyatt & Hann, *supra* note 60.

<sup>73</sup> Annalee Newitz, *Web 3.0.*, 42-43, NEW SCIENTIST 197.2647 (2008).

<sup>74</sup> Fernando L. F. Almeida, & Justino MR Lourenço, *Creation of value with Web 3.0 technologies*, 1-4, 6TH IBERIAN CONFERENCE ON INFORMATION SYSTEMS AND TECHNOLOGIES (CISTI), IEEE, (2011).

These technologies enable the creation of decentralized, autonomous systems that can operate independent of centralized authorities.<sup>75</sup>

Web 3.0 takes the application of these technologies further by adding more meaning and context to the data on the Web. Web 3.0 uses metadata and ontologies to annotate web content,<sup>76</sup> making it easier for computers to understand the relationships between different pieces of information. This allows for more sophisticated applications that can process data intelligently, provide personalized recommendations, and enable the automation of tasks.<sup>77</sup>

Web 3.0 is still in the process of development and realization, and there is no unambiguous consensus in the technological community on what it will look like in practice. However, it is expected to lead to a more intelligent and personalized web, with greater automation, decentralization, and increased user privacy and security. Web 3.0 represents a more decentralized and interconnected web that is built on blockchain technology, AI, and IoT.<sup>78</sup> This decentralized nature of Web 3.0 has implications for copyright laws, as it may make it more challenging to identify and enforce copyright infringement.<sup>79</sup> Tracking ownership, enforcing royalties, resisting censorship, and global jurisdictional issues become challenging, necessitating innovative solutions and international cooperation.<sup>80</sup>

Web 3.0 represents a new Internet era that utilizes blockchain technology, smart contracts, and decentralized protocols to enable a more open, transparent, and secure Web. This new Internet era will likely induce significant challenges for copyright laws specifically in regard to ownership, protection, jurisdiction, and distribution.

### 1. *Identification of Ownership*

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<sup>75</sup> Riaan Rudman, *Web 3.0: governance, risks and safeguards*, 31.3 J. of Applied Business Research (JABR) 1037, 1038-1042 (2015).

<sup>76</sup> R. Rafael S. Gonçalves, Maulik R. Kamdar, & Mark A. Musen, *Aligning biomedical metadata with ontologies using clustering and embedding*, SPRINGER LINK (May 25, 2019), [https://link.springer.com/chapter/10.1007/978-3-030-21348-0\\_10](https://link.springer.com/chapter/10.1007/978-3-030-21348-0_10) [<https://perma.cc/PUR2-PFN8>].

<sup>77</sup> Fernando LF Almeida & Justino MR Lourenço, *Creation of value with Web 3.0 technologies*, 6TH IBERIAN CONFERENCE ON INFORMATION SYSTEMS AND TECHNOLOGIES (CISTI 2011), IEEE, (2011).

<sup>78</sup> The Internet of Things (IoT) is a network of physical objects, devices, vehicles, buildings, and other items that are embedded with sensors, software, and connectivity, enabling them to exchange data with each other and with central servers or databases over the internet. This interconnected network of devices and objects can communicate with each other and can be remotely monitored and controlled, allowing for a variety of applications such as home automation, smart cities, industrial automation, and healthcare monitoring, among others. The IoT has the potential to revolutionize the way we live and work, enabling greater efficiency, convenience, and cost savings in a wide range of industries and applications. This is based on the definition provided by Techtargget.com. See Alexander Gillis, *Definition: internet of things (Iot)*, TECHTARGET, <https://www.techtargget.com/iotagenda/definition/Internet-of-Things-IoT> [<https://perma.cc/WYA9-F4RP>] (last visited Dec. 10, 2023).

<sup>79</sup> Tereza Trencheva & E. Zdravkova, *Intellectual property management in digitization and digital preservation of cultural heritage*, EDULEARN19 CONFERENCE, <https://mixedreality.unibit.bg/wp-content/uploads/2020/08/1468.pdf> [<https://perma.cc/VU4U-WBL9>] (last visited Dec. 10, 2023).

<sup>80</sup> CATHY HACKL, DIRK LUETH, & TOMMASO DI BARTOLO, NAVIGATING THE METAVERSE: A GUIDE TO LIMITLESS POSSIBILITIES IN A WEB 3.0 WORLD, 24-25, (John Wiley & Sons, 2022).

With the increase in decentralized networks of Web 3.0, it has become more difficult to identify the copyright owner of a particular piece of work.<sup>81</sup> This could result in a situation where the copyright owner cannot be identified or located, which would make it difficult to seek permission for its use. Web 3.0 is likely to disrupt the traditional concept of ownership, particularly in relation to digital assets. With the use of blockchain technology, digital assets can be tokenized and transferred without the need for a central authority or intermediary.<sup>82</sup> This means that ownership of digital assets, such as art, music, and other creative works, can be decentralized, making it difficult for copyright laws to enforce ownership rights.<sup>83</sup> For example, suppose a piece of art is tokenized and sold in a decentralized marketplace. In that case, it may be difficult to determine who actually owns the copyright to that artwork, as ownership may be distributed among multiple token holders.<sup>84</sup>

## 2. *Enforcement of Protection*

Another significant impact of Web 3.0 on copyright laws is the issue of intellectual property protection. In the era of digital content creation, copyright infringement has become prevalent due to the ease of access and distribution of digital media.<sup>85</sup> Web 3.0 has increased emphasis on data sharing and interoperability. This means that data will be more easily accessible and contextualized, allowing for more accurate and effective search results.<sup>86</sup> However, this also raises issues around copyright, as the use of others' copyrighted work may be more prevalent and widespread and thereby difficult to effectively control. Web 3.0 has also led to the emergence of new forms of infringement, such as deepfakes, which are AI-generated media, using deep learning to convincingly alter videos or images, often superimposing one person's likeness onto another.<sup>87</sup> They pose significant challenges to copyright laws for misinformation and privacy violations.

## 3. *Challenge to Jurisdiction*

With the Internet's global reach, copyright laws have become more international in scope. It is necessary to reconcile the different copyright laws of different countries to ensure that works are protected globally. This is why Web 3.0 will likely challenge American jurisdiction. With the

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<sup>81</sup> Martin Potthast, et al., *Who wrote the web? Revisiting influential author identification research applicable to information retrieval*, 23-24, *ADVANCES IN INFORMATION RETRIEVAL: 38TH EUROPEAN CONFERENCE ON IR RESEARCH*.

<sup>82</sup> Angel A. Juan, et al., *Tokenized Markets Using Blockchain Technology: Exploring Recent Developments and Opportunities*, 14.6 *INFORMATION* 347, 348-349 (2023).

<sup>83</sup> JINESH VARIA, *THE TOTAL COST OF (NON) OWNERSHIP OF WEB APPLICATIONS IN THE CLOUD*, (Amazon Web Services Whitepaper, 2012).

<sup>84</sup> Balachander Krishnamurthy, Delfina Malandrino, & Craig E. Wills, *Measuring privacy loss and the impact of privacy protection in web browsing*, PENN STATE UNIVERSITY, <https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=9aab1fc25f8dcb865ece822f8ea0d41d00d793ac> [https://perma.cc/PY3V-RGSN] (last visited on Dec. 10, 2023).

<sup>85</sup> Sen Peng, Y. Chen, J. Xu, Z. Chen, C. Wang, & X. Jia, *Intellectual property protection of DNN models*, 26.4 *WORLD WIDE WEB* 1877, 1878-1879 (2023).

<sup>86</sup> Riaan Rudman, *Web 3.0: governance, risks and safeguards*, 31.3 *J. OF APPLIED BUSINESS RESEARCH (JABR)* 1037, 1038-1039 (2015).

<sup>87</sup> Yisroel Mirsky & Wenke Lee, *The creation and detection of deepfakes: A survey*, 54.1 *ACM COMPUTING SURVEYS (CSUR)* 1, 2-4 (2021).

decentralized nature of Web 3.0, it may be difficult for authorities to determine which jurisdiction applies to a particular digital asset or transaction.<sup>88</sup> This could lead to a lack of clarity regarding which laws apply, making it difficult for copyright holders to enforce their rights.<sup>89</sup> For instance, suppose a digital asset is created in one jurisdiction, such as the U.S., but sold on a decentralized marketplace that operates in multiple jurisdictions, such as the European Union. In that case, it may be difficult to determine which jurisdiction's copyright laws will apply.

#### 4. *Decentralization of Distribution*

Web 3.0 enables the creation of smart contracts, which can automate copyright transactions and facilitate the licensing and sale of creative works. This could provide a more decentralized, efficient, and transparent distribution system for copyright management.<sup>90</sup> Since Web 3.0 can transfer digital assets without the need for a central authority or intermediary, it may be difficult for copyright holders to control the distribution of their works. This could lead to widespread piracy and infringement, as digital assets can be easily shared and copied.<sup>91</sup> For example, suppose a song is tokenized and sold on a decentralized marketplace. In that case, it may be difficult for the copyright holder to prevent unauthorized copies of the song from being shared or distributed.<sup>92</sup>

Web 3.0 will likely present significant challenges for copyright laws regarding ownership, protection, jurisdiction, and distribution.<sup>93</sup> The potential impact of Web 3.0 on copyright laws is enormous because it changes the ways digital content is created, distributed, and consumed. As the decentralized Web continues to evolve, it will be important for lawmakers to address these challenges and develop new frameworks for protecting intellectual property in this new era of the Internet. Web 3.0 is transforming the field of copyright laws, and there is a need for policymakers and legal experts to adapt to these changes in order to ensure that creative works are protected while also encouraging innovation and creativity.<sup>94</sup>

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<sup>88</sup> Oleksii Kostenko, V. Furashev, D. Zhuravlov, & O. Dniprov, *Genesis of Legal Regulation Web and the Model of the Electronic Jurisdiction of the Metaverse*, 6.2 *Bratislava Law Rev.* 21, 36 (2022).

<sup>89</sup> Kevin M. Faulkner, *Personal Jurisdiction in Texas and Internet Web-Sites*, 4 *Tex. Wesleyan L. Rev.* 31, 34-35 (1997).

<sup>90</sup> Hui Li, et al., *A Review of Approaches for Detecting Vulnerabilities in Smart Contracts within Web 3.0 Applications*, 1.1 *BLOCKCHAINS* 3, 5-6 (2023).

<sup>91</sup> Henry J. Lowe, Edward C. Lomax, & Stacey E. Polonkey, *The World Wide Web: a review of an emerging Internet-based technology for the distribution of biomedical information*, 3.1 *J. OF THE AMERICAN MED. INFORMATICS ASS'N* 1, 3-4 (1996).

<sup>92</sup> Michael Blackstock & Rodger Lea, *Toward a distributed data flow platform for the web of things (distributed node-red)*, *PROCEEDINGS OF THE 5TH INTERNATIONAL WORKSHOP ON WEB OF THINGS* (2014).

<sup>93</sup> Nick Vogel, *The great decentralization: How web 3.0 will weaken copyrights*, 15.1 *J. MARSHALL REV. INTELL. PROP. L.* 136, 142-146 (2015).

<sup>94</sup> K. Sita Manikam & Ayush Khandelwal, *Right to Privacy and Techno-Legal Issues*, 8.3 *IUP LAW REV.* 7, 9-10 (2018).



## IV. NEW COPYRIGHT LAWS

The evolution of copyright laws in the U.S. reflects a tension between the need to protect intellectual property and the desire to promote innovation and creativity. While copyright laws are intended to promote the creation and dissemination of new ideas, they can also limit the ability of others to build upon existing work. As technology continues to evolve, including the development of Web 3.0, it is likely that copyright laws will continue to be shaped and re-shaped in response to new challenges and opportunities.<sup>95</sup>

In the early days of the U.S., there were no formal copyright laws, and unauthorized copying of published works was rampant. Authors and publishers had no legal protection for their intellectual property.<sup>96</sup> In 1790, the U.S. Congress passed the first federal copyright law, primarily designed to protect books, maps, and charts.<sup>97</sup> This law established the principle of exclusive rights for authors and publishers to reproduce, distribute, and display their work and gave them the power to sue for infringement. However, the law was limited in scope and did not cover other types of creative works, such as music, plays, or photographs. In the following decades, copyright laws were gradually expanded to include other types of creative works.<sup>98</sup>

In 1909, the institutionalization phase emerged as a result of Congress passing a comprehensive revision of the copyright laws, which extended copyright protection to include all forms of creative expression, including music, movies, and photographs.<sup>99</sup> This law established the concept of “fair use,” which allowed for limited use of copyrighted material for purposes such as criticism, commentary, and news reporting.<sup>100</sup> The law also established the Copyright Office as a formal institution to manage copyright registrations and enforce copyright laws.<sup>101</sup> Institutionalization refers to the process of establishing a structured and organized system or institution, typically with rules and procedures, in order to manage or provide certain services or functions.<sup>102</sup> This can include the creation of government agencies, prisons, schools, and other facilities. It can also refer to the process by which individuals become accustomed to and dependent on institutionalized norms, behaviors, and beliefs, which can restrict their ability to adapt to new social contexts or changes in their lives.<sup>103</sup>

<sup>95</sup> Anita Colyer, *Copyright law, the Internet, and distance education*, 11.3 *American J. of Distance Ed.* 41, 43-44 (1997).

<sup>96</sup> JESSICA LITMAN, *REVISING COPYRIGHT LAW FOR THE INFORMATION AGE, THE INTERNET AND TELECOMMUNICATIONS POLICY*, 272-273 (Routledge, 2020).

<sup>97</sup> William J. Maher, *Copyright Term, Retrospective Extension, and the Copyright Law of 1790 in Historical Context*, 49 *J. COPYRIGHT SOC'Y U.S.A.* 1021, 1023-1024 (2001).

<sup>98</sup> ANDREAS RAHMATIAN, *COPYRIGHT AND CREATIVITY: THE MAKING OF PROPERTY RIGHTS IN CREATIVE WORKS*, 1-10 (Edward Elgar Publishing, 2011).

<sup>99</sup> WILLIAM F. PATRY, *COPYRIGHT LAW AND PRACTICE*, 4-9 (BNA Books, 1994).

<sup>100</sup> Mary W. S. Wong, *Transformative User-Generated Content in Copyright Law: Infringing Derivative Works or Fair Use*, 11 *VAND. J. ENT. & TECH. L.* 1075, 1080-1081 (2008).

<sup>101</sup> Benjamin W. Rudd, *Notable Dates in American Copyright 1783—1969*, 28 *The Quarterly J. of the Library of Congress* 2, 1-20 (1971).

<sup>102</sup> Robert A. Gehring, *The institutionalization of open source*, 4 *POIESIS & PRAXIS* 54, 56-57 (2006).

<sup>103</sup> Hsing-Kuo Wang, Jung-Feng Tseng, & Yu-Fang Yen, *How do institutional norms and trust influence knowledge sharing? An institutional theory*, 16.3 *INNOVATION* 374, 376-377 (2014).

In recent years, copyright infringement has become a more serious crime, and penalties for copyright violations have become more severe. In 1998, Congress passed the Digital Millennium Copyright Act (DMCA), which made circumventing digital rights management (DRM)<sup>104</sup> technology illegal and imposed harsh penalties for violations.<sup>105</sup> The DMCA also established a “notice-and-takedown” system, which allowed copyright holders to request the removal of infringing material from websites and other online platforms.<sup>106</sup> Additionally, the 2011 Protect I.P. Act (PIPA) and the Stop Online Piracy Act (SOPA) were introduced in Congress, which would have given the government and copyright holders unprecedented power to shut down websites accused of hosting infringing material.<sup>107</sup> However, both bills were met with widespread opposition and ultimately failed to pass.<sup>108</sup>

This article posits copyright laws in the U.S. have gone through at least three phases: illegalization, institutionalization, and criminalization. This section will provide an in-depth explanation of each phase.

#### A. *Historical Development of Copyright Laws in The U.S. Before the Web Era*

American copyright laws have undergone a conceptual transformation over the course of the past two and a half centuries. The first phase of illegalization started when the first copyright law in the U.S. appeared in the form of the Copyright Act of 1790, modeled after the Statute of Anne in England.<sup>109</sup> It granted copyright owners the exclusive right to their works for 14 years, with the option to renew for an additional 14 years. This law was amended several times over the years, including the Copyright Act of 1831, which extended the copyright term to 28 years, and the Copyright Act of 1909, which extended the term to 56 years. The Sonny Bono Copyright Term Extension Act was enacted in 1998, which extended the copyright term for works created after January 1, 1978, by

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<sup>104</sup> Digital rights management (DRM) refers to the technologies and techniques used to restrict access or usage of digital content, such as software, music, videos, or e-books. DRM systems typically involve the use of encryption and access control mechanisms to prevent unauthorized copying or distribution of copyrighted material. It is used by content creators, holders, and publishers to protect their intellectual property rights and control the distribution and use of their digital content. This is based on the definition provided by Fortinet.com. *What is Digital Rights Management (DRM)?*, FORTINET, <https://www.fortinet.com/resources/cyberglossary/digital-rights-management-drm> [https://perma.cc/XF4K-LPWD] (last visited Dec. 10, 2023).

<sup>105</sup> Arielle Singh, *Agency Regulation in Copyright Law: Rulemaking under the DMCA and its broader implications*, 26.1 BERKELEY TECH. LAW J. 527, 530-533 (2011).

<sup>106</sup> Jennifer M. Urban, Joe Karaganis, & Brianna L. Schofield, Notice and takedown: Online service provider and rightsholder accounts of everyday practice, 64 J. COPYRIGHT SOC'Y U.S.A 371, 375-376 (2017).

<sup>107</sup> Madison Cartwright, *Who cares about Reddit? Historical institutionalism and the fight against the Stop Online Piracy Act and the PROTECT Intellectual Property Act*, 39.4 POLICY STUDIES 383-401 (2018).

<sup>108</sup> *Id.*

<sup>109</sup> BENEDICT ATKINSON & BRIAN FITZGERALD, SHORT HISTORY OF COPYRIGHT, 45-61 (Springer International, 2016).

20 years.<sup>110</sup> It also extended the copyright term for works owned by corporations from 75 years to 95 years.<sup>111</sup>

In the early twentieth century, copyright was generally considered private property in the U.S., subject primarily to the jurisdiction of private laws by focusing on the rights and liabilities of copyright owners.<sup>112</sup> The Copyright Act of 1976 represented a major milestone in American copyright laws by providing copyright protection for original works of authorship created in a tangible medium of expression by defining the exclusive rights of copyright owners and limitations on those rights.<sup>113</sup>

During the second phase of Copyright laws, institutionalization commenced in 1870 when Congress established the Copyright Office as a separate entity within the Library of Congress.<sup>114</sup> This happens to be a follow-up to the requirement of copyright holders and authors to deposit copies of their work with the Secretary of State as per the provisions of the Copyright Act.<sup>115</sup> However, this proved difficult to manage, and the Copyright Office was established for the purpose of [insert purpose]. The underlying rationale of the institutionalization process is the legal process of conception, which is built upon the presumption that the substantive content of the law is fundamentally a matter of identifying the institution with formal competence to execute the related laws, has become the foundation for policies and directives related to copyrights.<sup>116</sup>

Over the years, the Copyright Office has played an important role in protecting the intellectual property rights of creators in the U.S.<sup>117</sup> In 1909, Congress passed a major revision of the copyright laws, which included provisions for compulsory licensing of certain types of works, such as music.<sup>118</sup> In the 1970s, the Copyright Office faced new challenges as technology made creating and distributing creative works easier. The office played an important role in developing the Digital Millennium Copyright Act (DMCA), passed in 1998, which updated copyright laws to address the challenges of the new digital age. Today, the U.S. Copyright Office is responsible for administering federal copyright laws and maintaining a public record of copyright registrations and transfers.<sup>119</sup> The office also provides guidance to copyright owners and users and promotes

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<sup>110</sup> Christina N. Gifford, *The Sonny Bono Copyright Term Extension Act*, 30 U. MEM. L. REV. 363, 365-372 (1999).

<sup>111</sup> Krystal E. Noga, *Securitizing copyrights: An answer to the Sonny Bono copyright term extension act*, 9 TUL. J. TECH. & INTELL. PROP 3-8 (2007).

<sup>112</sup> Shyamkrishna Balganes, *Copyright as legal process: The transformation of American copyright law*, 168 U. PA. L. REV. 1101 (2019).

<sup>113</sup> Robert A. Gorman, *Overview of the Copyright Act of 1976*, 126 U. PA. L. REV. 856, 865-869 (1977).

<sup>114</sup> Pamela Samuelson, *Will the copyright office be obsolete in the twenty-first century*, 13 CARDOZO ARTS & ENT. LAW J. 57-59 (1994).

<sup>115</sup> Heidi J.S. Tworek & Christopher Buschow, *Changing the rules of the game: Strategic institutionalization and legacy companies' resistance to new media*, 10 INT'L J. OF COMMUN. 21, 23-27 (2016).

<sup>116</sup> William N. Eskridge Jr & Philip P. Frickey, *Making of the Legal Process*, 107 THE HARV. L. REV. 2032-2034 (1993).

<sup>117</sup> Robert Kasunic, *Copyright from inside the Box: A View from the U.S. Copyright Office*, 39 COLUM. J. LAW & ARTS 311, 312-318 (2015).

<sup>118</sup> Thomas P. Olson, *The Iron Law of Consensus: Congressional Responses to Proposed Copyright Reforms Since the 1909 Act*, 36 J. COPYRIGHT SOC'Y U.S.A 109, 120-122 (1988).

<sup>119</sup> SIMON STOKES, *DIGITAL COPYRIGHT: LAW AND PRACTICE*, 3-12 (Bloomsbury Publishing, 2019).

copyright education and awareness.<sup>120</sup> It continues to play an important role in shaping the future of copyright laws in the U.S.<sup>121</sup>

### B. *Copyright Laws in The Early Web Era*

The World Wide Web, or the Web, emerged in 1989 when Sir Tim Berners-Lee invented the first web browser and developed the technologies to access and navigate the Web.<sup>122</sup> The idea of a distributed information system allows researchers at CERN (the European Organization for Nuclear Research)<sup>123</sup> to share and access information from any location. Later, this CERN system became the World Wide Web, transforming how people communicate, access information, and conduct online business.

The first version of the Web, Web 1.0, brought along the problems of illegal usage of online materials.<sup>124</sup> This ignited the beginning of the criminalization phase of Copyright laws with the passing of the No Electronic Theft (NET) Act. NET was enacted in 1997 to strengthen the protection of intellectual property rights on the Internet and provide greater penalties for those who engage in copyright infringement for commercial gain.<sup>125</sup> It was deemed a federal crime to reproduce, distribute, or share copyrighted material, including software, without permission or payment.<sup>126</sup> NET was created to address the issue of copyright infringement that was becoming increasingly common due to the growth of the Internet and digital technologies.<sup>127</sup>

As the evolving phase of criminalization in the Web era kept consolidating, it also ignited the passing of the DMCA, an important milestone in American copyright laws.<sup>128</sup> It addressed the challenges posed by digital technology and the Internet by including provisions for digital rights management and criminalizing some specific types of digital copyright infringement.<sup>129</sup> The DMCA criminalizes the circumvention of digital rights management (DRM) technologies used to protect

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<sup>120</sup> *Id.*

<sup>121</sup> Karyn A. Temple, *Copyrightability in the US Copyright Office*, 43 COLUM. J. LAW & ARTS 337-340 (2019).

<sup>122</sup> Karwan Jacksi & Shakir M. Abass, *Development history of the world wide web*, 8.9 INT. J. SCI. TECH. RES 75, 76 (2019).

<sup>123</sup> Nordic Investment Bank (NIB), *The Statesman's Yearbook 2015: The Politics, Cultures and Economies of the World*, 42-44, CERN—THE EUROPEAN ORGANIZATION FOR NUCLEAR RESEARCH (2016).

<sup>124</sup> Nupur Choudhury, *World wide web and its journey from web 1.0 to web 4.0.*, 5.6 INT'L J. OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGIES 8096, 8099-8100 (2014).

<sup>125</sup> Eric Goldman, *A road to no warez: The No Electronic Theft Act and criminal copyright infringement*, 82 OR. L. REV. 371, 372 (2003).

<sup>126</sup> *Id.* at 373.

<sup>127</sup> Adam M. Bossler, *Cybercrime legislation in the United States*, THE PALGRAVE HANDBOOK OF INTERNATIONAL CYBERCRIME AND CYBERDEVIANCE 257, 258-259 (2020).

<sup>128</sup> Patricia Aufderheide, Aram Sinnreich, & Joseph Graf, *The limits of the limits of the law: how useable are DMCA anticircumvention exceptions?*, 12 INT'L J. OF COMM'N 20, 22-24 (2018).

<sup>129</sup> *Digital Millennium Copyright Act*, Public Law 105.304, EVERYTHING2.COM, <https://everything2.com/title/Digital+Millennium+Copyright+Act?> [<https://perma.cc/75WT-TEEH>] (last visited Dec. 10, 2023).

copyrighted works.<sup>130</sup> It also provides a safe harbor for internet service providers (ISPs)<sup>131</sup> and websites that host user-generated content, shielding them from liability for infringing content posted by their users as long as they comply with certain requirements.

In safeguarding their intellectual properties, copyright owners use modern technologies to protect their “exclusive rights.” This includes tracking copyright holders’ works by using technologies such as “copyright management information” embedded in the digital file of the works.<sup>132</sup> The DMCA outlaws the selling and use of technologies that circumvent a copyright holder’s protective technology.<sup>133</sup> It also criminalizes falsifying, removing, or altering “copyright management information (CMI)”<sup>134</sup> installed by copyright holders’ protective technologies to track their works.<sup>135</sup> The DMCA protects the technologies and digital information copyright holders use to protect their “exclusive rights[.]”<sup>136</sup>

As the criminalization phase commenced and progressed, the institutionalization process was also actively pursued in the U.S. to supplement and support the criminalization operations. The Copyright Office provides guidance and assistance to copyright owners, online service providers, and the public regarding implementing and enforcing the DMCA’s provisions.<sup>137</sup> The Copyright Office also maintains the DMCA’s online service provider designation directory, which lists the names of online service providers with designated agents to receive notifications of claimed infringement under the DMCA.<sup>138</sup>

Following the enactment of the DMCA in 1998, a sequence of legislative measures was promulgated, constituting a trajectory towards the advancement of copyright safeguarding.

## 1. *The Technology, Education and Copyright Harmonization Act of 2002*

<sup>130</sup> Daniel M. Sutko, *Rewiring the DMCA’s history: 20th-century new media and the expanding imaginary for infringement*, 21.2 THE COMMUNICATION REVIEW 153, 155-156 (2018).

<sup>131</sup> Internet Service Providers (ISPs) are companies that provide internet access to individuals, businesses, and other organizations. They offer various internet connection types such as DSL, cable, and fiber optic, as well as additional services like email, web hosting, and virtual private networks (VPNs). ISPs are crucial for accessing and using the internet, and they play a significant role in the infrastructure of modern communication. This is based on the definition provided by Investopedia.com. Alexandra Twin, *Internet Service Provider (ISP): What They Do and Examples*, INVESTOPEDIA (Sept. 1, 2022), <https://www.investopedia.com/terms/i/isp.asp> [<https://perma.cc/GQ6D-WVN3>].

<sup>132</sup> Severine Dusollier, *Some reflections on copyright management information and moral rights*, 25 COLUM. J. LAW & ARTS 377, 378-380 (2001).

<sup>133</sup> See 17 U.S.C. §1201.

<sup>134</sup> Copyright management information (CMI) refers to the information that identifies the author, owner, or other information about a copyrighted work, such as the title, date of creation, and any rights management information. CMI helps to protect the copyright owner’s rights and to prevent copyright infringement. This is based on the definition provided by Copyrightalliance.org. Accessible at: *Copyright Management Information (CMI)*, COPYRIGHT ALLIANCE, <https://copyrightalliance.org/education/copyright-law-explained/the-digital-millennium-copyright-act-dmca/copyright-management-information/> [<https://perma.cc/YCV2-4SEB>] (last visited Dec. 10, 2023).

<sup>135</sup> See 17 U.S.C. §1202.

<sup>136</sup> Hanns Ullrich, *Intellectual property: exclusive rights for a purpose—the case of technology protection by patents and copyright*, MAX PLANCK INSTITUTE FOR INTELLECTUAL PROPERTY & COMPETITION LAW 13-01, 425-459 (2012).

<sup>137</sup> Aaron Perzanowski, *The Limits of Copyright Office Expertise*, 33.3 Berkeley Tech. Law J. 733, 735-737 (2018).

<sup>138</sup> COMMENTS OF THE COPYRIGHT OFFICE ON THE INQUIRY REGARDING DMCA §§ 109, 117, (American Library Association, Medical Library Association, and Special Libraries Association, 2000).

The Technology, Education and Copyright Harmonization (TEACH) Act of 2002 is a federal law that provides guidelines for using copyrighted materials in distance education.<sup>139</sup> The TEACH Act focuses on the use of copyrighted materials used in distance education; it permits the use of copyrighted works in a distance learning syllabus, subject to certain limitations.<sup>140</sup> The TEACH Act attempts to amend previous copyright laws, including the Copyright Act of 1976, to reflect the changing technological landscape of education.<sup>141</sup> It specifically addresses the use of copyrighted materials in digital formats, including online courses, and sets forth guidelines for educators' use of these materials in distance learning environments.

## 2. *The Copyright Royalty and Distribution Reform Act of 2004*

The Copyright Royalty and Distribution Reform Act of 2004 (CRDRA) was enacted in 2004. It reformed the process of collecting royalties using copyrighted works in digital formats such as webcasting and satellite radio.<sup>142</sup> The Family Entertainment and Copyright Act of 2005 (FECA) criminalizes the use of camcorders to record movies in theaters and provides increased penalties for copyright infringement.<sup>143</sup> Using or selling technologies that circumvent copyright protection measures is illegal.<sup>144</sup> FECA also contains provisions that allow the creation of certain copies for personal use and allows technology to skip objectionable content in movies.

## 3. *The Artists' Rights and Theft Prevention Act of 2005*

The Artists' Rights and Theft Prevention Act (ART Act) is a U.S. federal law enacted in 2005. The ART Act aims to protect the intellectual property rights of artists, photographers, and other creators of visual works and deter individuals from stealing or infringing upon their intellectual property.<sup>145</sup> One of the main provisions of the ART Act criminalizes the act of creating or distributing a work that is knowingly altered or removed from its original copyright management information.<sup>146</sup> The ART Act also

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<sup>139</sup> Kenneth D. Crews, *The Technology, Education and Copyright Harmonization (TEACH) Act*, AMERICAN LIBRARY ASSOCIATION (Sept. 30, 2002), <https://www.ala.org/advocacy/sites/ala.org/advocacy/files/content/copyright/teachact/teachsummary.pdf> [<https://perma.cc/MH46-WELG>].

<sup>140</sup> *Id.*

<sup>141</sup> Henry V. Carter, Why the Technology, Education and Copyright Harmonization Act matters to librarians: Two cheers for the TEACH Act, 18.1 J. OF INTERLIBRARY LOAN, DOCUMENT DELIVERY & ELECTRONIC RESERVE 49, 50-51 (2008).

<sup>142</sup> Robin Jeweler, *HR 1417: The Copyright Royalty and Distribution Reform Act of 2004*, AMERICAN LAW DIVISION (April 22, 2004), <https://apps.dtic.mil/sti/tr/pdf/ADA435777.pdf> [<https://perma.cc/XGB6-6KK3>].

<sup>143</sup> Congressional Budget Office, *Family Entertainment and Copyright Act of 2005*, US GOVERNMENT PRINTING OFFICE (March 14, 2005), <https://www.cbo.gov/sites/default/files/109th-congress-2005-2006/costestimate/s1670.pdf> [<https://perma.cc/3GYG-D7XK>].

<sup>144</sup> *Id.*

<sup>145</sup> Carmina M. Diaz, *Art Law Research: An Introduction*, 86 LAW LIBR. J. 335, 337-338 (1994).

<sup>146</sup> Henry Hansmann & Marina Santilli, *Authors' and artists' moral rights: A comparative legal and economic analysis*, 26.1 THE J. OF LEGAL STUDIES 95-143 (1997).

provides civil remedies for artists and other creators whose works have been infringed upon.<sup>147</sup> Under the ART Act, an artist can bring a civil action against anyone who violates his or her copyright and may be entitled to damages, injunctive relief, and attorney's fees.<sup>148</sup>

#### 4. *The Prioritizing Resources and Organization for Intellectual Property Act of 2008*

The Prioritizing Resources and Organization for Intellectual Property (PRO-IP) Act of 2008<sup>149</sup> increases the penalties for copyright infringement and counterfeiting, provides more resources for enforcing intellectual property rights, and establishes an Intellectual Property Enforcement Coordinator position within the White House.<sup>150</sup>

#### 5. *The Copyright Royalty Judges Program Technical Corrections Act of 2009*

In 2009, the Copyright Royalty Judges Program Technical Corrections Act was enacted. This Act amended several provisions of the Copyright Act of 1976, specifically regarding the Copyright Royalty Board (CRB).<sup>151</sup> This administrative body determines the rates and terms for using copyrighted works, including digital music services, satellite radio, and cable television. The CRB comprises three copyright royalty judges appointed by the Librarian of Congress.<sup>152</sup>

The Act made several changes to the process of appointing copyright royalty judges.<sup>153</sup> It also addressed the issue of compensation for copyright royalty judges. In addition, the Act changed the CRB's decision-making process. Specifically, it clarified that the CRB must use a "willing buyer, willing seller"<sup>154</sup> standard when setting royalty rates for using copyrighted works. This standard requires the CRB to determine what rates would be agreed upon in a hypothetical negotiation between a willing buyer and a willing seller rather than basing rates on what is considered fair or reasonable.<sup>155</sup>

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<sup>147</sup> *Id.*

<sup>148</sup> *Id.*

<sup>149</sup> Copyright Royalty and Distribution Reform Act (CRDA) of 2004, Pub. L. No. 108-419, 118 Stat. 2341 (codified as amended at 17 U.S.C. §§ 801–805, 1010 (2012)).

<sup>150</sup> United States Congress, House Committee on the Judiciary, Subcommittee on Courts, the Internet, and Intellectual Property, *Prioritizing Resources and Organization for Intellectual Property Act of 2007: Hearing Before the Subcommittee on Courts, the Internet, and Intellectual Property of the Committee on the Judiciary, House of Representatives, One Hundred Tenth Congress, First Session, on HR 4279, December 13, 2007, Vol. 4*, U.S. GOVERNMENT PRINTING OFFICE, 2008.

<sup>151</sup> David Strickler, *Royalty rate setting for sound recordings by the United States copyright royalty board: The judicial need for independent scholarly economic analysis*, 12.1 REVIEW OF ECONOMIC RESEARCH ON COPYRIGHT ISSUES 2, 3-5 (2015).

<sup>152</sup> Saurabh Vishnubhakat & Dave Fagundes, *The Coming Copyright Judge Crisis*, 98 NYUL REV. ONLINE, <https://larc.cardozo.yu.edu/cgi/viewcontent.cgi?article=1689&context=faculty-articles> [<https://perma.cc/8LZK-2BVJ>] (last visited Dec. 10, 2023).

<sup>153</sup> *Id.*

<sup>154</sup> Lindah Kotut, T. L. Stelter, M. Horning, & D. S. McCrickard, *Willing buyer, willing seller: Personal data trade as a service*, ASSOCIATION FOR COMPUTING MACHINERY, <https://arxiv.org/pdf/1909.02674.pdf> [<https://perma.cc/R7TN-QHNN>] (last visited Dec. 10, 2023).

<sup>155</sup> Brian Flavin, *A Digital Cry for Help: Internet Radio's Struggle to Survive a Second Royalty Rate Determination Under the Willing Buyer/Willing Seller Standard*, 27.2 SAINT LOUIS UNIVERSITY PUBLIC LAW REV. 427, 430-433 (2008).

## 6. *The Music Modernization Act of 2018*

In 2018, the Music Modernization Act (MMA) significantly changed how royalties are paid to songwriters and music publishers by creating a new mechanical licensing system to streamline the licensing process and pay for the use of musical works.<sup>156</sup> It updates copyright laws for music by providing a new system for mechanical licensing, creating a blanket license for digital music services, and establishing a collective that administers mechanical licenses and collects and distributes royalties for songwriters and publishers.<sup>157</sup>

There are some less significant copyright-related laws and regulations, as well as court decisions enacted or made. On a prima facie basis, the prevailing copyright laws at the criminalization phase, with the support of institutionalization, appear comprehensive and effective enough to protect the interests of copyright holders in the age of Web 1.0 and, to a great extent, also in Web 2.0 era. In the new era of Web 3.0, a profound transformation is underway, necessitating the formulation of novel copyright legislations to encapsulate the repercussions engendered by this new decentralized digital milieu.<sup>158</sup>

### C. *Copyright Laws From 2020 Onwards*

The Copyright Act of 1976 was enacted before the introduction of the Web. According to the Act, the right to control the reproduction of a work is one of the “exclusive rights” of the copyright holder.<sup>159</sup> The Act protects against the actual infringement, or illegal copying or using of a copyright. Upon the arrival of the new age of digital media, many authors, artists, musicians, photographers, and content creators seek protection for their works through some new relevant, comprehensive laws. With the introduction of Web 2.0 and emerging development of Web 3.0, people can illegally copy and infringe upon the copyright holder’s exclusive rights on a massive scale.<sup>160</sup> This explains why there have been a series of legal reforms in copyright laws since 2020.

#### 1. *The Protecting Lawful Streaming Act of 2020*

The Protecting Lawful Streaming Act (PLSA) was enacted in 2020 to combat the illegal streaming of copyrighted material.<sup>161</sup> The major

<sup>156</sup> See Orrin G. Hatch-Bob Goodlatte, Music Modernization Act, H.R. 1551, 115th Cong. § 103(a)(1)(B) (2018), 1-10.

<sup>157</sup> Kaitlin Chandler, *The Times They Are a Changin': The Music Modernization Act and the Future of Music Copyright Law*, 21 TUL. J. TECH. & INTELL. PROP. 53, 55-58 (2019).

<sup>158</sup> Aaron Hyzen, Propaganda and the Web 3.0: Truth and ideology in the digital age, 5.1 NORDIC J. OF MEDIA STUDIES 49, 50-52 (2023).

<sup>159</sup> See 17 U.S.C. §501 Infringement of Copyright.

<sup>160</sup> Ryeong Hwan Kim, Hwangjun Song, & Gi Seok Park, *Moving Real-time Services to Web 3.0: Challenges and Opportunities*, 2-4, IEEE Transactions on Services Computing (2023). doi: 10.1109/TSC.2023.3307153.

<sup>161</sup> See the website of the U.S.PTO for details of the Act. See *About Us*, UNITED STATES PATENT AND TRADEMARK OFFICE, <https://www.uspto.gov/about-us> [<https://perma.cc/PYW9-8N9Z>] (last visited Dec. 10, 2023).



components of the law are (i) criminalizing illegal stream copyrighted material for commercial purposes; (ii) increasing the penalties for individuals who commit these offenses, with fines and up to 10 years in prison; (iii) providing additional resources for law enforcement agencies to enforce these laws; (iv) ensuring that legitimate streaming services are not targeted under this law; and (v) protecting individuals who unknowingly stream illegal content.<sup>162</sup>

One of the most significant impacts of the PLSA is that it strengthens the existing copyright laws in the U.S.<sup>163</sup> The law provides legal tools for content creators and distributors to combat the unauthorized distribution of their copyrighted material.<sup>164</sup> Specifically, the law provides criminal penalties for individuals who willfully infringe upon the copyright of others, including those who stream copyrighted material for commercial purposes.<sup>165</sup> The law addresses the issue of digital piracy, which has been a significant problem for content creators and distributors for years.<sup>166</sup> By criminalizing the act of streaming copyrighted material, the law makes it easier for law enforcement agencies to take action against those who engage in digital piracy.<sup>167</sup> However, the PLSA has also been criticized for its potential to be used to target legitimate streaming services.<sup>168</sup> Some scholars have expressed concern that the broad language of the law could be used to target platforms with user-generated content, even if the platform has no knowledge that the content is copyrighted.<sup>169</sup> While the PLSA has strengthened the existing copyright laws in the U.S., it has also raised concerns about potential unintended consequences. It is essential to strike a balance between protecting the rights of content creators and distributors and ensuring legitimate streaming services are not unfairly targeted.

The PLSA is not directly related to Web 3.0—a concept for the next evolution of the Internet that focuses on decentralization, privacy, and user control. It aims to combat illegal streaming services that provide access to copyrighted content without permission.<sup>170</sup> Because illegal streaming services harm content creators and legitimate streaming services by siphoning away viewers and devaluing their work, the Act would increase criminal penalties for those who operate illegal streaming services, making it easier to prosecute and punish offenders. Specifically, the Act

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<sup>162</sup> This is based on the website of the United States Trademark and Patent Office. See *Protecting Lawful Streaming Act of 2020*, UNITED STATES PATENT AND TRADEMARK OFFICE, <https://www.uspto.gov/ip-policy/enforcement-policy/protecting-lawful-streaming-act-2020> [<https://perma.cc/4FFS-A4LC>] (last visited Dec. 10, 2023).

<sup>163</sup> Irene Calboli, *Legal Perspectives on the Streaming Industry: The United States*, 70 THE AMERICAN J. OF COMPARATIVE LAW 1, 220-245 (2022).

<sup>164</sup> Maurizio Borghi, *Chasing copyright infringement in the streaming landscape*, 42.3 INT'L REV. OF INTELL. PROP. AND COMPETITION LAW 1, 4-6 (2011).

<sup>165</sup> Irene Calboli, *Legal Perspectives on the Streaming Industry: The United States*, 70.1 THE AMERICAN J. OF COMPARATIVE LAW 220, 222-224 (2022).

<sup>166</sup> Sulaiman Al-Rafee & Timothy Paul Cronan, *Digital piracy: Factors that influence attitude toward behavior*, 63 J. OF BUSINESS ETHICS 237, 239-241 (2006).

<sup>167</sup> Dakota Foster, *Protecting Video Game Gameplay Creators: A Two-Pronged Copyright Approach*, 9 TEX. A&M L. REV. 711, 724-728 (2021).

<sup>168</sup> Calboli, *supra* note 165, at 223-225.

<sup>169</sup> See, e.g., Joanna F. DeFranco, Nir Kshetri, & Jeffrey Voas, *Piracy's Impact on "the Silver Screen,"* 23.3 IT PROFESSIONAL 7-11 (Jun. 4, 2021), <https://ieeexplore.ieee.org/abstract/document/9464108> [<https://perma.cc/8XEC-GQBS>].

<sup>170</sup> *Id.*

would establish criminal penalties for illegal streaming services that offer unauthorized access to copyrighted works, create a new felony offense for commercial streaming of copyrighted works, and authorize the Department of Justice to seek injunctions and seize illegal streaming devices and domain names. Nevertheless, it is important to consider how laws like the PLSA could impact the development and adoption of Web 3.0 technologies.

## 2. *The Trademark Modernization Act of 2020*

The Trademark Modernization Act was enacted in 2020.<sup>171</sup> Since then, the U.S. Patent and Trademark Office (USPTO) has been working on implementing its provisions.<sup>172</sup> It is designed to strengthen trademark protections and create a more efficient trademark registration process. The Act is intended to address concerns surrounding the rise of fraudulent trademark filings and to make it easier for businesses to prevent the unauthorized use of their marks.<sup>173</sup> Specifically, the Act includes provisions to establish procedures for expedited examination of trademark applications; empower the USPTO to challenge fraudulent and misleading trademark filings; establish new procedures for canceling registrations for marks that have not been used in commerce; and increase penalties for bad-faith trademark infringement.<sup>174</sup>

## 3. *The Copyright Alternative in Small-Claims Enforcement Act of 2022*

The Copyright Alternative in Small-Claims Enforcement Act (CASE) was signed into law in 2020.<sup>175</sup> The CASE Act aims to give creators, particularly small creators, a more cost-effective way to protect their creative works without spending the time and resources required to file a full copyright infringement lawsuit.<sup>176</sup> The underlying legal philosophy of the Act is to provide a practical mechanism for small creators to protect their copyrighted material efficiently and judiciously with reasonable costs.<sup>177</sup> Implementing the CASE Act requires establishing the Copyright Claims Board—a small claims court-like

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<sup>171</sup> Jake B. Vallen, *The Trademark Modernization Act of 2020: Legislating the “Extra” Out of “Extraordinary,”* 67.1 NYLS LAW REV. 9, 11-14 (2023).

<sup>172</sup> Alan C. Marco, et. al, *The USPTO patent assignment dataset: Descriptions and analysis*, 2, (2015).

<sup>173</sup> Ethan LeBleu, *Trademark Modernization Act and the Codification of the Presumption of Irreparable Harm*, 30 J. INTEL. PROP. LAW 101, 112-114 (2022).

<sup>174</sup> Naira Rezende Simmons, *Putting Yourself in the Shoes of a Patent Examiner: Overview of the United States Patent and Trademark Office (U.S.PTO) Patent Examiner Production (Count) System*, 17 J. MARSHALL REV. INTEL. PROP. LAW 1-9 (2017), <https://www.kiip.re.kr/webzine/1711/resource/file/Library02.pdf> [<https://perma.cc/92U8-2N56>].

<sup>175</sup> See (1) Congress, U. S. Trademark Modernization Act of 2020 (2020); (2) Ben Kessler, *Refuting the Three Major Arguments against the Copyright Alternative in Small-Claims Enforcement (CASE) Act*, 19 VA. SPORTS & ENT. LJ 215, 216-220 (2019).

<sup>176</sup> Sara Benson & Timothy Vollmer, *Opinion: CASE Act will harm researchers and freedom of inquiry*, 5.1 JOURNAL OF COPYRIGHT IN EDUCATION & LIBRARIANSHIP 1-6 (2021), <https://doi.org/10.17161/jcel.v5i1.15260> [<https://perma.cc/E95K-9ES6>].

<sup>177</sup> *Id.*

system for resolving copyright infringement disputes.<sup>178</sup> By providing a small claims court-like approach, the Act tries to make justice more accessible to small creators. Nevertheless, objections arise, based primarily on the claim that the CASE Act will make it more difficult for artists and copyright holders to find new users and will put their customers and fans at risk of infringement.<sup>179</sup>

#### 4. *The Proposed SMART Copyright Act*

In March 2022, Senator Tillis proposed the SMART (Strengthening Measures to Advance Rights Technologies) Copyright Act of 2022.<sup>180</sup> According to Senator Tillis, the key provisions of the proposed SMART Copyright Act<sup>181</sup> serve to modernize and update copyright laws to better address the challenges posed by new technologies and the digital age.<sup>182</sup> The SMART Act attempts to address the issue of Digital Rights Management (DRM) by specifying the terms under which digital works can be accessed, shared, and protected from infringement. It aims to strengthen liability protections by providing legal protections for online platforms that prioritize filtering and blocking infringing content in good faith. The proposal also tries to enhance law enforcement efficiency by modernizing the ways of enforcing and dealing with copyright infringers while considering education and remediation steps before punitive measures and endeavors to improve licensing processes by streamlining licensing procedures, providing clarity and simplification of the permission process that eases licensing for creators and other copyright holders.<sup>183</sup>

This new proposal represents one of the latest efforts to fortify protections for copyrighted online materials. Once enacted, the Act would establish a procedure for the Librarian of Congress to designate standardized protection measures to be adopted by online content and service providers.<sup>184</sup> It appears that the proposed SMART Digital Act restricts creators' capacity to speak freely online, so that groups representing the content industry praised the proposed bill. At the same

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<sup>178</sup> Russell W. Jacobs, *The Copyright Claims Board and the Appointments Clause*, U. ILL. L. REV. ONLINE 85, 87-92 (2021), <https://www.illinoislawreview.org/wp-content/uploads/2021/04/Jacobs.pdf> [<https://perma.cc/3QG6-HWZ9>].

<sup>179</sup> This is based on the petition "Coalition Letter to the Senate Judiciary Committee Expressing Opposition to S. 1273, the Copyright Alternative in Small-Claims Enforcement Act of 2019 ("CASE Act")." Lindsey Graham & Diane Feinstein, *Coalition Letter To The Senate Judiciary Committee Coalition Letter To The Senate Judiciary Committee Expressing Opposition To S1273-The Copyright Alternative In Small Claims Enforcement Act Of 2019*, (Jul. 17, 2019), [https://alair.ala.org/bitstream/handle/11213/14575/CoalitionLetterToTheSenateJudiciaryCommitteeExpressingOppositionToS1273-TheCopyrightAlternativeInSmallClaimsEnforcementActOf2019\\_20190717.pdf?sequence=1](https://alair.ala.org/bitstream/handle/11213/14575/CoalitionLetterToTheSenateJudiciaryCommitteeExpressingOppositionToS1273-TheCopyrightAlternativeInSmallClaimsEnforcementActOf2019_20190717.pdf?sequence=1) [<https://perma.cc/WH7L-9N4V>].

<sup>180</sup> The acronym SMART here stands for "strengthen measures to advance rights technologies".

<sup>181</sup> This is based on the article "The SMART Copyright Act of 2022: A Bill to Reduce Online Theft and Enhance Content Sharing for All" published on the Website of Sen. Tillis. See Thom Tillis, U.S. Senator for North Carolina, *The Smart Copyright Act of 2022: A Bill to Reduce Online Theft and Enhance Content Sharing for All*, <https://www.tillis.senate.gov/services/files/465759C0-DBFA-4348-9565-CBA4FE6FB45F> [<https://perma.cc/LR5S-4VBX>] (last visited Dec. 10, 2023).

<sup>182</sup> *Id.*

<sup>183</sup> *Id.*

<sup>184</sup> Sara Neumann, Jelena Bleja, & Uwe Grossmann, *Data Usage Concepts for Care Platforms in Smart Cities: Opportunities and Challenges*, 1-6, 2022 IEEE INTERNATIONAL SMART CITIES CONFERENCE (ISC2), IEEE (2022).

time, proponents of fair use and freedom of speech opposed it. The bill was objected to by some influential groups such as the Authors Alliance<sup>185</sup> and Public Knowledge.<sup>186</sup> So far, it has not yet been passed into law.

#### D. *Involuntary Effects of New Copyright Laws*

The concept of involution is introduced in this article to review and analyze the impact of Web 3.0 on copyright laws in the U.S. Involution is a term used to describe a process of inward turning, a reversal or decline of a particular social, economic, or political condition.<sup>187</sup> It causes complex systems to become more integrated and self-contained over time, often resulting in the formation of new structures or forms of organization that are more resistant to change.<sup>188</sup> This process involves reexamining and reconfiguring existing social and economic structures, norms, and practices, resulting in new forms of cultural expression and social interaction. In simple words, involution, in the context of a legal framework, refers to the process of a law or legal system becoming more complex, convoluted, and difficult to understand and apply.

In the context of copyright laws, involution can be seen as a double-edged sword with both positive and negative implications. On the one hand, the involution of Web technologies such as blockchain and smart contracts can enhance the protection of intellectual property rights and facilitate more efficient and transparent licensing and distribution of digital content. For example, blockchain-based systems can enable the creation of tamper-proof digital ledgers that can record and verify the ownership and provenance of digital assets.<sup>189</sup> At the same time, smart contracts can automate the enforcement of licensing terms and conditions.<sup>190</sup> On the other hand, there is a possible involution effect on copyright laws as a different set of rules and rights seems to appear, enforced by technological protection measures (TPMs), to which copyright legislation is not applicable.<sup>191</sup> For example, the decentralized and distributed nature of Web 3.0 technologies can make it difficult to identify and hold infringers accountable. The emergence of new forms of

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<sup>185</sup> See the website of *Authors Alliance*. See *Authors Alliance Opposing The Smart Copyright Act of 2022*, AUTHORS ALLIANCE (Mar. 22, 2022), <https://www.authorsalliance.org/2022/03/22/authors-alliance-opposes-the-smart-copyright-act-of-2022/> [<https://perma.cc/7Z73-CL35>].

<sup>186</sup> See the website of *Public Knowledge*. See Shiva Stella, *Public Knowledge Opposes Bill Granting Copyright Office Authority To Mandate Content Monitoring Technology*, PUBLIC KNOWLEDGE (Mar. 18, 2022), <https://publicknowledge.org/public-knowledge-opposes-bill-granting-copyright-office-authority-to-mandate-content-monitoring-technology/> [<https://perma.cc/J9TX-EU7Z>].

<sup>187</sup> Lei Kang & Yeyao Jin, *A review of involution and its psychological interpretation*, 9.1 FILOZOFIA PUBLICZNA I EDUKACJA DEMOKRATYCZNA 7, 8-15 (2020).

<sup>188</sup> J. van Dijck, *Datafication, dataism and dataveillance: Big Data between scientific paradigm and ideology*, 12.2 SURVEILLANCE & SOCIETY 197, 198-202 (2014).

<sup>189</sup> Feng Liu, Zhefu Feng, & Jiayin Qi, *A blockchain-based digital asset platform with multi-party certification*, 12.11 APPLIED SCIENCES 5342, 5342-5345 (2022).

<sup>190</sup> Hamed Taherdoost, *Smart Contracts in Blockchain Technology: A Critical Review*, 14.2 INFORMATION 117, 118-122 (2023).

<sup>191</sup> T. Heide, *The Approach To Innovation Under The Proposed Copyright Directive: Time For Mandatory Exceptions*, 3 I.P.Q. 215, 216-220 (2000).

digital creativity, such as remixing, sampling, and fan fiction, can challenge traditional notions of authorship and originality.<sup>192</sup>

Moreover, involution can give rise to new forms of power and control over cultural production and consumption, as dominant actors in the Web 3.0 ecosystem may seek to consolidate their position by developing proprietary technologies and protocols.<sup>193</sup> As social media has become more ubiquitous, there has been a growing concern about the “echo chamber” effect,<sup>194</sup> where people are only exposed to viewpoints and opinions confirming their beliefs.

With the rise of Web 3.0 and decentralized technologies, there is a growing movement towards more open and collaborative content creation and sharing models. Involution, in this context, is a useful process to describe the self-reflection and introspection that can help creators and consumers of content on the Internet navigate the complexities of copyright laws and find new, innovative ways to share and collaborate on creative works.<sup>195</sup> This approach to copyright laws is often based on the principle of involution, as it encourages creators and consumers to reflect on their own roles in the creative process and actively participate in sharing and modifying creative works.

The concept of involution has evolved over time and is currently being applied to a range of fields, including social media, Web 3.0, and copyright laws. As these fields continue to evolve, involution will likely play an increasingly important role in helping individuals and communities navigate the complexities of modern life and find new, innovative ways to collaborate and share creative works.<sup>196</sup> The potential involuntary effects of a new copyright law depend on the specific provisions and changes introduced by the law. However, involution can have several negative effects on how copyright laws influence society, including stagnation, social and economic inequality, authoritarianism, and a decline in social trust.<sup>197</sup> It is important for individuals and institutions to be aware of these risks and work towards promoting social and economic development, innovation, and open-mindedness to prevent these negative effects from the enactment of new copyright laws. The ensuing points outline specific involuntary risks associated with the potential implementation of new copyright laws in the emerging Web 3.0 era.

First, it is likely that potential new copyright laws will attempt to introduce stricter provisions for copyright protection by restricting access to information and limiting the ability of individuals to use, remix, or build

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<sup>192</sup> M. Bourdeau, *The Involution of Copyright: Has the Internet Changed the Nature of Intellectual Property?*, 24.1 THE J. OF INTELL. PROP. LAW, 95, 97-103 (2017).

<sup>193</sup> Werner M. Seiler, *Involution*, vol. 24, 43-67, SPRINGER (2010).

<sup>194</sup> Matteo Cinelli, G. De Francisci Morales, A. Galeazzi, W. Quattrociochi, & M. Starnini, *The echo chamber effect on social media*, 118.9 PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES e2023301118 (2021).

<sup>195</sup> R. Deazley, *On the origin of the right to copy: Charting the movement of copyright law in eighteenth-century Britain*, vol. 26, 115-149, HART PUBLISHING (2006).

<sup>196</sup> Werner M. Seiler, *Involution III: Differential Theory, Involution: The Formal Theory of Differential Equations and its Applications in Computer Algebra*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2009. 263-327. pp. 264-270.

<sup>197</sup> *Id.*

upon copyrighted works.<sup>198</sup> This involutory effect of restricting access to information can lead to creativity stagnation in society, where the progress and growth of individuals and institutions become restricted.<sup>199</sup> A lack of innovation can cause decreased openness to new ideas or resistance to change. As a result, involution can hinder social and economic development, negatively affecting the well-being of individuals and communities.

Second, a new copyright law that strengthens copyright protections for established companies or industries could stifle competition and make it more difficult for new entrants to compete.<sup>200</sup> In this context, its involutory effects can exacerbate social and economic inequality and unfair competition by limiting opportunities and resources available to certain groups of powerful people and large corporations in the new digital age.<sup>201</sup> For example, if economic growth and development are stagnant, certain groups may struggle to access education, health care, and employment opportunities.<sup>202</sup>

Third, a new copyright law that increases the scope and authority of copyright protection could limit creativity and innovation by making it more difficult for artists, writers, and creators to build upon existing works.<sup>203</sup> This involutory effect can contribute to the growth of authoritarianism, where leaders and institutions become more controlling and less responsive to the needs and desires of their citizens and their rights to innovate. In such cases, government officials, through institutions such as the Copyright Office, may prioritize their own interests over the public good, suppress dissent, and limit individual freedoms.<sup>204</sup> This can lead to a decline in democracy and the rule of law and a corresponding increase in possible corruption and abuse of power as too much power is given to government authorities and agencies.<sup>205</sup>

Lastly, if the new copyright law introduces provisions that limit the ability of individuals to express themselves, it could restrict freedom of expression and have a chilling effect on speech. A new copyright act that introduces complex and unclear provisions could create legal uncertainty and make it difficult for individuals and businesses to know how to comply with the law. This involutory effect can result in a decline in social trust, making it harder for communities to come together

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<sup>198</sup> Gerald V. Post & Albert Kagan, *Evaluating information security tradeoffs: Restricting access can interfere with user tasks*, 26.3 COMPUTERS & SECURITY 229, 230-232 (2007).

<sup>199</sup> Yiwen Li, *A Summary of Platform Strategy in the Digital Age*, *International Conference on Business and Policy Studies*. Singapore: Springer Nature Singapore, 2022. pp. 1-20.

<sup>200</sup> Carl Shapiro, *Navigating the patent thicket: Cross licenses, patent pools, and standard setting*, 1 INNOVATION POLICY AND THE ECONOMY 119, 123-140 (2000).

<sup>201</sup> Matteo Stocchetti, *Remaking the Truth in the Digital Age: Parrhesia and Human Interest*, 405, 406-407 (2017).

<sup>202</sup> *Id.*

<sup>203</sup> Pamela Samuelson, *Self-plagiarism or fair use*, 37.8 COMMUNICATIONS OF THE ACM 21-25 (1994).

<sup>204</sup> Eugene Volokh & Brett McDonnell, *Freedom of Speech and Independent Judgment Review in Copyright Cases*, 107.8 THE YALE LAW J. 2431, 2432-2440 (1998).

<sup>205</sup> Gabriel J. Michael, *Politics and rulemaking at the copyright office*, 11.1 J. OF INFO. TECH. & POLITICS 64, 65-70 (2014).

and solve shared problems. This is because the involuntary effect of unclear provisions and uncertainty with the law can lead to increased polarization and tribalism,<sup>206</sup> and can lead to a breakdown in communication and lack of cooperation between copyright holders and users.<sup>207</sup>

The potential involuntary effects of a new copyright act depends on the specific provisions and changes introduced by the new copyright law. It is important to carefully consider the implications of any new copyright legislation to ensure that it strikes a balance between protecting the rights of creators and promoting the public interest.

#### E. *Recommended Parameters For Enacting New Copyright Laws*

From a legal perspective, a parameter refers to a characteristic or condition that sets the boundaries or limits for how a law is applied or enforced.<sup>208</sup> Parameters in enacting laws serve as guiding principles that help ensure consistency, fairness, and predictability in legal systems. They can help define the scope and constraints of a legal principle, rule, or regulation. For instance, they can include factors such as time limits, geographical boundaries, numerical thresholds, or specific requirements that must be met for copyright laws to be applicable or effective.<sup>209</sup> They clarify and establish the framework for how laws can be interpreted, implemented, and enforced.<sup>210</sup>

Some analysts propose that the current centralized model of the Internet, which allows large corporations to control user data and content, has led to the proliferation of illegal streaming and other forms of piracy.<sup>211</sup> It is believed that a more decentralized internet could help reduce the need for laws like the PLSA by giving users more control over their own data and content and creating more opportunities for artists and creators to earn income from their work through direct engagement with their audiences.<sup>212</sup> The new era of the Web 3.0 requires thinking about “decentralization” rather than “criminalization” and “institutionalization”.

New laws and regulations should be created to address issues that arise in a decentralized internet. As Web 3.0 continues to evolve, it will be important for lawmakers to balance the need for innovation and user empowerment with the need to protect intellectual property rights and prevent illegal activities. The recommended guiding parameters for

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<sup>206</sup> Tribalism refers to a strong sense of identity and loyalty to one's social group or tribe. It involves a tendency to favor members of one's own group over others and to perceive outsiders as different and potentially threatening. Tribalism can manifest in various forms, from cultural and ethnic identities to political affiliations and sports teams. See Archie Mafeje, *The ideology of 'tribalism'*, 9.2 THE J OF MODERN AFRICAN STUDIES 253, 252-255 (1971).

<sup>207</sup> Tom R. Tyler, *Compliance with the intellectual property laws: A psychological perspective*, 29 NYU J. INT'L L. & POL. 219, 220-227 (1996).

<sup>208</sup> Kenneth M. Alfano, *Copyright in Exile: Restoring the Original Parameters of Exclusive Reproduction*, 11 J. TECH. L. & POL'Y 215, 216-220 (2006).

<sup>209</sup> Dan L. Burk, *Method and madness in copyright law*, UTAH L. REV. 587, 588-590 (2007).

<sup>210</sup> Mark A. Edwards, *Law and the parameters of acceptable deviance*, 97 J. CRIM. L. & CRIMINOLOGY 49, 50-55 (2006).

<sup>211</sup> See, e.g., Brian T. Yeh, *Illegal internet streaming of copyrighted content: legislation in the 112th Congress*, LIBRARY OF CONGRESS, CONGRESSIONAL RESEARCH SERVICE, (2011).

<sup>212</sup> Alex Murray, Dennie Kim, & Jordan Combs, *The promise of a decentralized internet: What is Web3 and how can firms prepare?*, 66.2 BUSINESS HORIZONS 191, 200 (2023).

enacting new copyright laws can vary depending on the jurisdiction and specific circumstances. While the specifics of copyright laws can vary, the most important principle of introducing new ones is to balance the interests between content providers and users in the context of open-source materials. Balancing these interests requires a clear, collaborative approach emphasizing transparency and respect for all parties. Based on the technical nature of Web 3.0, the following are recommended parameters for a proper copyright law to be introduced in the U.S. They include the technology-based applications of the fair use doctrine and the use of modern technology, such as blockchain and smart contracts, to balance the interest between content providers and users through revenue-sharing models, the complexity of the public domain, and cross-border considerations.

First, there is a need to consolidate the fair use doctrine through modern technologies. The fair use doctrine is a legal principle that allows for the limited use of copyrighted material without permission from the copyright owner.<sup>213</sup> The fair use doctrine is intended to balance the rights of copyright owners with the public's interest in free expression and the dissemination of knowledge.<sup>214</sup> This includes allowing users to use copyrighted material for specific purposes, such as criticism, commentary, reporting, or teaching.<sup>215</sup> This could help ensure that users can still benefit from copyrighted material while protecting the rights of the copyright holders. The fair use doctrine is codified in Section 107 of the Copyright Act of 1976, which provides a four-factor balancing test to determine whether a particular use of copyrighted material is fair.<sup>216</sup> Fair use is a complex legal concept that requires a deep understanding of copyright laws regarding: (i) the purpose and character of the use; (ii) the nature of the copyrighted work; (iii) the amount and substantiality of the portion used; and (iv) the effect on the potential market for or value of the copyrighted work. However, the introduction of Artificial Intelligence (AI) can be useful for a simple and minor infringement of copyrights.

As new decentralization-based technologies of the Web 3.0 emerge, courts are unlikely to be able to handle all disputes on a timely basis. While complex disputes must be adjudicated by the courts, AI tools can be used to analyze the content of two works and provide a percentage match indicating the level of similarity between them. This can be helpful in cases where a copyright holder claims their work has been copied without

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<sup>213</sup> Lloyd L. Weinreb, *Fair's Fair: A Comment on the Fair Use Doctrine*, 103 HARV. L. REV. 1137, 1138-1142 (1989).

<sup>214</sup> Harry N. Rosenfield, *Constitutional Dimension of Fair Use in Copyright Law*, 50 NOTRE DAME LAW 790 (1974).

<sup>215</sup> L. Ray Patterson, *Understanding fair use, Law and contemporary problems* 55.2, 249, 249-258 (1992).

<sup>216</sup> The four factors balancing test of "fair use" to be considered are (i) The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; (ii) The nature of the copyrighted work; (iii) The amount and substantiality of the portion used in relation to the copyrighted work as a whole; and (iv) The effect of the use upon the potential market for or value of the copyrighted work. See, for example, Charlie Penrod, "Restoring the balancing test: a better approach to fair use in copyright." *Chi.*, 14 KENT J. INTELL. PROP. 106, 114-115 (2014).



permission. Since there will be large volumes of copyright disputes with similar details in the new era of Web 3.0, AI can provide a first-tier judgment to support the fair use doctrine. As a safety valve for the decisions of AI judgment, they can be reviewed and potentially revised by the court upon any appeals by the copyright holders or users.

Second, there is a need to consider the impact of technological advances on copyright laws, such as mechanisms related to AI, machine learning, blockchain, smart contracts, and other emerging technologies, as well as their implications for copyright protection, use, and enforcement. This is especially important for creating new revenue-sharing models using digital rights management (DRM) technology which can control access to copyrighted works for digital content like movies, music, and e-books by preventing unauthorized use or distribution.<sup>217</sup> The primary objective of DRM is to prevent piracy and protect the revenue streams of content creators and distributors. The DRM-based revenue-sharing model can involve sharing profits between copyright holders and users who use their material in a way that generates income, such as through advertising or subscription fees. It is essential to foster a culture of trust between content providers and users based on transparency and collaboration. By doing so, content providers can feel confident that their work is being used responsibly and respectfully, while users can benefit from access to quality content. The use of AI-based monitoring tools helps ensure that copyrighted material is not being used illegally while allowing users to use it within the boundaries of the law.

The use of DRM is supported by Section 1201 of the DMCA, which is a provision that criminalizes the Act of circumventing technological measures that are designed to protect copyrighted works.<sup>218</sup> Specifically, it prohibits manufacturing, selling, or distributing any technology, device, or service primarily designed to circumvent a technological measure controlling access to a copyrighted work. Instead of restricting access, DRM should be used to encourage more usage by adopting some appropriate profit-sharing models. Unlike Designate Technical Measures (DTMs) and Standardized Technical Measures (STMs)<sup>219</sup> as proposed in the SMART Copyright Act of 2022, the DRM technology used by copyright holders is preferably not standardized, and the content providers are accountable for their own data security. Furthermore, the profit-sharing model for fair use materials can use smart contracts, which are computer programs that execute automatically when certain predefined conditions

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<sup>217</sup> Eberhard Becker, W. Buhse, D. Günnewig, & N. Rump, (eds), *Digital rights management: technological, economic, legal and political aspects*, Vol. 2770, 11-23, SPRINGER SCIENCE & BUSINESS MEDIA (2003).

<sup>218</sup> This is based on Section 1201 of the DMCA: *Exemptions to Prohibition Against Circumvention of Technological Measures Protecting Copyrighted Works*. See *Section 1201 Exemptions to Prohibition Against Circumvention of Technological Measures Protecting Copyrighted Works*, U.S. COPYRIGHT OFFICE, <https://www.copyright.gov/1201/2018/#:~:text=The%20Digital%20Millennium%20Copyright%20Act,video%20games%2C%20and%20computer%20software> [<https://perma.cc/Y42H-PFHN>] (last visited Dec. 10, 2023).

<sup>219</sup> Designate Technical Measures (DTMs) are designed to prevent unauthorized access or use of copyrighted material, while Standardized Technical Measures (STMs) are used to promote interoperability between different devices and systems. Both STM and DRM are included in the Digital Millennium Copyright Act (DMCA) of 1998. See Zhen Cheng, et al., *Amplify-and-forward relaying in mobile multi-hop molecular communication via diffusion*, 30 NANO COMMUNICATION NETWORKS 100375 (2021).

are met.<sup>220</sup> They are self-executing contracts stored on blockchain networks and operate according to the rules encoded in their code. In the era of Web 3.0, smart contracts can be used to facilitate decentralized transactions, automate processes, and enable trustless interactions between copyright holders and users.<sup>221</sup> They can also be used to create self-sovereign digital identities owned and controlled by individuals rather than centralized authorities.

Third, there is a need to define and protect the public domain, including works no longer protected by copyright and are available for public use and reuse. In particular, the use of open-source material has to be encouraged.<sup>222</sup> Of course, there needs to be a balance between the rights of copyright holders and the interests of users, including provisions that promote access to knowledge, education, research, and cultural heritage. By using open-source resources,<sup>223</sup> users can avoid copyright infringement issues while still being able to access valuable information and tools.<sup>224</sup> Open-source materials can be licensed to protect the interests of content providers and users. This includes clearly defining the terms and conditions of use, specifying how the materials can be used, and ensuring the rights of all parties are respected. Content providers should be encouraged to participate actively in the open-source community, engaging with users and contributing to ongoing discussions. This process of open-source resourcing can help to build a sense of community and collaboration while ensuring that content providers have a say in how their work is used. Content providers should be incentivized to contribute their work to open-source materials by being recognized for their contributions and benefit from increased exposure and recognition for their work.<sup>225</sup> Users need to be provided with adequate support, including documentation, forums, and other resources, to help them navigate the open-source materials and ensure that they are using the materials in the correct way.<sup>226</sup> This also applies to orphan works, which are copyrighted works whose

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<sup>220</sup> Spencer Cheng & Avni Rambhia, *DRM and Standardization—Can DRM Be Standardized?*, In *Digital Rights Management: Technological, Economic, Legal and Political Aspects*, 162, 164-170, SPRINGER (2003).

<sup>221</sup> Hui Li, et al., *A Review of Approaches for Detecting Vulnerabilities in Smart Contracts within Web 3.0 Applications*, 1.1 BLOCKCHAINS 3, 4-8 (2023).

<sup>222</sup> See Edward Samuels, *The public domain in copyright law*, 41 J. COPYRIGHT SOC'Y U.S.A 137, 138-143 (1993).

<sup>223</sup> Open-source resources are freely accessible tools and software that can be used, modified, and shared. These resources cover a wide range of domains including web development, graphic design, education, and scientific research. Examples include Linux operating systems, LibreOffice office suite, WordPress CMS, and Python programming language. See Nathan R. Swain, et al., *A review of open source software solutions for developing water resources web applications*, 67 ENVIRONMENTAL MODELLING & SOFTWARE 108, 109-115 (2015).

<sup>224</sup> Nathan R. Swain, et. al, *A review of open source software solutions for developing water resources web applications*, 67 ENVIRONMENTAL MODELLING & SOFTWARE 108, 109-113 (2015).

<sup>225</sup> Matthew Bodie, *The future of the casebook: An argument for an open-source approach*, 57 J. LEGAL EDUC. 10, 11-21 (2007).

<sup>226</sup> Olive Huang, *USPTO copyright office orphan works inquiry: Finding homes for the orphans*, 21 BERKELEY TECH. LJ 265, 267-274 (2006).

copyright owner is unknown or cannot be located.<sup>227</sup> Lawmakers may consider establishing procedures for using orphan works to promote access to culturally significant works while protecting the rights of copyright owners.

Fourth, enacting copyright laws needs to involve cross-border considerations, including international treaties and agreements, such as the Berne Convention<sup>228</sup> and the WIPO Copyright Treaty,<sup>229</sup> by ensuring compliance with relevant international standards and agreements.<sup>230</sup> The recognition and protection of foreign copyrights, as well as the protection of U.S. intellectual property abroad, will also need to be considered.<sup>231</sup>

It is important to note that copyright laws are complex and subject to change, especially in the era of the upcoming Web 3.0. While the new trend of decentralization is setting sail by adopting new technologies such as blockchain and smart contracts, the recommended parameters, while useful for balancing the interest of different stakeholders' specific needs and interests, including creators, users, and the public, are nevertheless subject to the impact of some sudden and unexpected appearance of disruptive technologies.<sup>232</sup>

## V. CONCLUSION

To effectively address the challenges posed by involution on the issue of copyright laws, policymakers and stakeholders need to adopt a multidisciplinary and collaborative approach that balances the protection of the rights and interests of creators, users, and intermediaries while promoting access to knowledge, innovation, creativity, and diversity in the digital ecosystem for the benefit of society.

Taking into consideration the impact of Web 3.0 on copyright protection, this article recommends the use of profit-sharing models based on the fair use doctrine implemented through modern technologies like AI in proposing new copyright laws in the Web 3.0 era, the use of decentralized Digital Rights Management (DRM) technology and smart contracts, the encouragement of the use of open source material, and international harmonization of copyright laws.

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<sup>227</sup> Elisa Kuhn, *Abandoned But Not Forgotten: A Proposal for Orphan Works Use in Archives*, 4.1 PATHFINDER: A CANADIAN JOURNAL FOR INFORMATION SCIENCE STUDENTS AND EARLY CAREER PROFESSIONALS 44, 45-51 (2023).

<sup>228</sup> The Berne Convention for the Protection of Literary and Artistic Works, often referred to as simply the Berne Convention, is an international agreement governing copyright first adopted in Berne, Switzerland, in 1886. It sets out basic rules for copyright protection, including the minimum duration of protection, the rights that copyright holders are granted, and the limitations and exceptions to those rights. The convention has 178 member states, making it one of the most widely adopted international agreements in the field of intellectual property. See Mirela Romitan, *Berne Convention on Protection of Literary and Artistic Works-120 Years*, ROM. J. INTELL. PROP. LAW 16, 17-28 (2006).

<sup>229</sup> The WIPO Copyright Treaty (WCT) is an international treaty administered by the World Intellectual Property Organization (WIPO). The WCT was adopted in 1996 and entered into force in 2002. It addresses the challenges posed by new technologies to copyright protection, including digital and online uses of copyrighted works. The WCT has been ratified by many countries around the world, including the U.S., Japan, the EU, and many other countries. See Graeme Dinwoodie, *The WIPO Copyright Treaty: A Transition to the Future of International Copyright Lawmaking*, 57 CASE W. RES. LAW REV. 751, 752-760 (2006).

<sup>230</sup> Kate H. Murashige, *Harmonization of patent laws*, 16 HOUS. J. INT'L LAW 591, 592-601 (1993).

<sup>231</sup> Paul Goldstein, *International copyright: principles, law, and practice*, 3-23 (OXFORD UNIVERSITY PRESS, 2001).

<sup>232</sup> See Erwin Danneels, *Disruptive technology reconsidered: A critique and research agenda*, 21.4 J. OF PRODUCT INNOVATION MANAGEMENT 246-258 (2004).

In conclusion, the keyword of the new Web 3.0 will be “Decentralization.” Web 3.0 will likely cause significant challenges for copyright laws, particularly in ownership, protection, jurisdiction, and distribution. The involutory effect of Web 3.0 on copyright is transforming the nature of copyright itself, making it more complex and difficult to manage. The whole world is witnessing the emerging third generation of the Web. In the coming era of Web 3.0, if U.S. lawmakers primarily base their understanding on Web 2.0 and embrace old models of criminalization and institutionalization, it is difficult to see how the U.S. can maintain its status as a global leader in digital technology.