Chapter 1- Infinite Exclusivity: Endless Challenges in Framing Non / Generative-AI Works in International Copyright Frameworks

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Introduction

Generative AI (**GAI**) tools are foundationally shifting modes of creative production, as entire paintings and songs can be generated within seconds with minimal human direction.[1] As such, with enough computational power, professional musical works can be generated faster it takes to listen to them.[2] In turn, "infinite" generators run 24/7, creating livestreams of seemingly never-ending new content.[3] This is, of course, paradigm-shifting. In turn, the conventional (though much debated) economic rationale underlying copyright frameworks that rational market participants would not invest in the creation of a work if they were not then granted exclusive rights to that work is foundationally undermined, as creators can invest minimal time and effort to create fully formed works with the help of GAI tools.[4]

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[1] Text-to-image models include Open AI's DALL-E 3 (available at: https://openai.com/index/dall-e-3/) , Stability AI's Stable Diffusion (available at: https://stability.ai/news/stable-diffusion-3) , Midjourney Inc's Midjourney (available from: https://www.midjourney.com/home), and Google's Imagen 2 (available at: https://deepmind.google/technologies/imagen-2/). Text-to-music models include Suno AI (available at: https://suno.com/), Udio (available at: https://www.udio.com) , and Stable Audio 2.0 (available at: https://stableaudio.com/)

[2] As of the 24th of July 2024, this was true of both Suno and Udio, which both managed to generate one minute's music in less than one minute.

[3] See, for example: DADABOTS, RELENTLESS DOPPELGANGER \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ \м/ (https://www.youtube.com/live/JF2p0Hlg_5U 2024).

[4] See, for example: Robert M Hurt & Robert M Schuchman, *The economic rationale of copyright*, 56 THE AMERICAN ECONOMIC REVIEW, 425 (1966);ANSGAR OHLY & DIETHELM KLIPPEL, GEISTIGES EIGENTUM UND GEMEINFREIHEIT 3 § 11 (Mohr Siebeck. 2007);Nadine Klass, et al., *Bringing Europe's cultural heritage online: initiatives and challenges*, in EU COPYRIGHT LAW 959, (Irini Stamatoudi & Paul Torremans eds., 2021);PETER DRAHOS & JOHN BRAITHWAITE, INFORMATION FEUDALISM: WHO OWNS THE KNOWLEDGE ECONOMY 177 (The New Press. 2002);Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society L 167 (2001).; U.S. Constitution. Art. I § 8, cl. 8.

These shifted modes of creative production fundamentally alter the behaviour that copyright will now incentivise and challenge our means of determining when an author is unfairly profiting off of the work of another author. The incoherence between current copyright framework applications and these new modes of creative production are apparent. Copyright is turned "upside down", according to Mark Lemley.[5] Edward Lee has called "Code Red For Copyright Law".[6] They are absolutely right, yet the severity of the situation is inflated by the absurd means by which national regulators have sought to respond to these challenges. In both Europe and the United States, courts seek to deny works developed with these state-of-the-art tools of holding copyright, in an effort to maintain the functionality of the status quo.[7] No decision could be more radical – namely, to create a dichotomy of rights between otherwise identical works. Although copyright has never applied to *everything* and there have always been questions as to whether objects which were not clearly artworks should be determined copyrightable works or not, here we are faced with a wholly different set of circumstances.[8] GAI tools are being widely integrated into all manner of creative technologies.[9] As such, this is not a question of debating whether a lamp should be considered an artwork. Instead, this dichotomy would mean nothing less than calling into question the copyright status of every artwork from here on in which *might* have utilised GAI tools. It creates a dichotomy of identical works between the AI-assisted and its non-AI-affected twin, which demands either tracking the process of the artist or reverse engineering the artwork itself to determine whether its stated author can hold exclusive rights to their work.

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[5] Mark Lemley, *How Generative AI Turns Copyright Law Upside Down*, 25 SCIENCE AND TECHNOLOGY LAW REVIEW (2024).

[6] Edward Lee, *The Code Red for Copyright Law*, 76 FLORIDA LAW REVIEW (2024).

[7] See, for example: U.S. Copyright Office Letter to Lindberg re: Zarya of the Dawn (Registration # VAu001480196) (Feb. 21, 2023), https://www.copyright.gov/docs/zarya-of-the-dawn.pdf; Czech Republic Judgment In The Name Of The Republic (Case No. 10 C 13/2023-16) (Oct. 11, 2023), available at: https://justice.cz/documents/14569/1865919/10C_13_2023_10/108cad3e-d9e8-454f-bfac-d58e1253c83a

[8] In the USA, for example, landmark cases such as: Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884); Bleistein v. Donaldson Lithographing Co., 188 U.S. 239 (1903); Mazer v. Stein, 347 U.S. 201 (1954). In Europe, for example: Eva-Maria Painer v Standard VerlagsGmbH and Others, C-145/10, (The Court of Justice of the European Union (Third Chamber)).

[9] Pam Clark, *The next generation of generative AI is now in Photoshop* Adobe Blog *at* https://blog.adobe.com/en/publish/2024/04/23/the-next-generation-generative-ai-now-in-photoshop;*Logic Pro takes music-making to the next level with new AI features* Apple Newsroom *at* https://www.apple.com/newsroom/2024/05/logic-pro-takes-music-making-to-the-next-level-with-new-ai-features/;Peter Kirn, *Magenta Studio: Free AI tools for Ableton Live* Ableton Blog *at* https://www.ableton.com/en/blog/magenta-studio-free-ai-tools-ableton-live/.

To hover a question mark over the rights held to the work both rejects the legitimacy of the creative process, while also destabilising the entire creative economy around such works, as each individual author who wishes to use these tools is unsure what rights they hold. In turn, the lack of harmonisation worldwide means that creators are unsure *where* they will hold rights. As such, this dichotomy undermines both of copyright's pillars, in its inability to protect neither the dignity of creators *nor* the economic market around them. Rather, each new work *may* be in the public domain, *may* be exclusively owned, or *may* hold different rights in different countries.

Yet, most absurdly, even were this dichotomy of identical works purposively coherent, it is entirely unauditable and unenforceable. In turn, it destabilises and disharmonises the international creative economy blindly without means of asserting its own framework. This is especially problematic, given the new potential for massive *scale* of production. Without means of enforcement, a copyright framework that denies ownership of GAI-assisted works inherently incentivises denial of use of GAI-tools in order for an author to achieve full rights to the work created.[10] As such, redesign of copyright frameworks should not focus on trying to ascertain appropriate dichotomy thresholds as to when an artwork has had enough human intervention, if it is *prima facie* clear that it is a literary or artistic work without any confusion as to its stated author. Any copyright framework that seeks to assert a dichotomy of rights in identical works without means of enforcement is a paper tiger – a distraction from the challenges posed to foundational elements of copyright frameworks by new modes of creative production that demand consideration.

As an experimental musician utilising GAI tools in my own creative practice, I will first illumine the rich current-state spectrum of GAI-uses in the creation of musical works. Some of these GAI-uses do not affect the copyrightable aspects of a work. Others do, but in spectrums ranging from trivial to substantial. Other GAI tools are specifically designed by the artist themselves for bespoke aesthetic purpose. All of these tools can have radically different levels of interaction or reliance in development of the final work. As such, the amount and nature of GAI-tool use would need to be granularly understood for each work in a way that even the artists themselves may not know in order to determine whether any work has passed a dichotomy threshold.

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[10] Indeed, this was already foreseen as a critical issue by Pamela Samuelson in 1986. See: Pamela Samuelson, *Allocating ownership rights in computer-generated works*, 47 U. PITT. L. REV., 1226 (1986).

In the second section, I run through the current state of uncertainty in international copyright frameworks around whether GAI-assisted works can hold copyright. I outline the indeterminate dichotomy thresholds being established without international harmonisation nor guidance as to whether the many use cases outlined in the first section would be copyrightable or not. I thus exhibit a clear lack of understanding of how GAI-tools are being utilised by artists by those who are determining their rights over the works they develop.

In the third section, I question the purpose in asserting a dichotomy of rights between identical creative works. I exhibit how doing so does not clearly serve any of the rationales for copyright, while undermining decades of international copyright harmonisation and free trade in creative products.

In the fourth section, I consider a textbook scenario of how GAI-tools are currently being utilised within creative communities, and use this as a starting point to analyse how the vague dichotomy thresholds espoused internationally would struggle to ascertain whether these works could hold copyright.

In the fifth section, I consider trust-based enforcement systems, and outline how artists are incentivised to hide their use of GAI tools in order to receive rights over their work.

In the sixth section, I audit potential auditing systems, and outline the incredible challenges in developing frameworks to ascertain whether artists have used GAI-tools as part of their practice, let alone *how* they have used them at a level of detail granular enough to determine *which* elements of a work should receive copyright and which should not.

In the final section, having exhibited a dichotomy of identical works as dubious in purpose and impracticable in practice, I outline some of the core challenges to copyright frameworks to be considered in the new reality of creative production, where authors can create large numbers of works with minimal investment. If exclusive rights are to be maintained over these works, substantial similarity tests will need to be reconsidered. Copyright will no longer provide the same incentives, and different interpretations will have different market effects. It is to these questions that I will turn in the next Chapter.

The Myriad Uses of GAI Tools In Creative Practice

GAI tools are best known for prompt-based text and image generation, both of which have received enormous amounts of press coverage since the launch of OpenAI's Large Language

Model- (**LLM**)-based chatbot and virtual assistant, ChatGPT, in November 2022.[11] LLM's, such as Open AI's GPT-4, Anthropic's Claude 3, Google Deepmind's Gemini 1.5, and Meta AI's Llama 3, facilitate for-purpose text-generation in response to user input text prompts, such that creative written works, such as poems, stories and screenplays, can be generated on-command.[12] Text-to-image models, such as Open AI's DALL-E 3, Stability AI's Stable Diffusion, Midjourney Inc's Midjourney, and Google's Imagen 2, are similarly able to respond to user text input by producing bespoke images.[13] Although text-to-music generation tools were initially still unable to create music that entirely "passed" for non-AI generated music, rather maintaining their own aesthetically unique glitchy imperfections and garbled vocal stylings, they evolved very quickly.[14] In September 2023, Stable AI launched Stable Audio 1.0, the "first commercially viable AI music generation tool capable of producing high-quality 44.1kHz music" in response to user input text prompts.[15] In the months since then, the quality of publicly available AI music generation has skyrocketed, with the launches of Suno AI, Udio, and Stable Audio 2.0, all of which allow the user to generate entire songs with convincing vocal performances.[16] The quality of this generation of text-to-music GAI tools has already been controversial, as the Recording Industry Association of America and the world's largest record labels, including Sony Music, Universal Music Group and Warner Records, are suing Suno AI and Udio in two separate lawsuits for copyright infringement

[11] Jen Bartholomew & Dhrumil Mehta, *How the media is covering ChatGPT* Columbia Journalism Review *at* https://www.cjr.org/tow_center/media-coverage-chatgpt.php;Paul R Brewer, et al., *Artists or art thieves? media use, media messages, and public opinion about artificial intelligence image generators*, AI & SOCIETY (2024).

[12] *Hello GPT-4o* Open AI *at* https://openai.com/index/hello-gpt-4o/;*Introducing the next generation of Claude* Anthropic *at* https://www.anthropic.com/news/claude-3-family;Sundar Pichai & Demis Hassabis, *Our next-generation model: Gemini 1.5* Google Blog *at* https://blog.google/technology/ai/google-gemini-next-generation-model-february-2024/;*Introducing Meta Llama 3: The most capable openly available LLM to date* AI at Meta Blog *at* https://ai.meta.com/blog/meta-llama-3/.

[13] *DALL·E 3 is now available in ChatGPT Plus and Enterprise* Open AI *at* https://openai.com/index/dall-e-3-is-now-available-in-chatgpt-plus-and-enterprise/;*Stable Diffusion Launch Announcement* Stability AI *at* https://stability.ai/news/stable-diffusion-announcement;Barry Collins, *Midjourney 5.1 Arrives - And It's Another Leap Forward For AI Art* Forbes *at* https://www.forbes.com/sites/barrycollins/2023/05/03/midjourney-51-arrivesand-its-another-leap-forward-for-ai-art/;Eli Collins, *New and better ways to create images with Imagen 2* Google Blog *at* https://blog.google/technology/ai/google-imagen-2/.

[14] See, for example: Andrea Agostinelli, et al., *MusicLM: Generating Music From Text* Google Research *at* https://google-research.github.io/seanet/musiclm/examples/.

[15] *Introducing Stable Audio 2.0* Stability AI *at* https://stability.ai/news/stable-audio-2-0.

[16] Brian Hiatt, *A ChatGPT for Music Is Here. Inside Suno, the Startup Changing Everything* Rolling Stone *at* https://www.rollingstone.com/music/music-features/suno-ai-chatgpt-for-music-1234982307/;Brian Hiatt, *AI-Music Arms Race: Meet Udio, the Other ChatGPT for Music* Rolling Stone *at* https://www.rollingstone.com/music/music-features/udio-ai-music-chatgpt-suno-1235001675/;Introducing Stable Audio 2.0. 2024.

after the plaintiffs were able to use the GAI tools to generate songs that sounded similar to non-GAI works that they owned, such as Mariah Carey's "All I Want For Christmas Is You" and Green Day's "American Idiot".[17]

Yet, text-to-audio generators have also been used to create critically acclaimed and innovative work. Last year, electronic music producer patten (stylised lowercase) released a highly acclaimed album *Mirage FM* on the prestigious and influential record label Warp Records - the first album to be entirely stitched together from text-to-audio generated samples.[18] This year, Udio was used as the main "instrument" in developing a new genre of club music called GenCore.[19] Gencore spotlights the specific sonic imperfections present in Udio generations as core elements of its aesthetic, as voice-cloned (a deepfake synthetic audio technology that substitutes voices) MC's ridicule copyright frameworks.[20] In these instances, text-to-audio generators have been used to create samples that would not be possible without GAI tools in the development of innovative new works and genres.

While much of the publicity and resulting debate around GAI tools focuses on top-to-bottom tools that can create entire works within seconds, there are in fact vast array of available GAI tools that range from those that only very marginally alter a work to those that create entire works from scratch. These include AI audio production plug-ins that are devoted entirely to specific effects, like reverb or delay. By analysing the music recorded, these plug-ins seek to work out the best types and levels of effects to apply to each individual track, such that they will sit well together.[21] Other tools automate EQ'ing – the process of changing the frequency ranges (the highs, the mids and the lows) of each element within a track so that all of the individual elements (such as each instrument) sit nicely together - usually to avoid clashing between too many of the same frequencies across different instruments, such as too much bass or too much treble.[22]

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[17] Jason Koebler, *Listen to the AI-Generated Ripoff Songs That Got Udio and Suno Sued* 404 Media *at* https://www.404media.co/listen-to-the-ai-generated-ripoff-songs-that-got-udio-and-suno-sued/.

[18] PATTEN, *Mirage FM*, (Warp 2023);Chal Ravens, *patten Taps Into Text To Audio AI's Musical Potential* Bandcamp Daily *at* https://daily.bandcamp.com/features/patten-mirage-fm-interview;*patten - Mirage FM* Boomkat *at* https://boomkat.com/products/mirage-fm.

[19] The first GenCore mix can be heard on the podcast episode "NM Presents: Illegal Generation Vol. 1 by the Bootcut Boys w/ intro by Lil Internet" from New Models (2024).

[20] Id. at

[21] See, for example: Neoverb (available here: https://www.izotope.com/en/products/neoverb.html), and Trash (available here: https://www.izotope.com/en/products/trash.html)

[22] See, for example: Sonible (available at: https://www.sonible.com/smarteq4/ ; and Neutron https://www.izotope.com/en/products/neutron.html). For basic understanding of EQ'ing, see: *EQ 101 for music producers* Native Instruments Blog *at* https://blog.native-instruments.com/eq-101/.

Especially helpful for the money-saving musician are AI music mastering tools. Music mastering is a highly specialised post-production process that usually serves as the final step of audio production, in which a specific mastering engineer (usually *not* the person who has produced and mixed the music) takes the final mix of the songs and subtly amends them such that they will sound as good as possible in all of the different acoustic environments that they might be played – from a highly compressed (and therefore lower quality) mp3 file coming out of a laptop speaker to a high-definition surround sound system in a large amphitheatre.[23] The technique is so poorly understood, even by most musical professionals, that it is sometimes referred to as the "dark art" of music production, yet one "that's all but necessary to make music sound great."[24] It is of no surprise then that AI-mastering tools, which analyse the tracks and perform this "dark art" on songs, have been latched onto by musicians who are unable to afford sending their music to a professional mastering engineer, whose fees can be weighty.[25]

AI tools such as these do not directly affect those elements of a song traditionally considered compositional, rather changing the *sound* of individual elements within the song, or indeed the entirety of the song. In turn, it may be debatable whether they are considered GAI tools at all, depending on how their outputs manifest. Naturally, however, there is a great spectrum of their prospective uses. Some genres of music intentionally utilise effects and mixing as core spaces of their compositional expression. For example, dub music, as pioneered in Jamaica in the 1960's, is built off of taking existing recordings (usually reggae songs) and innovatively experimenting with different effects and mixing techniques to recompose the songs into wholly other works.[26] As such, GAI mixing and effects tools can be utilised to take a song that is fully composed and just make it sound *crisper*, or they can be used to alter the sound of the music to the point where it sounds like something else entirely (and of course, the entire gradual spectrum between these two states). Regardless, whether effects are used subtly or transformatively, they have not been expressly recognised as copyright protectable elements in either the United States or in Europe.[27]

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[23] Jordan Kisner, *The Dark Art of Mastering Music* Pitchfork *at* https://pitchfork.com/features/article/9894-the-dark-art-of-mastering-music/.

[24] Id. at.

[25] Mike Levine, *LANDR Mastering Plug-in – A Mix Real-World Review* MIX *at* https://www.mixonline.com/technology/landr-mastering-plug-in-a-mix-real-world-review.

[26] MICHAEL VEAL, DUB: SOUNDSCAPES AND SHATTERED SONGS IN JAMAICAN REGGAE 2 (Wesleyan University Press. 2013);PAUL SULLIVAN, REMIXOLOGY: TRACING THE DUB DIASPORA 8 (Reaktion Books. 2013).

[27] For an examination of copyrightable elements in US copyright law, see: Lewis Sorokin, *Out of Tune: Recomposing the Link between Music and Copyright*, 14 DREXEL L. REV. (2022);Jamie Lund, *Fixing music

Other GAI tools focus on specific instruments, from synthesizers to drums.[28] Some of these focus on the tones of the instruments themselves. One of the great boons of GAI musical tools is that they can create sounds that are strange hybrids of more traditional musical elements, such as a sound that is halfway between a piano and an electric guitar. By playing with parameters, composers can thus generate highly unique tones (say, something between a harp, a violin and a bass guitar) to create melodies, harmonies or sonic textures.

Some of these GAI tools also allow for compositional elements. For example, there are AI-drum plugins that will analyse the music that you have created and generate both different drum samples to create beats with as well as drum patterns that it believes will best suit the work.[29] Thus, a songwriter who does not know how to drum program can record songs and then cycle through options for both drum sounds and patterns until they find one that they believe suits the song. A more advanced producer can use the same tool more intensively – utilising the generative capacities with more specific understandings of the parameter adjustments to generate something more in line with whatever their vision of the beat is.

In this way, GAI tools are both able to "fill in the gaps" in instances where a musician only has expertise in certain instruments, or can themselves be used expertly to specifically generate more sophisticated or strange sounds and patterns that would be difficult or time-consuming to create without GAI tools. Naturally, there is an entire spectrum between those who simply generate an entire drum track with the press of one button, barely intervening into the tool's preset settings, and someone who specifically designs a very sophisticated drum track using GAI tools. Yet, even the former may sit there re-generating over and over, unsure of what they want, waiting for the tool to generate something that fits the song they are writing. This is itself a highly creative process that requires an ear for selection and arrangement, akin to the myriad artists who record session musicians jamming, waiting until they play something that the artist likes. As such, even within those musicians pressing a button to generate a drum line or a bass line, there is a spectrum between those choosing the first thing generated and those who tirelessly reflect upon, curate and arrange a large amount of generated material.

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copyright, 79 Brook. L. Rev. (2013). For international analysis of copyrightable elements, see: Andreas Rahmatian, *The Musical Work in Copyright Law,* 73 GRUR International (2024).

[28] See, for example: Session Loops' DrumNet (available at: https://sessionloops.com/drumnet) and BeatSurfing's RANDOM (available at: https://beatsurfing.com/audio-plugins/random/)

[29] Such as Session Loops' DrumNet (available at: https://sessionloops.com/drumnet). Professional music software Logic Pro is also integrating tools these tools. See: Logic Pro takes music-making to the next level with new AI features. 2024.

Still other GAI tools serve as musical assistants, providing musical information around that which has been recorded and suggesting means by which to develop the composition and production of the work.[30] For example, there are tools which are able to analyse simple compositions that a songwriter may have written (such as those with basic melodies and lyrics, written on one instrument) that can recommend different chord progressions, harmonies and arrangements.[31] GAI software could then be used to fill out tracks with additional instrumentation.[32] In this way, GAI tools are making it easier for simple pop songs to be quickly converted into grand orchestral works, or remixed into slamming electronic club tracks. By the same token, half-written melodies can receive suggestions as to how best to finish them, or songwriters with only a verse or chorus can cycle through options that sound like appropriate compositional next steps. This is one of GAI's most helpful creative uses: generating a litany of prospective options to continue to build upon an artist's work when they are suffering writer's block.

Other tools being developed try to split the difference between more compositionally involved tools for use within audio production software and "out-of-the-box" text-to-music song generators, by adding more musical language understanding to the latter.[33] In turn, creators can both describe the style of the song, as well as write out the chord progression or the tempo, and generate a work. Creators are then also able to cycle through the same song in different genres, or otherwise use language to describe a new style entirely.[34] These tools are working towards a world where music production software will function more like an AI-assistant - "Turn this rock song I recorded into a slow bossanova version, 90 bpm, and add in a bridge after the second verse that goes from Gsharp minor to Csharp minor 4 times. Then show me a techno version – 144 bpm – that is just the chorus."

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[30] For example, W.A. Productions' InstaChord 2 (available at: https://www.waproduction.com/plugins/view/instachord-2)

[31] Id. at

[32] Logic Pro takes music-making to the next level with new AI features. 2024.

[33] Or Tal, et al., *Joint Audio and Symbolic Conditioning for Temporally Controlled Text-to-Music Generation*, ARXIV PREPRINT ARXIV:2406.10970, 6 (2024).

[34] Id. at. See also a demo page for the model at: https://pages.cs.huji.ac.il/adiyoss-lab/JASCO/

One of the most publicised (and indeed, controversial) uses of GAI tools for musical composition is voice cloning (also known as audio deepfakes).[35] Voice cloning is a process whereby synthetic copies of a human voice are created that can then speak or sing text.[36] The technique first went viral in April 2023 when a song called "Heart On My Sleeve" featuring synthetic voice clones of pop stars the Weeknd and Drake was released by an online creator known as @ghostwriter, without any involvement from the stars in question.[37] The ensuing uproar across artistic communities resulted 12 months later in musician FKA twigs appearing in the United States' Congress to testify before the Senate Judiciary Subcommittee on Intellectual Property in support of the Nurture Originals, Foster Art, And Keep Entertainment Safe (**NO FAKES**) Act, which seeks to protect artists from unauthorised GAI uses of name, image and likeness.[38] At the time of writing, the NO FAKES Act is still under consideration in its draft form. Despite the controversy surrounding unauthorised use of artists' likeness, popular musicians have themselves released music featuring voice cloning. In his recent highly publicised feud with rapper Kendrick Lamar, Drake graduated from unauthorised voice *clonee* to unauthorised voice *cloner,* releasing a song with AI-generated voices of West Coast hip-hop legends (and heroes of Lamar) Tupac Shakur and Snoop Dogg dissing Lamar (in the case of Shakur, from beyond the grave).[39] Drake quickly removed the song from his Instagram (where he had initially published it) after receiving a cease-and-desist letter on behalf of the Shakur estate which threatened litigation for "[n]ot only… a flagrant violation of Tupac's publicity and the estate's legal rights … [but] also a blatant abuse of the legacy of one of the greatest hip-hop artists of all time."[40] Lamar's responding

[35] See, for example: Catherine Stupp, *Fraudsters Used AI to Mimic CEO's Voice in Unusual Cybercrime Case* Wall Street Journal *at* https://www.wsj.com/articles/fraudsters-use-ai-to-mimic-ceos-voice-in-unusual-cybercrime-case-11567157402;Rashard Rose & Marshall Cohen*, Political consultant behind fake Biden AI robocall faces charges in New Hampshire* CNN *at* https://edition.cnn.com/2024/05/23/politics/new-hampshire-ai-robocall-biden-charges/index.html;*Deepfake audio of Sir Keir Starmer released on first day of Labour conference* Sky News *at* https://news.sky.com/story/labour-faces-political-attack-after-deepfake-audio-is-posted-of-sir-keir-starmer-12980181.

[36] *What is Voice Cloning?* ElevenLabs Blog *at* https://elevenlabs.io/blog/what-is-voice-cloning.

[37] Mark Savage, *AI-generated Drake and The Weeknd song goes viral* BBC *at* https://www.bbc.com/news/entertainment-arts-65298834.

[38]Ethan Millman, *FKA Twigs Developed Her Own Deepfake* Rolling Stone *at* https://www.rollingstone.com/music/music-news/fka-twigs-ai-deep-fake-senate-regulation-1235012242/.; Chris Coons, et al., The Nurture Originals, Foster Art, and Keep Entertainment Safe (NO FAKES) Act one pager (2023).

[39] Vicky Wong & Bonnie McLaren, *Drake: AI Tupac track gone from rapper's Instagram after legal row*, BBC (2024).

[40]Id. at.; Bill Donahue, *Tupac Shakur's Estate Threatens to Sue Drake Over Diss Track Featuring AI-Generated Tupac Voice,* BILLBOARD (2024).

song, "Not Like Us", which speculates that Shakur's fans will kill Drake for daring to voice clone the legend, immediately topped the charts and broke multiple streaming records (many of which were previously held by Drake), including Spotify's largest ever single day streams for a hip hop song, most streams in a week by a rapper, and the fastest rap song to accumulate 100 million, 200 million, 300 million, 400 million, and 500 million streams.[41] (Another diss track responding to Drake during the feud, Metro Boomin's "BBL Drizzy", sampled an AI-generated song that comedian King Willonius created using Udio, also named "BBL Drizzy", making it the first prominent example of AI sampling in commercial music production.[42] This first use of AI-sampling immediately went viral, garnering millions of streams.)[43]

As such, much of the publicity around voice cloning has honed in on the controversy of unauthorised use of other artists' likenesses. However, voice cloning technology offers utility far beyond swapping out one voice for that of another artist. Rather, GAI audio deepfake tools allow musicians not only to replace voices with other voices, but also instruments with other instruments.[44] This is an incredibly useful tool, as it means that an artist can whistle their prospective guitar solo and immediately convert it into the sound of a guitar without even being able to play a single guitar chord. Indeed, an artist can sing every single part of a song without knowing how to play *any* of the instruments, and then have each instrument subbed in for the sound they initially made. By the same token, each instrument can be converted into any other instrument, or any other sound, such that an artist could listen to an entire symphony with each instrument converted into a different animal sound (pigs for flutes, birds for violins, legal scholars beatboxing for the drums). This is a truly paradigm-

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[41] Preezy Brown, *Kendrick Lamar's "Not Like Us" Breaks Drake's 2021 Spotify Record For Most Streams In A Day* Vibe *at* https://www.vibe.com/music/music-news/kendrick-lamar-not-like-us-breaks-spotify-streams-record-drake-1234876810/;Kelli Johnson, *Kendrick Lamar shatters streaming records* Fox 11 Los Angeles *at* https://www.foxla.com/news/kendrick-lamar-billboard-hot-100;Gabriel Bras Nevares, *Kendrick Lamar Breaks Yet Another Drake Spotify Streaming Record With "Not Like Us"* HotNewHipHop *at* https://www.hotnewhiphop.com/807204-kendrick-lamar-not-like-us-drake-streaming-record-spotify-200-million-hip-hop-news;*Kendrick Lamar's "Not Like Us" Becomes Fastest Hip-Hop Song in History To Reach 300 Million Spotify Streams* HYPEBEAST (2024);Will Schube, *Kendrick Lamar Claims Another Victory Over Drake With 'Not Like Us' Video Views* HipHopDX *at* https://hiphopdx.com/news/kendrick-lamar-not-like-us-views-drake-family-matters;Sam Moore, *Kendrick Lamar's 'Not Like Us' Returns To No. 1 After Breaking Another Drake Record* see id. at *at* https://hiphopdx.com/news/kendrick-lamar-not-like-us-returns-number-1-billboard-hot-100.

[42] Kristin Robinson, *Metro Boomin's 'BBL Drizzy' Is More Than a Joke – It Could Signal the Future of Sampling* Billboard *at* https://www.billboard.com/business/tech/metro-boomin-bbl-drizzy-future-ai-sampling-1235682587/.

[43] Maxwell Zeff, *The Saga of 'BBL Drizzy'* Gizmodo *at* https://gizmodo.com/saga-bbl-drizzy-drake-kendrick-lamar-metro-boomin-1851470820.

[44] For example: Replay (available at: https://www.tryreplay.io/)

shifting compositional affordance made possible by GAI tools, bound to lead to sonically adventurous new works that were previously impossible to create.

They are especially valuable when used with AI isolators, which allow musicians to isolate a single element (such as a vocal performance or a guitar solo) from a song and use it elsewhere.[45] This was the highly publicised technique used to remove John Lennon's vocal performance from an old Beatles demo, such that the surviving Beatles could re-record the entire instrumental track beneath it without hearing the musty old piano from the original.[46] Thus, the Beatles were able to give us another chart-topping AI-assisted hit, setting the record for longest gap between number one singles by an artist (54 years!)[47] If you combine AI isolators with AI voice cloning technologies, anyone can take any song, choose any element they like, and change the sound of the element such that it is no longer recognisable. You could take your favourite Miles Davis solo, turn it into the sound of children laughing, play it backwards, and then fill it out with an automated 3-piece band – bass, keyboards, drums. It would take no time at all, and might sound beautiful.

As such, there is a great spectrum of GAI tools for use in music, from those that simply spruce up the sheen of the sound to those that suggest added instrumentation for songs already written to those that generate entire songs from simple text prompts. Yet, the level of generation by the model itself is not necessarily an accurate arbiter as to the level of authorial control over the output. Many artists are themselves developing and refining models for their own use to generate their own specific bespoke works. Here, model design is expressly authorial, laboured over by artists as part of the process in determining the final output. Prior to the recent advent of text-to-music tools that drastically reduced the amount of labour required to create a fully formed AI-generated work, the most prominent GAI artistic works were products of labour intensive artist-led model-training and refining. High profile artists such as Refik Anadol and Mario Klingemann have trained bespoke machine-learning data sets for years to create aesthetically unique artworks.[48] Last year, Anadol trained a machine

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45 See, for example: Ultimate Vocal Remover v5 (available at: https://ultimatevocalremover.com/). These tools are also being integrated into professional music software, such as Logic. See: Logic Pro takes music-making to the next level with new AI features. 2024.

46 Laura Snapes, *The Beatles: 'final' song Now and Then to be released thanks to AI technology* The Guardian *at* https://www.theguardian.com/music/2023/oct/26/the-beatles-final-song-now-and-then-ai-technology.

47 Ben Beaumont-Thomas, *The Beatles set record 54-year gap between No 1 singles as Now and Then tops UK chart* see id. at *at* https://www.theguardian.com/music/2023/nov/10/the-beatles-54-years-no-1-singles-now-and-then-uk-chart.

48 Refik Anadol, et al., *Modern Dream: How Refik Anadol Is Using Machine Learning and NFTs to Interpret MoMA's Collection* MoMA Magazine *at* https://www.moma.org/magazine/articles/658;Malarie Gokey, *Can*

learning model on the New York Museum of Modern Art 's (**MOMA**) collection to create a work titled "Unsupervised – Machine Hallucinations" that reinterpreted the collection into a continuously evolving generative piece (yet one that retained Anadol's aesthetically recognisable style).[49] This work was itself then added to the MoMA's permanent collection along with another GAI work by artist Ian Cheng, which changes in real time according to the activity of its owner's blockchain wallet.[50] Prior to text-to-music generators, the most high-profile AI-generated music was by experimental electronic musician Holly Herndon, who had trained a machine learning model on musicians she knew (as well as herself) with her creative and romantic partner Mat Dryhurst (with assistance from AI expert Jules LaPlace).[51] She referred to the model as her AI baby "Spawn", which she used to create the first album to utilise singing neural networks.[52] Since then, Herndon and Dryhurst have worked with other AI experts to build technologies (along with accompanying ethical frameworks) to evolve what they refer to as "spawning", "the ability to generate new media in the likeness of someone else".[53] In 2021, Herndon and Dryhurst built a voice-cloning tool called "Holly+", which allows artists to sing live with their voice converted into Herndon's in real time.[54] Holly+ was used to produce the first voice-cloned song on Spotify, a cover of Dolly Parton's "Jolene" converted into Herndon's voice.[55] Voctro Labs, the AI research lab that helped Herndon develop Holly+ along with the other first virtual singers for Yamaha, has since been acquired by Voicemod, which is producing but one of a number of competing real life voice changers currently available.[56]

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machines be creative? Meet the Google coders teaching them to make art_ Digital Trends _at_ https://www.digitaltrends.com/computing/google-machine-learning-and-art/.

[49] Harrison Jacobs, _MoMA Acquires Refik Anadol's Popular Generative Artwork 'Unsupervised'_ ARTnews _at_ https://www.artnews.com/art-news/artists/moma-acquires-refik-anadol-unsupervised-digital-art-nfts-1234681622/.

[50] Id. at.

[51]Sasha Geffen, _Holly Herndon - PROTO_ Pitchfork _at_ https://pitchfork.com/reviews/albums/holly-herndon-proto/;Scott Wilson, _Interview: Holly Herndon & Mat Dryhurst_, FACT 2022;Emily Mackay, _Holly Herndon: Making music with her AI child Spawn_ BBC _at_ https://www.bbc.com/culture/article/20190511-holly-herndon-making-music-with-her-ai-child-spawn;Holly Herndon, _Holly+ ? ?_ mirror.xyz _at_ https://holly.mirror.xyz/54ds2IiOnvthjGFkokFCoaI4EabytH9xjAYy1irHy94.

[52] Geffen. 2019;Wilson, FACT. 2022;Herndon. 2021;Mackay. 2019.

[53] Wilson, FACT. 2022.

[54] Herndon. 2021;TED, WHAT IF YOU COULD SING IN YOUR FAVORITE MUSICIAN'S VOICE? | HOLLY HERNDON | TED (https://www.youtube.com/watch?v=5cbCYwgQkTE 2023).

[55] _Voicemod Acquires Voctro Labs to Power the AI Singing Generation_ Voicemod _at_ https://www.voicemod.com/latest-press-releases/voicemod-acquires-voctro-labs-to-power-the-ai-singing-generation.

[56] These include Voicemod (available at: https://www.voicemod.net/), Voice.ai (available at: https://voice.ai/) and Altered (available at: https://www.altered.ai/real-time/)

Herndon & Dryhurst were not alone in trying to create new forms of music with AI models. The Dadabots, whose sworn goal is to "Eliminate Humans From Music", have been developing AI modelled music since 2012, and are now known for their infinite music generators which endlessly live-stream generated music.[57] They have emerged as prominent innovators in an underground musical ecosystem that evolved out of university hackathons, events where coders meet up to develop pioneering new technologies.[58] Where only recently, designing one's own GAI training set to create a bespoke model for one's own music required specialised knowledge and was practiced by only a highly niche community, the barrier to entry has been radically reduced in recent years. Now, open source access to generative audio models such as RAVE: Realtime Audio Variational autoencoder and Dance Diffusion, along with vibrant community tutorials and troubleshooting, allow musicians to train their own models on whatever audio they want, in order to create their own bespoke GAI tools.[59] The Dadabots state on their website that they "want to give [musicians] artistic superweapons and see what fires out of their brains. But really if we can make it really accessible, there will be kids taking it places no one's ever dreamed."[60] Within a vast array of Discord servers (a number of which are actively led and moderated by the Dadabots), this ethos is manifested, as some individual servers devoted to bespoke GAI-model building for music generation have tens of thousands of members alone. These servers are bursting with musical works developed using GAI tools built by the users themselves. Musicians can livestream the outputs of their models, where the infinite stream is itself the work.[61] Where only a few years ago, much of the output of these infinite streams was glitchy, abstract and noisy, some of them are now remarkably coherent – bespoke artistic creations of infinite length developing custom-made music at the behest of their creator.

We can thus summarise that artists can use GAI tools in ways that do not meaningfully affect copyrightable elements of a work. Artists can also use GAI tools for specific ideas for copyrightable elements of a work within a larger work (such as a bass line suggestion within a song). Artists can use GAI tools to create entire works within seconds. These GAI tools may themselves be developed wholly or in part by the artist themselves as a part of their

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[57] See, for example: DADABOTS, Pho Queue (https://www.youtube.com/watch?v=uZ-K647LViU 2024). For more information on the Dadabots' many works, visit their website at: https://dadabots.com/

[58] DADABOTS, *DADABOTS FAQ, available at* https://dadabots.com/faq/.

[59] Most of this activity takes place in underground music community Discord servers. These include such the Dadabots own DADABOTS KVLT server, among many others.

[60] DADABOTS, DADABOTS FAQ.

[61] Such as DADABOTS, Pho Queue. 2024.

creative practice. Artists can use any of these GAI tools to vastly different degrees and with massively different levels of interaction or reliance. The output of these GAI tools are beholden not only to the creative decisions of those who use the GAI tools, but also those who designed the GAI tools and those whose creative work was used in the training input of these GAI tools. The GAI-element may form a tiny part of the final work, or a be used across the entire work but only to a tiny degree.

As some works are laboured over for years and GAI-tools are being integrated into all elements and stages of creative production in all manner of utilities, it is nigh on impossible to expect an artist to remember every time they have applied a GAI-tool to an aspect of their work in the often long and arduous process of creative development. Even were they to, it would be nigh on impossible to individually evaluate every time that an artist used the GAI tool as to whether it has passed an uncertain threshold into over-reliance on the tool. Despite this unworkability, this interaction threshold system is what is being relied on by international regulatory bodies.

Let us then examine how, and *why*, international copyright frameworks seek to differentiate receiving authorship by asserting an unclear dichotomy somewhere within this infinite quagmire of use cases.

The Current State of the Law

Despite decades of international copyright harmonisation to avoid the economic pitfalls of drastically variant national copyright frameworks, there is no consensus nor harmonisation across international legal frameworks as to when AI-assisted outputs should receive copyright. Most countries are yet to clarify how their respective legal frameworks should apply to AI-assisted works. Those that have take differing approaches, yet none have provided a specific enough framework that any artist playing in the grand spectrum of GAI use cases could be certain exactly when their work is sure to receive copyright. On the most permissive end of the spectrum (and in turn, the clearest threshold to cross), China's Beijing Internet Court was the first court in the world to grant copyright to an AI-generated image in the case of Li v. Liu.[62] The plaintiff in the case, Li, used Stable Diffusion, a text-to-image generative AI model, to generate a picture of a woman. The text that Li prompted the model with was relatively extensive. Per the official translation, the initial prompt was:

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[62] Li v Liu, Jing 0491 Min Chu No. 11279, (Beijing Internet Court). English translation available at: https://english.bjinternetcourt.gov.cn/pdf/BeijingInternetCourtCivilJudgment112792023.pdf

"(ultra photorealistic:1.3)，extremely high quality highdetail RAW color photo,in locations,japan idol,highly detailed symmetrical attractive face,angular simmetrical face,perfectskin,skin pores,dreamy black eyes,reddish-brown plaits hairs,uniform,long legs,thighhighs,soft focus,(film grain,vivid colors,film emulation,kodak gold portra 100, 35mm, canon50 f1.2)，Lens Flare,Golden Hour,HD,Cinematic,Beautiful Dynamic Lighting". [63]

The negative prompting – those attributes that the plaintiff did not want to see - was even more extensive:

"((3d,render,cg,painting,drawing,cartoon,anime,comic:1.2)) bad anatomy,bad hands,text,error,missing fingers,extra digit,fewer digits,cropped,worst quality,signature,watermark,username,blurry,artist name,(longbody)，bad anatomy,liquid body,malformed,mutated,badproportions, uncoordinated body,unnaturalbody,disfigured,ugly,gross proportions,mutation,disfigured,deformed,(mutation),(child:1.2)，b&w,fat,extra nipples,minimalistic,nsfw,lowres,badanatomy, bad hands,text,error,missing fingers,extra digit,fewer digits,cropped,worst quality,low quality,normal quality,jpeg artifacts,signature,watermark,username,blurry,disfigured,kitsch,ugly,oversaturated,grain,low-res,Deformed,disfigured,poorly drawn face,mutation,mutated,extra limb,ugly,poorly drawn hands,missing limb,floating limbs,disconnected limbs,malformed hands,blur,out of focus,long neck,long body,ugly,disgusting,poorly drawn,childish,mutilated,mangled,old,surreal,text,b&w,monochrome,conjoined twins,multiple heads,extra legs, extra arms,meme,elongated,twisted,fingers,strabismus,heterochromia,closed eyes,blurred,watermark,wedding,group,dark skin,dark-skinned female，，tattoos,nude,lowres,badanatomy,badhands,text,error,missing fingers,extra digit,fewer digits,cropped,worst quality,low quality,normal quality,jpeg artifacts,signature,watermark,username,blurry".[64]

Li then adjusted the parameters and regenerated the image 3 more times before he was satisfied with the output, which he posted on the Chinese social media platform Xiaohongshu. The Chinese court considered four elements in determining whether the image was a copyrightable work: "1. Whether it falls under the realm of literature, art, or science; 2.

[63] Id. at, 4.
[64] Id. at.

Whether it is original; 3. Whether it is expressed in a certain form; 4. Whether it is an intellectual achievement".[65] The Court found that due to the extensive prompting and refinement of the tool's generative parameters, "the picture involved reflects the plaintiff's intellectual investment" and "reflects the plaintiff's personalized expression."[66] Therefore, the contentious elements, "originality" and "intellectual achievement", are both satisfied, and the image holds copyright. Although the threshold to be passed is not entirely clear, given the detailed level of prompting, this is the closest a court has come to asserting a *de minimis* level of human creative interaction to receive authorship over a GAI-assisted work.

This can be contrasted with the USA, whose Copyright Office (**USCO**) expressly rejected copyright over the images in the *Zarya of the Dawn* graphic novel, which were created using the text-to-image GAI program, Midjourney, on the grounds that the author Kristina Kashtanova "lack[ed] sufficient control" over the output, was not able to "predict what Midjourney will create ahead of time" and did not "dictate a specific result", asserting that the USCO "will not knowingly register works produced by a machine or mere mechanical process that operates randomly or automatically without sufficient creative input or intervention from a human author."[67] Yet the USCO did allow copyright over the *non*-GAI elements of the work, leading to a policy of granular differentiation within works between GAI-elements and non-GAI-elements. Only a few weeks later, the USCO clarified its position with a Copyright Registration Guidance document, asserting that the copyrightability of AI-generated material "will depend on the circumstances, particularly how the AI tool operates and how it was used to create the final work" in a "case-by-case inquiry".[68] Despite this supposed openness to a certain threshold of human interaction, the USCO also states in the document that "if a work's traditional elements of authorship were produced by a machine, the work lacks human authorship and the Office will not register it."[69] This has served as the USCO's position since the publication of the Guidance Document, which also imposes a new duty to "disclose the inclusion of AI-generated content in a work submitted

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[65] Id. at, 10.
[66] Id. at, 15.
[67] U.S. Copyright Office Letter to Lindberg re: Zarya of the Dawn (Registration # VAu001480196) (Feb. 21, 2023), https://www.copyright.gov/docs/zarya-of-the-dawn.pdf, 2, 8-9 (*hereinafter* Zarya of the Dawn decision)
[68] Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 FED. REG. 16,190 (Mar. 16, 2023) (to be codified at 37 C.F.R. § 202), available at: https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence, 16192
[69] Id. at

for registration."[70] While the US Copyright Board claims to have "examined hundreds of works that incorporate AI-generated material and has issued registrations to well over 100 so far", this carefully worded statement dodges whether it has issued copyright to the AI-generated elements of the works (nor provided specifics about *any* of the works themselves).[71] It is therefore unclear whether GAI-elements have been granted copyright, or whether this is solely an extension of the granular differentiation policy. Indeed, every published decision from the US Copyright Review Board of AI-generated content has expressly denied copyright.[72]

The Chinese approach and the US approach seem *prima facie* divergent, given one allows copyright for a generated image while the other rejects it. Yet, both ostensibly claim that an AI-assisted work can hold copyright, given a requisite threshold of human intervention in the output is surpassed. Thus, they rather both exist on different ends of the same spectrum. Although it is unclear whether any AI-generated work has passed this threshold in the USA, the increasing ubiquity of GAI tools in professional creative production software will render the sustained rejection of copyright over *all* AI-generated elements unfeasible. Eventually, even the US' framework will need to assign full copyright over a work that has *some* minimal AI-generated elements, lest it seeks to audit every bass line and drum track for the entire next generation of creative works.

And what of the EU? Although the EU has gone to great efforts to harmonise its copyright acquis, it remains a "piecemeal patchwork".[73] Regrettably, it is an especially uncertain patchwork when dealing with GAI-assisted works, as there is very little legislation or case law across Europe providing any clarity. The case law of the Court of Justice of the European Union has essentially amounted to four interrelated criteria that an AI-assisted output must meet to be designed a copyrightable "work" – namely, that the output is (1) in relation to production in the literary, scientific or artistic domain; (2) the product of human intellectual effort; and (3) the result of creative choices that are (4) expressed in the output.[74] The most

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[70] Id. at 16193

[71] Shira Perlmutter, USCO Letter on AI and Copyright Initiative Update February 23 (Chris Coons, et al. eds., 2024). available at: https://copyright.gov/laws/hearings/USCO-Letter-on-AI-and-Copyright-Initiative-Update-Feb-23-2024.pdf?loclr=blogcop

[72] *supra* 6 Lee, FLORIDA LAW REVIEW, 9 (2024).

[73] Agnès Lucas-Schloetter, *Is there a concept of European copyright law? History, evolution, policies and politics and the acquis communautaire, in* EU COPYRIGHT LAW 12, (Irini Stamatoudi & Paul Torremans eds., 2021).

[74] P Bernt Hugenholtz & João Pedro Quintais, *Copyright and artificial creation: does EU copyright law protect AI-assisted output?,* 52 IIC-INTERNATIONAL REVIEW OF INTELLECTUAL PROPERTY AND COMPETITION LAW, 1193-1200, 1212 (2021).

contentious criteria here are the third and fourth, demanding an uncertain level of requisite creativity and expression.[75] For the most part, national legislation across Europe has not specifically outlined which works are protected or not. However, on the 20th of May, the Italian AI Law Proposal was submitted to the Italian Parliament for discussion, which now specifies that AI-generated works can only be protected when created by humans "provided that they constitute the result of the author's intellectual work."[76] Although this Proposal was ostensibly drafted to provide clarity around this issue, this legislative criterion provides little guidance as to what threshold must be met for a work to be considered "the result of the author's intellectual work". Within the rich array of potential GAI-use-cases laid out in the previous section, there is no certainty where authorship would be granted. The Proposal could truly signal interpretation more akin to the Chinese approach, the US approach, or any indeed any other.

The only case law in Europe over whether a GAI-output can receive copyright comes from the Czech Republic, where the court took a hardline approach rejecting authorship of an image created using OpenAI's text-to-image generator Dall-E. [77] The image was generated from the text prompt - "Create a visual representation of two parties signing a business contract in a formal setting, such as a conference room or a law firm office in Prague. Show only hands."[78] In its judgment, the court did not think of Dall-E as a tool for an artist, but a substitute for the artist themselves, rejecting authorship on the grounds that the picture "does not meet the defining characteristics of a copyrighted work" as "[t]he plaintiff did not personally create the work; it was created by artificial intelligence."[79] Although this reasoning is not dissimilar that of the US Copyright Office's, the judgment's language takes a step further towards a misguided anthropomorphising of the tool. This is seemingly an unfortunate byproduct of the widespread ill-defined usage of "artificial intelligence" to refer to an array of disparate technologies. While image- or music-creation tools have existed for a long time without any risk of them being considered anything other than creative tools for use by artists, user interface decisions for LLM's around chatbot and virtual assistant functionality,

[75] Id. at, 1212.
[76] Gianluca Campus, *Artificial Intelligence and copyright: the Italian AI Law Proposal* Kluwer Copyright Blog *at* https://copyrightblog.kluweriplaw.com/2024/05/28/artificial-intelligence-and-copyright-the-italian-ai-law-proposal/.
[77] Czech Republic Judgment In The Name Of The Republic (Case No. 10 C 13/2023-16) (Oct. 11, 2023), https://justice.cz/documents/14569/1865919/10C_13_2023_10/108cad3e-d9e8-454f-bfac-d58e1253c83a
[78] Id. at
[79] Id. at

along with other human-imitating capacities, has led to widespread anthropomorphising of AI tools which now "hallucinate" and are said to "see, hear, and speak".[80] This is a dangerously wrong-headed perception of GAI creative tools, as it detaches the current debates around ascribing authorship to GAI-assisted works from the long history of copyrightability debates in the face of new modes of cultural production.

As evidenced in the previous section, there are an array of GAI-technologies that authors can use in their creative practice of variant nature to variant degrees. Regrettably, the court's factually incorrect and precedentially useless reasoning is that the tool is the creator, and as a tool is not a human, there is no creator. This hardline rejection avoids the actual question at play here: what is the threshold of interaction with a GAI tool by which the artist *would* own the work they create? Given the European Union's concerted efforts to harmonise copyright across Europe, it is unclear the extent to which other European countries will follow suit. Although the denial of copyright over a single-prompt GAI image may not be especially contentious across the continent, the reductive reasoning which fails to adequately interrogate the vast spectrum of GAI-tool use in creative practice is unsustainable in its simplicity for harmonised international policy.

Thus, there are divergent tests for copyrightability worldwide, harmonised only in their collective uncertainty as to when GAI-assisted works can receive copyright, to be determined on a case-by-case. On the most permissive end of the spectrum, China has the only court to have expressly granted copyright to a work which was entirely developed with a generative AI-tool. On the other end of the spectrum lies the USA, which has repeatedly denied copyright to AI-assisted outputs, even in instances where extensive human creative expression is apparent within the works. Yet, despite these ostensibly divergent approaches with expressly differing legal criteria that must be met for a work to receive copyright, all of these frameworks are predicated on an unclear threshold of human interaction with generative AI tools which, if surpassed, will grant a human creator copyright over the output.

Due to this uncertainty, there is no international harmonisation as to which of the works built using these tools will be hold copyright in different nations. With express rejection of works using GAI tools in the USA and in Europe, the myriad prospective works built from GAI tools (as outlined in the first section) currently live in a regulatory no-mans-land, with an entire class of new songs, images and videos that been developed using state-of-the-art tools holding no legal certainty as to their copyright status internationally. Although we do not

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[80] Nicholas Barrow, *Anthropomorphism and AI hype,* AI AND ETHICS, 2 (2024).

need an *identical* framework worldwide, there cannot be an entirely open season as to which works receive copyright in certain countries and which do not. Within the infinite use-cases of GAI tools, what should this harmonised standard of requisite human interaction be? Where European and US copyright frameworks have both traditionally required only a very low threshold of creativity to receive copyright in the resulting work, it is apparent from the hardline rejections of GAI works in the USA and the Czech Republic that something more significant than *de minimis* creative input is required. The US Copyright Office's determination in the *Zarya of the Dawn* case has provided the most specific (although still murky) criteria as to a different standard, focusing on a lack of sufficient control over the output, inability to predict the output ahead of time, and lack of dictation of a specific result.[81] Yet, as basic GAI tools are more readily incorporated into professional visual and music software, this ostensibly conservative regime may instead serve as a radical rejection of the copyright system, denying copyright over the next generation of creative works for their use of contemporary compositional tools.[82] Despite its admirable specificity over the European free-for-all, the criteria are in stark opposition to the creative utilities of GAI creative tools. The lack of predictability and the freedom to *not* need to dictate a specific result are not solely helpful as replacements for labour. They are core utilities in an emergent modality of creative practice which can create works impossible to create through any other process. It is for this reason that artists go through the significant labour of designing their own GAI models so as to specialise outputs towards their own goals. Yet, even an entirely bespoke GAI model developed by an artist to generate aesthetically specific output, such as those by Refik Anadol or Holly Herndon, does not generate output that is predictable or specifically dictated. Indeed, much of the joy of creating art with GAI models comes from the excitement of *not* knowing what will come out. Thus, GAI tools specifically designed for use by creators to create are absurdly deemed to have removed creative intention. If the world were to maintain these criteria as suggested by the US Copyright Office, then something extraordinary would happen. There would no longer be copyright over an enormous number of new works that otherwise resemble the old works. Although there is a rich corpus of case law in different national frameworks around when artworks are able to receive copyright,

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[81] Zarya of the Dawn decision, 9

[82] Edward Lee has also written about the "near limitless" ways that AI inpainting can be used to amend an image. See: Edward Lee, *Prompting progress: authorship in the age of AI*, 76 FLORIDA LAW REVIEW, 5, 9-10 (2024).

traditionally these cases have debated the status of works that lived within the grey area of non-artistic and artistic works.[83]

Now, large amounts of completed creative works of an expressly artistic nature may not be able to hold copyright. Their aesthetics are deemed unattributable to a human creator, despite their existence being the direct product of human creators (be it those who trained the model, those who created the input material used to train the model or those who directed the model). Thus, GAI-assisted works have been treated more like raw materials than they have the outputs of creative decision making. Yet, this is inherently problematic when the raw material in question is clearly an artistic work. A pop song developed using GAI-tools has far more in common with the same pop song developed without GAI-tools than it does the keys of a piano. Yet, if a GAI-assisted work holds no copyright, it lives in the public domain, able to modified by an artist in order to receive copyright, provided they are not using GAI tools when they modify it.

This renders passing a requisite threshold of GAI-usage twofold: what level of interaction with the initial GAI tool will grant an author ownership of the output, and what level of creative modification to a GAI output (which is deemed unauthored) will beget authorship? Naturally, this can be an iterative process, whereby a work (or individual elements of a work) are amended multiple times with the use of GAI tools. Thus, in order for a coherent international market to form predicated on a dichotomy of rights over identical works, there must be (1) a level of detailed understanding of *how* a work was developed (which may be impossible to achieve with some works), in order for (2) the works to be evaluated against a certain *specific enough* standard (which is currently neither harmonised nor certain). There are significant challenges in reconciling *both* of these elements. Thus, if this is to be the approach we pursue, we must understand *why* we wish to assert this dichotomy of rights. It is to this question we now turn.

Rationales for the Dichotomy

Rationales for copyright are not uniform, and national copyright frameworks have developed with expressly divergent philosophical foundations.[84] Copyright frameworks in Anglophone

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[83] *Supra fn* 8

[84] Rebecca Giblin, *A New Copyright Bargain: Reclaiming Lost Culture and Getting Authors Paid*, 41 COLUM. JL & ARTS, 372 (2017); BRAD SHERMAN & LIONEL BENTLY, THE MAKING OF MODERN INTELLECTUAL PROPERTY LAW 141 §

nations such as the USA have for the most part treated copyright as an alienable economic property right, predicated on incentivising innovative creation and enrichment of the public domain through the educational and entertaining social utility of creative works.[85] The so-called Copyright Clause in the US Constitution expressly states that the purpose of granting exclusive rights to authors over their works is to "promote the Progress of Science and useful Arts".[86] Conversely, Continental European frameworks have rather focused on the interests of the creator themselves as having an inalienable relationship to the work that they create, irrespective of the interests of the work's audience or the public at large, that must be protected regardless.[87] Despite these divergent philosophical foundations, global markets have largely incentivised convergent harmonisation of copyright frameworks over the last century. As such, the USA joined the Berne Convention, and abolished the requirement for formal registration of works to receive copyright, while Continental Europe adopted work-for-hire in certain instances, such that creators could be hired to create copyrightable works for their employers without receiving their own rights to the work.[88] Although the European Union has not fully harmonised copyright law across Europe, it has sought to do so as much as is practicable.[89] Its rationales are evident from the Recitals of the various texts of harmonising European copyright legislation, which focus on the necessity for establishing a functioning single internal market across Europe, and to stimulate creation and exploitation of new works with increased legal certainty (among others).[90]

As such, the rationales for harmonised international copyright law have been pragmatic without outright theoretical justification in all instances. Furthermore, the purposes of copyright are often laid out in tandem purpose, without uniform hierarchy as to which of these purposes should prevail over others if they are to come into conflict.

In Rebecca Giblin's analysis of the vast history of variant copyright rationales, she concludes that "two rationales stand ahead of the rest in justifying copyright policies over time" – instrumentalist "incentives" theories that incentivise economic and social aims, and naturalist

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1 (Cambridge University Press. 1999);PETER BALDWIN, THE COPYRIGHT WARS: THREE CENTURIES OF TRANS-ATLANTIC BATTLE 259-261 (Princeton University Press. 2014).

[85] BALDWIN, 9. 2014.

[86] US Constitution, Article I, Section 8, Clause 8

[87] BALDWIN, 9. 2014.

[88] Id. at, 395.

[89] Lucas-Schloetter, 12-13. 2021.

[90] See, for example: Directive 2001/29/EC of the European Parliament and of the Council of 22 May 2001 on the harmonisation of certain aspects of copyright and related rights in the information society, *OJ L 167* Recitals 1-4

"rewards" approaches that reward authors in their own right – with both rationales coexisting in any international or domestic copyright framework.[91] Giblin thus summarises that:

> "copyright law is predominantly sold as a means of:
> 1. Incentivizing initial cultural production (so that society benefits from access to knowledge and culture);
> 2. Incentivizing ongoing investment in existing works (to ensure their preservation and continued availability - those access aims again); and
> 3. Rewarding authors for their creative contributions."[92]

Which of these purposes is served by the dichotomising of generated from non-generated output?

GAI tools themselves appear to already incentivise the first, massively lowering the barrier for entry for cultural production. They can be utilised as digital assistants to be conversed with, directed by artists with no technical skill towards creating a cultural product in line with the artist's vision. Just as children begin learning the piano at a young age, no doubt children who play with GAI tools from a young age, immediately iterating on fully-formed works, will develop a proficiency and thereby creative control of final works that those of us toying with them for the first time in our advanced years will find difficult to compete with. Thus, dichotomising generated from non-generated works shifts this first purpose to one that *disincentivises* a specific mode of cultural production in favour of *other* modes of cultural production. This broadly aligns with the US Copyright Office's new requirement for "traditional forms of authorship", which appears inherently at odds with the Constitutional purpose of intellectual property law to "promote the Progress of Science and useful Arts".[93] Seemingly, dichotomising *does* serve the second purpose – as it expressly preferences protection of older works that have not utilised state-of-the-art creative tools over those that have. Yet, it also perverts this purpose, as it is not meant to be served at the expense of stimulating new works. Counter-intentionally, this dichotomy *may,* in a sense, stimulate access to newer works by denying them authorship and releasing them immediately into the public domain. To the excitement of "copyleft" activists everywhere, the necessity for

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[91] Giblin, Colum. JL & Arts, 373 (2017).
[92] Id. at, 374.
[93] Zarya of the Dawn decision, 8; US Constitution, Article I, Section 8, Clause 8. Edward Lee has also argued this in *supra* 81 Lee, Florida Law Review, 4 (2024).

copyright to stimulate a market could be placed on trial: a protected "traditional" work market competing against an unprotected new market. While this radical experiment does not appear to be the intention of the copyright bodies that seek to enforce this dichotomy between creative works unnaturally separated into authored and unauthored, it would appear to be the clear effect of such enforcement (under the assumption that this dichotomy can be meaningfully enforced).

And what of rewarding authors? Once more, the purpose is flipped. Instead of rewarding authors, this dichotomy fears *wrongly rewarding* authors for creative contributions that it views as illegitimate and undeserving of protection of the state. This fear is a historic one with the advent of new technologies, with direct analogues towards legal battles around the copyrightability of photographs, which were argued incapable of being artistic.[94]

It is unclear, then, what the *purpose* of such a dichotomy is. It certainly does not clearly serve any of the traditional purposes of copyright. It actively destabilises international copyright harmonisation, removing legal certainty around authorship of GAI-works which may be authored in some countries and not in others – a disaster for international free markets. Thus, the establishment of this dichotomy cannot be confused for the conservative maintaining of a status quo. It is a decision no less radical than to draw a line in the sand within the creative market, wherein works otherwise indistinguishable from one another hold completely different ownership rights. Where every image and song from now on *may* hold copyright or may not, depending on the work's having passed an *undetermined* threshold.

Critically, to harmonise such a dichotomy internationally would require strict, legible certainty as to *how* we are to ascertain whether a requisite threshold has been surpassed, to be agreed upon by all countries. To do so, it must be robust enough to meaningfully engage with the myriad natures and levels of GAI-tool use possible in the development of a work. Even were these standards to be agreed upon worldwide, if we are unable to differentiate between a work that is entirely GAI-generated and a work which is entirely human-made, how sustainable is *any* framework which relies on a requisite level or nature of human involvement? It is to this question that we now turn.

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[94] Supra 8 Burrow-Giles Lithographic Co. v. Sarony, 111 U.S. 53 (1884)

The Drunken Jam Sessions

Let's consider the following scenario, broadly emblematic of the current vanguard of GAI-utilising artists. A group of musicians meet up every week to make music together. They are committed to created pioneering state-of-the-art work, using the most exciting new tools available to them. By the same token, they are friends and they are there to have a good time. Some nights, enraptured by the seemingly endless array of new instruments at their disposal, they spend hours experimenting with GAI-tools. They try to create strange new genres by mashing their favourite styles together. They experiment with text-to-music generators by typing out unintuitive word combinations, just to see what the machine spits out. They use AI-isolators to pull the weirdest sounds out, to remix and jam over. On other nights, inspired by their AI-generated creations, they try to recreate and recombine these odd-sounding new elements *without* using any GAI tools. Some nights are productive, others descend into debauchery. The longer they play, they more they rework and remix ideas that might have been generated and might not have been - who remembers? They iterate and reiterate in various states of sobriety. After some months, they have an impressive back-catalogue of strange and innovative new works, a veritable litany of new genre ideas and undeniably great songs, all lumped together in the same folder helpfully labelled "music". Some time passes before they decide that it might actually be worth releasing some of this music. Critically, no one remembers which tunes were entirely AI-generated, entirely AI-free, and everything in between. How can a framework built on requisite human interaction with GAI tools preside over this situation? Despite these circumstances' garden variety nature, it is not clear how any of the respective copyright frameworks reliant on understanding generated, part-generated and non-generated materials would begin to approach this situation. Let us consider the possibilities.

The Responsibility of the Artist and Trust Systems

There are two means by which we can try to ascertain whether GAI tools have been used in the production of a work – the first is to track the work while it is created, the second is to reverse engineer the work once it is completed. Any other system is a trust system. Currently, without means of tracking or reverse engineering, most copyright frameworks are relying on trust systems.

As a starting point, let us consider the current US approach – it is the responsibility of the band to be conscious of exactly *what* has been generated and to declare as much. We come up against an immediate challenge here. Almost every country on earth (181 of 195) is party to the Berne Convention for the Protection of Literary and Artistic Works, which states that copyright protection exists from the first moment that a work is fixed and that no formal registration of a work for copyright is required.[95] This means that any creative work nominally appears to have automatic copyright, unless the governing authority discovers that GAI tools were used to create it. As we have outlined, the band is not *sure* whether they have used GAI or not. This situation is bound to become increasingly ubiquitous for artists as time passes, who are unlikely to remember exactly how each work they have created was developed (particularly if they have been especially prolific across their career). Given they will receive automatic copyright if they haven't used GAI and that any attempt on their end to exactly describe when and how GAI was used for any song would be falsified regardless, they are naturally incentivised to claim that none of the material is generated.[96]

How might we avoid this? A simple answer is that we do not allow false representations and punish them accordingly. Perhaps a large fine or a criminal charge would adequately deter our musicians from lying about their process. There are a few issues with this scenario. The first is that the musicians have not tracked their process, meaning any representation here must be false. The hard-line approach to such a situation would be that if an artist is unsure whether they have used GAI tools in their creative process, the work will be treated under the assumption that GAI tools *were* used in the development of the work. It would also be presumed that they were relied upon in such a way that the artist has not been able to meet the requisite threshold for authorship.

Yet, such a framework would render every work where an artist does not remember how it was developed that has prospectively had any GAI tool used in its development as non-copyrightable. It would therefore directly contradict the provisions of the Berne Convention that grant copyright protection from the moment that the work is fixed, instead creating an illegal presumption that works do *not* hold copyright unless it is certain that no GAI tools were used in the development of the work. This could meaningfully be the case with almost every single digital work developed after the availability of GAI tools. Even if a proof

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[95] Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), Art. 5(2). For the list of countries that has ratified the Berne Convention, see: https://intellectualpropertyrightsoffice.org/berne_convention/

[96] This was also argued in: Samuelson, U. Pitt. L. Rev., 1226 (1986).

threshold were not illegal, it would be practically unworkable. Proving the *non-use* of GAI tools in the development of a work would be impossible without total surveillance of the complete development of a work from conception to completion.

The alternative (and Berne-compliant) route lies in the opposite presumption: that all works automatically hold copyright unless it is proved that GAI tools were used in the development of the work in such a way that the relevant threshold to receive authorship was not surpassed. This is essentially what occurred in the case of the *Zarya of the Dawn* graphic novel. The author was immediately granted copyright on the day of registration and only had their copyright removed after the USCO was made aware of their social media statements about using Midjourney in the development of the work.[97] This would mean that any artist who had used GAI tools would need to keep that fact well-hidden if they wanted to feel certain that they would maintain copyright over their work. In the case of our musicians, it would allow them to maintain copyright over the entirety of their corpus, but would inhibit them from publicising their use of GAI tools in its development.

Although we are not able to speculate about every reason that an artist may want to bring attention to their use of GAI tools in the creation of their work, it is perhaps fair to generalise that those most likely to wish to advertise their GAI use would be those whose use of GAI tools were *most interesting and innovative*, and those least interested in advertising their use of a GAI tool would be those whose use of GAI tools were most pragmatic - perhaps for efficiency or where the output would be more respected if a GAI tool had *not* been used. Thus, an inability to speak openly about use of GAI tools for fear of losing copyright apparently disincentivises declaring the *exact inverse* of GAI uses that copyright should best protect – those where it is most innovative.

Thus, any framework reliant on the artist to themselves declare the level and nature of GAI use in the development of their work must be either illegal (for *almost* every country), unworkable in its proof requirements, or counter-productive in its disincentivising declarations of innovative use while incentivising the hiding of pragmatic and efficient use. This may absurdly bring about an era of new works whose processes are hidden - entire underground creative ecosystems carrying open secrets that GAI is being used but never declared.

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[97] Zarya of the Dawn decision, 1-2

Any framework that would hope to maintain generated, non-generated and part-generated dichotomies would therefore need to rely on authority auditing and enforcement measures. We can consider their unlikely effectiveness next.

The Responsibility of the Authority

Seemingly, our musicians will not mention their use of GAI tools if it is likely to endanger their rights over their material, unless an authority is able to prove otherwise. Indeed, if no one is able to tell the difference, why would they choose to hold less rights? As such, an auditing and enforcement system would be crucial to enforce a dichotomy of rights over identical works.

Already, this would be a profound exceptionalism for a creative technology, in that the mere existence of a creative tool would bring about an auditing system for all creative works solely to police whether they *might* have been developed using this technology. What's more, each respective legal framework is in agreement that the question is not a binary as to whether GAI tools have been used, but rather *how* they were used.[98] In the US' *Zarya of the Dawn* application and in the Chinese case of *Li v Liu*, extensive detail was provided as to how the works were developed.[99] Thus, an ability to track not only *where* GAI tools were used but *how* they were used would be critical for such an assessment. Unfortunately, even an ability to ascertain whether GAI tools were used *at all* will be decidedly difficult in many cases. Naturally, the most convenient means would be inbuilt AI watermarking, a "process of embedding into the output of an artificial intelligence model a recognisable and unique signal (i.e. the watermark) that serves to identify the content as AI-generated."[100] An array of different techniques have been developed for text, image, video and audio content, yet they remain unreliable.[101] They produce false positives, meaning content *not* generated by GAI

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[98] See: Li v Liu, at 10-15;Hugenholtz & Quintais, IIC-INTERNATIONAL REVIEW OF INTELLECTUAL PROPERTY AND COMPETITION LAW, 1212-1213 (2021).; Copyright Registration Guidance: Works Containing Material Generated by Artificial Intelligence, 88 FED. REG. 16,190 (Mar. 16, 2023) (to be codified at 37 C.F.R. § 202), available at: https://www.federalregister.gov/documents/2023/03/16/2023-05321/copyright-registration-guidance-works-containing-material-generated-by-artificial-intelligence, 16192.

[99] Zarya of the Dawn decision, at 1-12; Li v Liu, at 2-10.

[100]Generative AI and watermarking. (2023)., European Parliamentary Research Service, 2 available at: https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/757583/EPRS_BRI(2023)757583_EN.pdf

[101] For an overview, see: European Union Intellectual Property Office, Automated Content Recognition: Discussion Paper – Phase 1 'Existing technologies and their impact on IP' (2020);Melissa Heikkilä, *Why Big Tech's watermarking plans are some welcome good news* MIT Technology Review *at* https://www.technologyreview.com/2024/02/13/1088103/why-big-techs-watermarking-plans-are-some-

tools could have its copyright revoked.[102] GAI models can also be targeted with "spoofing attacks" to intentionally deceive detectors into wrongly classifying human-written text as AI-generated in order to cause reputational damage to specific targets.[103] Watermarks are also not standardised, which means that those generated by one technology will not be universally readable by any other technology.[104]

Big tech is broadly relying on three methods of watermarking AI-generated content: visible watermarks that can be seen by humans, invisible watermarks which can only by detected by machines, and watermarks embedded in the metadata of the file.[105] None of these methods has proven robust.

Visible watermarks, such as those that Meta and OpenAI have claimed that they will attach to all of their AI-generated images, can be easily cropped or edited out of an image.[106] The technical standard for GAI detection that has received the most attention is C2PA, an open-source cryptographic internet protocol that encodes "provenance information", a technical term for details about the origins of a piece of content.[107] The project, originally started by Adobe, Arm, intel, Microsoft, and Truepic, now also includes Google, OpenAI, Sony, BBC, and the Publicis Group on its steering committee, with over 1500 other companies, such as Meta, Nikon, AWS, Canon and TikTok, also involved in the project.[108] C2PA uses cryptography to encode provenance information through a set of hashes that bind to the

welcome-good-news/.For text, see: ARA Alkhafaji, et al., *Digital text watermarking techniques classification and open research challenges: A review*, 62 JOURNAL OF TECHNOLOGY REPORTS OF KANSAI UNIVERSITY (2020). For images, see: Mahbuba Begum & Mohammad Shorif Uddin, *Digital image watermarking techniques: a review*, 11 INFORMATION (2020). For video, see: Mahima Jacob & Saurabh Mitra, *Video Watermarking Techniques: A Review*, 4 INTERNATIONAL JOURNAL OF RECENT TECHNOLOGY AND ENGINEERING (2015). For audio, see: Guangyu Chen, et al., *Wavmark: Watermarking for audio generation*, ARXIV PREPRINT ARXIV:2308.12770 (2023).

[102] Vinu Sankar Sadasivan, et al., *Can AI-generated text be reliably detected?*, ARXIV PREPRINT ARXIV:2303.11156 (2023).

[103] Id. at, 3.

[104] *Supra fn* 99, 3

[105] Nick Clegg, *Labeling AI-Generated Images on Facebook, Instagram and Threads* Meta *at* https://about.fb.com/news/2024/02/labeling-ai-generated-images-on-facebook-instagram-and-threads/;*Watermarking AI-generated text and video with SynthID* Google DeepMind Blog *at* https://deepmind.google/discover/blog/watermarking-ai-generated-text-and-video-with-synthid/.;

[106] Heikkilä. 2024;*C2PA in DALL·E 3*, OpenAI(2024), *available at* https://help.openai.com/en/articles/8912793-c2pa-in-dall-e-3.

[107] Heikkilä. 2024.

[108] Tate Ryan-Mosley, *Cryptography may offer a solution to the massive AI-labeling problem at* https://www.technologyreview.com/2023/07/28/1076843/cryptography-ai-labeling-problem-c2pa-provenance/?truid=;Heikkilä. 2024.For list of members of the project, see: (2024), *available at* https://c2pa.org/membership/. https://c2pa.org/membership/. https://www.technologyreview.com/2023/07/28/1076843/cryptography-ai-labeling-problem-c2pa-provenance/?truid=; https://www.technologyreview.com/2024/02/13/1088103/why-big-techs-watermarking-plans-are-some-welcome-good-news/

elements of a work, such as each individual pixel.[109] Yet, such a protocol only works if the protocol has also been adopted by the respective environments in the digital ecosystem.[110] This means that if a C2PA encoded image is uploaded to a site that does not use the C2PA protocol, the information will not be readable.[111] Currently, that is the case with all major social media sites.[112]

C2PA therefore has the same issue that any watermarking embedded into metadata is faced with – namely, that the watermark can be removed by simply re-creating the file. In the case of a visual work, this can simply occur by screenshotting the image (or indeed, taking a high-res photograph of it).[113] By the same token, for an audio work, the watermark could be removed by simply recording the work playing. Additionally, mandatory provenance information has been criticised for its ability to stifle freedom of speech, deter technology whistleblowing and generally enable mass-surveillance and government abuse.[114]

More promising, then, are invisible watermarks, undetectable to humans but machine-readable in the work itself (rather than in metadata attached to the work). The first Big Tech company to publicly launch an invisible watermarking tool was Google Deepmind with its SynthID tool, an optional watermark that users can choose to attach when using Google's Imagen AI-image generator.[115] The popular GAI image generator Stable Diffusion also uses invisible watermarking, and Meta has announced that it too will be incorporating invisible watermarking into its AI-image generation.[116] SynthID uses two separate neural networks.[117] The first (almost) replicates the original image, but subtly changes some of the pixels in a way that is invisible to the human eye.[118] The second neural network searches for human-

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[109] Ryan-Mosley. 2023.

[110] Id. at.

[111] Id. at.

[112] Id. at.

[113] Heikkilä. 2024.

[114] Sam Gregory & Raquel Vazquez Llorente, *Regulating Transparency in Audiovisual Generative AI: How Legislators Can Center Human Rights* Tech Policy Press *at* https://www.techpolicy.press/regulating-transparency-in-audiovisual-generative-ai-how-legislators-can-center-human-rights/. See the C2PA's own Harms Modelling with a list of Identified Harms: *C2PA Harms Modelling*(2024), *available at* https://c2pa.org/specifications/specifications/1.0/security/Harms_Modelling.html.

[115] Melissa Heikkilä, *Google DeepMind has launched a watermarking tool for AI-generated images* MIT Technology Review *at* https://www.technologyreview.com/2023/08/29/1078620/google-deepmind-has-launched-a-watermarking-tool-for-ai-generated-images/.

[116] *What's New Across Our AI Experiences* Meta *at* https://about.fb.com/news/2023/12/meta-ai-updates/;Heikkilä, Google DeepMind has launched a watermarking tool for AI-generated images. 2023. The invisible watermarking script used by Stable Diffusion is available at: https://github.com/ShieldMnt/invisible-watermark

[117] Heikkilä, Google DeepMind has launched a watermarking tool for AI-generated images. 2023.

[118] Id. at.

invisible patterns within the image, and informs users whether it has detected a watermark, hasn't detected a watermark, or *suspects that there might be* a watermark.[119] While Pushmeet Kohli, the vice-president of research at Google DeepMind, claims that SynthID is more resistant to circumvention than previous invisible watermarking attempts, he also conceded that the tool is still "experimental" and not yet immune from tampering nor indeed ready for wider dissemination.[120] Kohli also refused to answer whether Google would use the tool more widely for images outside those generated by Imagen as well as in Google's other AI-image generation systems.[121] As such, its utility has been met with skepticism from other AI researchers.[122] Critically, as a proprietary model, the SynthIDs can only be embedded or detected by Google. Further, its accuracy remains wholly unclear. [123]

Indeed, the history of watermark viability is not on its side. Prof. Ben Zhao, an expert computer scientist at the University of Chicago, has received an enormous amount of attention in recent years for a number of pioneering projects that have managed to fundamentally disrupt machine-learning tools' functionality, such as Nightshade, a data-poisoning tool which damages training data such that it will lead to incorrect GAI outputs, Glaze, a style-masking tool for artists to prevent their work being scraped in training data, and Fawkes, a tool that, similarly to invisible watermarking tools, embeds photos with invisible pixel-level changes that confuse facial recognition systems.[124] Yet Prof. Zhao is unconvinced of ongoing robustness of *any* watermarking technique, stating last year that "There are few or no watermarks that have proven robust over time."[125] Due to this lack of robustness, sole reliance on technical solutions to determine synthetic content has been roundly advised against by scholars and human rights organisations in major policy-building forums, such as US Senate hearings and European Parliament briefings.[126] This has also proven widely true of those most notorious copyright-relevant technologies that encompass Digital Rights Management (**DRM**), which seek to control the use of copyrighted material.

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[119] Id. at.
[120] Id. at.
[121] Id. at.
[122] Id. at.
[123] Id. at.
[124] See *long* lists of press coverage at: *Nightshade Publications & Media Coverage*(2024), *available at* https://nightshade.cs.uchicago.edu/media.html;*Glaze Publications & Media Coverage*(2024), *available at* https://glaze.cs.uchicago.edu/media.html;*Image "Cloaking" for Personal Privacy*(2024), *available at* https://sandlab.cs.uchicago.edu/fawkes/#press.
[125] Heikkilä, Google DeepMind has launched a watermarking tool for AI-generated images. 2023.
[126] Supra *fn 99; Testimony of Sam Gregory, Executive Director, WITNESS Before the U.S. Senate Committee on Commerce, Science and Transportation Subcommittee on Consumer Protection, Product Safety and Data Security at "The Need for Transparency in Artificial Intelligence" Hearing.* (2023).

After decades of DRM development, even DRM solution companies concede that "[c]ommon DRM workarounds, such as cracking software to remove DRM restrictions or using unauthorized sharing platforms, pose significant challenges to the effectiveness of DRM."[127] Problematically, if copyright frameworks expressly delineate likelihood of receiving ownership on whether a generative tool has been used in the creative process and seek to enforce as much through technological solutions and standards, developers are expressly incentivised to build robust tools that do *not* watermark to provide alternatives for creatives who are interested in using GAI tools as part of their practice. Thus, such an approach could counter-productively assist in the development of a black market for GAI creative tools. If the tools are already illegal for shirking watermarking requirements, they would be unlikely to adhere to other regulatory standards (for example, generating works by demand in another artist's likeness). The increasing availability of open-access models in the GAI ecosystem would render the removal of such tools from public availability challenging.

Still, international interest in marking GAI deepfake content for rhetorically higher-stakes reasons, such as combatting AI-generated disinformation, may lead to harsh penalties for those who develop non-watermarking GAI tools that could reduce development and public availability to an extent. Despite the challenges in developing robust watermarks, there are significant international regulatory efforts against disinformation that are driving watermarking of AI-generated content. President Biden vowed to "help develop effective labeling and content provenance mechanisms, so that Americans are able to determine when content is generated using AI and when it is not" in the US Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence in October 2023.[128] Also in October 2023, the G7 leaders adopted "[d]evelop[ing] and deploy[ing] reliable content authentication and provenance mechanisms, where technically feasible, such as watermarking or other techniques to enable users to identify AI-generated content" as one of the 11 International Guiding Principles for Organizations Developing Advanced AI Systems.[129] Both Europe and China have gone further - mandating

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[127] Patrick Spencer, *Does DRM Actually Work?* Kiteworks *at* https://www.kiteworks.com/digital-rights-management/drm-pros-cons/.

[128] Joseph R. Biden Jr, Executive Order on the Safe, Secure, and Trustworthy Development and Use of Artificial Intelligence (2023). Available at: https://www.whitehouse.gov/briefing-room/presidential-actions/2023/10/30/executive-order-on-the-safe-secure-and-trustworthy-development-and-use-of-artificial-intelligence/

[129] Hiroshima Process International Guiding Principles for Advanced AI Systems 4 (2023). Available at: https://digital-strategy.ec.europa.eu/en/library/hiroshima-process-international-guiding-principles-advanced-ai-system

watermarking for GAI tools.[130] China's Cyberspace Administration released requirements for AI-generated content to include watermarks in August 2023, while Article 50(2) of the EU AI Act explicitly states that GAI-system providers must ensure that "the outputs of the AI system are marked in a machine-readable format and detectable as artificially generated or manipulated" and that "their technical solutions are effective, interoperable, robust and reliable".[131] However, given the lack of robust, reliable technical solutions currently available, this requirement must only be met "as far as this is technically feasible, taking into account the specificities and limitations of various types of content, the costs of implementation and the generally acknowledged state of the art, as may be reflected in relevant technical standards."[132] Still, it is clear that international action against the potential pernicious societal effects of deepfakes is leading to a rhetorically higher-stakes interest in the development of technological solutions to detect synthetic content irrespective of the copyrightability woes of IP stakeholders.

Yet, given experts believe that watermarking alone will not be sufficient, extensive alternative measures have been advised in European and US briefings to support watermarking techniques, such as mandatory processes of documentation and transparency for foundation models, pre-release testing, third-party auditing, pre- and post-release human rights impact assessments and media literacy campaigns.[133] Yet, developing purely aesthetic synthetic content, like sounds or colours, is fundamentally other in nature to developing synthetic content that is ostensibly representative of lived reality, like a deepfake video. Thus, the ability for copyright enforcement bodies to piggyback off of the synthetic content detection frameworks that will be developed to combat other societal harmful effects may be limited. If an artist lived in a country where AI generation without watermarking was banned at the developer level, should they also refrain from using GAI tools developed in other countries, where developers were not held to the same watermarking requirements? Even if every country on earth were to agree to harmonised mandatory testing, auditing and transparency processes (a very large *if* indeed), as long as there are open models all over the world being

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[130] Regulations on the Management of Deep Synthesis for Internet Information Services (2023). Available at: https://www.cac.gov.cn/2022-12/11/c_1672221949354811.htm;Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act)Text with EEA relevance. OJ L, 2024/1689 (2024). Art. 50(2) (hereinafter "EU AI Act")
[131] Id. at
[132] EU AI Act, Art. 50(2)
[133] Gregory & Llorente. 2023.; *supra fn 99,* 55

developed to generate content, the ability to accurately audit the standards of every single model and output on earth to determine if a work has involved generation would be nigh on impossible.

Rather, the inverse – certifying content as *legitimate* - is seemingly comparatively more achievable than certifying content as *illegitimate*, although also formidable and currently without a robust system to do so. On the one hand, this inverse need not fear the aforementioned removal techniques, as any removal of the watermark delegitimises the work. Rather, the watermark must itself disappear if the work is altered.

Trust certification also benefits from institutional legitimacy. As the world becomes more replete with synthetic content, we are more likely to be sceptical of the authenticity of all content that we see. It is inherently much more difficult for institutions to confirm the illegitimacy of content that they were not involved with than to confirm the legitimacy of content that they were involved with. Trusted sources will be able to certify that content they have created or audited is not synthetic without needing to rely on technological watermarking solutions. This comparative ease in certifying legitimate, rather than illegitimate, content will likely direct international efforts in differentiating the two to invest more heavily in the former, unless watershed technological innovation renders the latter more achievable.

If ultimately international frameworks build themselves around trust certification of *human-generated* content, these will be of limited value in determining the copyrightability of creative works. For any creative work to receive a "human-generated" certification would then require either institutional or cryptographic approval, which would require front-to-back surveillance of the artistic process to ensure that no generated material was ever used in the process prior to certification. Indeed, institutional approval might itself be interpreted to be a registration formality, and in turn illegal under the Berne Convention.[134]

Thus, the applicability of anti-disinformation measures to combat synthetic content is questionable. It is therefore also questionable whether it is desirable to have the same level of punishment for shirking of watermarking provisions for synthetic representations of reality, as opposed to generated aesthetic content. Indeed, the enforcement of highly punitive measures roundly failed to curb illegal file sharing over the past few decades.[135] Instead, it is broadly held that the availability of convenient legal alternatives to file-sharing was far more effective

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[134] Berne Convention for the Protection of Literary and Artistic Works (as amended on September 28, 1979), Art. 5(2).

[135] See: The Film and TV Piracy Report 2022. (2023). Available at: https://www.ctam.com/wp-content/uploads/MUSO-2022-Film-And-TV-Piracy-Report.pdf

at combatting copyright infringement than punitive enforcement measures.[136] Yet, where the file-sharing crackdown targeted "pirates", an analogous crackdown here would punish artists for using tools to create works and not rightly reporting their processes.

On the one hand, it may therefore render it more effective. It is unclear if artists' will to use these tools to create is as great as the will of pirates to consume. In the current state of artistic backlash against GAI tools, it might not be the case that many artists will endanger themselves just to use them. Yet, as they become more mainstream and integrated into regular creative processes, artists who utilise GAI tools in their practice will be more likely to reject a system that delegitimises the integrity of their work.

On the other hand, this punishment would be for wrongful creation instead of wrongful consumption. Or rather, fraudulent creation. Such a system would entrench the vilification of this creative technology against all others, with undeclared use incurring a harsh penalty unlike any other creative tool. Naturally, this does not stimulate innovation, as it disincentivises use of an innovative new tool. It does not reward the dignity of the artist using the tool. It is a severe market regulator – one that expressly disincentivises production with the threat of punishment for inadequate bookkeeping. By what metric, then, would this punishment be justifiable?

Thus, as it stands, there is no wholly reliable technical tool to detect whether content incorporates GAI output *at all*, let alone to granularly determine exactly *which* part of a work was developed using GAI and *how* it has been altered.

Let us imagine that we *were* able to accurately watermark every single GAI output and that our musicians were not able to remove these watermarks. If they were to spend years altering the content such that it was turned into an entirely other creative representation deeply reflective of the labour and expression of the artists themselves, the watermark would remain. Thus, while a robust watermarking system does not exist and may never exist, even if it *did* exist, it would not convey the information required for a regulatory body to assess whether a human creator has developed the work enough to meet a requisite threshold for authorship. Rather, the robust watermarking system would need to be accompanied by a robust tracking system, able to granularly record an artist's alterations to a generated work. This would be especially necessary in a system, such as the US', which separates out which specific elements of the work are copyrightable and which are not, in order to maintain a hyper-specific understanding of *exactly*

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[136] See, for example: Sarah J Frick, et al., *Pirate and chill: The effect of netflix on illegal streaming*, 209 JOURNAL OF ECONOMIC BEHAVIOR & ORGANIZATION (2023);Alex Tofts, *Flood of new streaming video services could turn viewers toward piracy* Broadband Genie *at* https://www.broadbandgenie.co.uk/blog/20190926-streaming-piracy-survey;HYOJUNG SUN, DIGITAL REVOLUTION TAMED: THE CASE OF THE RECORDING INDUSTRY 135 (2019).

which elements of the work have reached the threshold. Naturally, such a system would need to be able to track a work as it changed environments – perhaps entering the physical realm to be worked on or moving across different digital environments. It would need to be robust enough that it could handle a song being re-recorded or an image being re-printed. As such, it would necessitate nothing less than top-to-bottom tracking of the entire artistic process, which is to say surveillance of the artist themselves. Naturally, to surveil an artist through their entire creative process – one which is often of extremely personal and private self-exploration – would not only be scandalously radical solely to determine whether a creative tool had been used, but also a clear breach of the European Convention of Human Rights Right to Privacy and of the First Amendment of the United States Constitution.[137]

Let us pretend, then, that there *is* a means of meaningfully auditing the exact nature and amount that an artist has utilised a GAI tool to the point that an enforcement body was able to consider whether the artist had reached a requisite authorial threshold. Let us imagine that our musicians did not want their contributions to be evaluated by a governing body to determine whether they had contributed enough to be authors of their work. Thus, they set about re-recording their work *without* GAI tools. While some copyright frameworks, such as the UK's, require labour to receive copyright, many others, such as European and US frameworks, expressly do *not* grant copyright based on labour.[138] Yet, if use of GAI tools is to be determined as a risk to authorship, it is labour and labour alone that will convert a work from uncopyrightable to copyrightable. Although this might be considered preferable to simply using GAI tools to create something, as the artist must understand how to replicate the work that they have generated, pure replication – "copying" – is not an artistic act. Here, the technician is rewarded, best able to replicate something existing, rather than the artist. Absurdly, the only aspects of works that would *not* be able to be meaningfully replicated would be those that are dependent on the aesthetic quality of the GAI tools themselves. Thus, non-GAI tools would need to be utilised (or perhaps even developed) to try to imitate the specificities of GAI works. Those endogenous components of GAI works most ripe for unique GAI-specific aesthetic experimentation and innovation would be those most difficult to receive authorship over. By disincentivising efficient creation of works with GAI tools, the inefficient reconstruction of those works is then

[137] European Convention of Human Rights (1953). Art. 8; U.S. Constitution First Amendment
[138] Jane C Ginsburg, *The concept of authorship in comparative copyright law*, 52 DEPAUL L. REV., 1078 (2002);Andres Guadamuz, *Living in a Remixed World: Comparative Analysis of Transformative Uses in Copyright Law*, FUTURE LAW: EMERGING TECHNOLOGY, REGULATION AND ETHICS, 349 (2020);Andreas Rahmatian, *Originality in UK copyright law: The old "skill and labour" doctrine under pressure*, 44 IIC-INTERNATIONAL REVIEW OF INTELLECTUAL PROPERTY AND COMPETITION LAW (2013).

incentivised. What purpose does this serve? It does not stimulate innovation. It does not reward the dignity of its creator. As a market mechanism, it is explicitly inefficient – demanding arbitrary labour to recreate a product.

Of course, it would be argued that this recreation of the generated material should itself also not be copyrightable, as it is not original. In order to audit this, we would require a repository of *every single output that was ever privately generated*, for each work to be compared against. Interestingly, a method akin to this has actually been suggested, wherein "the producer organization simply … keep[s] a (private) log of all the content it generates—a detector tool can then be implemented as a regular plagiarism detector operating on this log."[139] This method was recently partly demonstrated with text content, "detect[ing] 80% to 97% of paraphrased generations across different settings while only classifying 1% of human-written sequences as AI-generated".[140] Yet, in order for this to function for recreated visual or musical works, rather than simple text works, any comparative system would need to determine *similarity*, rather than identical copying, to a generated work. Then every artistic work would run the risk of losing its authorship if an artist is unlucky enough to have written something that is too similar to something that was once generated somewhere else by someone else. It would fundamentally render all private GAI-content generation as instant generation of content into the public domain, *unless* a user's output is only compared against material that they generated. This would then require user-specific tracking across models for auditing purposes for GAI-output detection, solely to determine whether there was any GAI-output in each respective work.

We can thus summarise that auditing and enforcement would require some combination of significant technological innovation, harmonised international standards enforcement, policing and removal of creative tools that do not meet these standards, and a heightened level of tracking and evidencing of the artistic process. Thus, this requires a significant evolution of "techno-regulatory coherence", calling for substantial development of both public regulatory and technological infrastructures in mutual objective and co-dependence.[141] This would amount to a reengineering of international copyright frameworks at large, in order to ensure adequate harmonisation and certainty around which creative works can hold copyright. Yet, even were such an intricate (and unproven) framework to develop, it is still unclear that it

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[139] Alistair Knott, et al., *Generative AI models should include detection mechanisms as a condition for public release*, 25 ETHICS AND INFORMATION TECHNOLOGY, 4 (2023).

[140] Kalpesh Krishna, et al., *Paraphrasing evades detectors of ai-generated text, but retrieval is an effective defense*, 36 ADVANCES IN NEURAL INFORMATION PROCESSING SYSTEMS, 1 (2024).

[141] Zachary Cooper & Arno R Lodder, *What's Law Got To Do With IT: An Analysis Of Techno-Regulatory Incoherence, in* RESEARCH HANDBOOK ON LAW AND TECHNOLOGY 51-53, (Bartosz Brożek, et al. eds., 2023).

would provide the requisite detail to understand the exact nature and amount of human interaction in developing a work, nor how it would meaningfully differentiate uses of GAI tools that would *not* effect authorship.

If international copyright frameworks must be reengineered regardless, then, we might consider whether instead of seeking to redevelop them in service of a "generated / non-generated" dichotomy that may never be possible to accurately illumine and which would require a Blade Runner-esque systematic creativity policing system on the hunt for a specific family of GAI technologies unheard of for any other creative development tool, that we might instead accept the new modes of creative production along with the artworks of variable quality that they lead to. With this acceptance, we can instead turn to the considerable challenge of reengineering copyright systems to in response to this new reality.

Concluding: Challenges of the New Reality

Debates around whether or not generated materials should receive copyright are moot without adequate means of differentiation. We can therefore engage in the seemingly Sisyphean task of building a worldwide framework to try to adequately enforce this differentiation, with fully formed artworks now subject to inquiry as to whether they have been authored or not, or we can adapt to a world where new means of creative development radically affect creative productivity so as to foundationally alter the effect of granting exclusive rights to creative works. As the former approach does not serve copyright's purposes of stimulating innovation nor rewarding creators and is seemingly impossible to enforce without infringing upon human rights to expression and privacy, it is time to adapt to the new modes of creative production.

Let us then ascertain what the issues we are faced with where use of GAI is not a determining factor in receiving exclusive rights to an output.

The critical questions posed by the advent of GAI tools is not, therefore, should authorship be granted to GAI-assisted works, but rather these three inter-related questions:

1) How do we determine authorship of a work between those who have contributed to its training data, those who have designed the model to an extent that it aesthetically directs the creative output, and those who use the model to create?

2) How must the substantial similarity test be reinterpreted?

3) Given these new challenges, to what extent are exclusive rights still functional as market incentives and rewards for authors?

The first question considers the spectrum of creative input in developing a model. While it would be absurd to give authorship to every musician in the training data of a model trained on all publicly available music, other models are trained entirely on one artist. Are there circumstances by which an output too closely and clearly resembles a specific input artist that that artist should receive authorship over the output? Should this exclusively be dealt with at the input stage? Should this rather be considered as a personality rights question? To what extent can someone who designs a tool claim authorship over all of its outputs? Critically, how are we to *enforce* any of this? As artists will be reluctant to share ownership over their final output, they will also be likely to try to hide their use of both GAI tools and other artist's work.[142] This feeds the final question – do exclusive rights correctly incentivise a fair allocation of rights to the final work?

The second issue is one of substantial similarity. As Mark Lemley writes, substantial similarity tests (while applied differently across different nations) will likely be challenged in their application, as a work may significantly resemble previous works without the author having engaged with them.[143] This is partly evidenced by the major record labels' lawsuits against Udio & Suno, where songs that were similar to existing copyrighted songs were generated.[144] Yet, the labels themselves were actively seeking to replicate songs they knew, meaning they were able to more readily direct the GAI-tools towards the music they sought to allege copyright infringement against.[145] Still, copyright frameworks that have found infringement for weak similarities between works may need to adjust. Controversial decisions, such as that which found Robin Thicke's "Blurred Lines" had too similar a feel to Marvin Gaye's "Got To Give It Up", set difficult precedents to uphold in a post-GAI world (if this was not already the case).[146] Europe has also allowed problematically low *de minimis* similarity thresholds in recent years, such as in the Court of Justice of the European Union's (**CJEU**) 2019 decision in the *Pelham v Kraftwerk* case, which found (after 22 years!) that the (only *just* audible) use of a 2 second Kraftwerk drum sample in Sabrina Setlur's song "Nur Mir" was an infringement.[147] Weak similarities such as these can be more readily defended

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[142] For discussion of this same issue, see: Samuelson, U. PITT. L. REV., 1223 (1986).
[143] Lemley, SCIENCE AND TECHNOLOGY LAW REVIEW, 19-21 (2024).
[144] Koebler. 2024.
[145] Id. at.
[146] Pharrell Williams et al. v Bridgeport Music et al., No. 15-56880, (United States Court of Appeals for the Ninth Circuit).
[147]

Pelham GmbH, Moses Pelham and Martin Haas v Ralf Hütter and Florian

against in a world where massive amounts of content is generated routinely from unpredictable GAI machines. Indeed, enforcement of weak similarities could open up regulatory bodies to an unmanageable number of infringement claims, as the fluid spectrum between works is increasingly mined and illumined by artists. Interestingly, the CJEU expressly stated in the *Kraftwerk* decision that sampling will not infringe if it is in a "modified form unrecognisable to the ear."[148] This is exactly what audio cloning technologies can achieve immediately, changing the sound of something such that is unrecognisable. It has never been easier, then, to take works that you are a fan of, and change them so that they are similar but not the same. Thus, exclusive rights in the age of GAI may not incentivise you *not* to use another artist's work as the basis of your own, but rather to hide your inspiration. In turn, artists who may have preferred to use straight samples of work will instead alter them to avoid the hassle of seeking permission from rightsholders.

We might question then, as content is rendered increasingly fluid and easy to modify due to the development of new creative tools, do exclusive rights still provide the correct incentives to service the purposes of copyright? Do we truly need to incentivise creative production? We already lived in an era of extravagant creative abundance before we received access to seemingly infinite creativity machines. Creative musical markets are built upon determining which creative content within the infinite galaxy of songs is to be selected and recommended to the public, through both human curation and algorithmic recommendation.[149] Much of this content is openly shared and remixed for free on platforms like Soundcloud, without consideration of copyright at all. Songs with the most valuable copyright (namely, the biggest songs in the world) in turn will likely have the largest number of unlicensed remixes permeating the internet. This has indeed become a core aspect of virality in the contemporary age, where fan reworking and participation in the dissemination of a cultural product have become fundamental drivers of promotion.[150] There are entire genres of music whose modes

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Schneider-Esleben, Case C-476/17, (Grand Chamber of the Court of Justice of the European Union).

[148] Id. at, para. 31.

[149] See, for example: Nedim Karakayali, et al., *Recommendation systems as technologies of the self: Algorithmic control and the formation of music taste*, 35 THEORY, CULTURE & SOCIETY (2018);Niko Pajkovic, *Algorithms and taste-making: Exposing the Netflix Recommender System's operational logics*, 28 CONVERGENCE (2022);Matt Artz, *Reimagining Recommender Systems: Towards a More Equitable Model for Creators*, in EMTECH ANTHROPOLOGY: CAREERS AT THE FRONTIER (Matt Artz & Lora Koycheva eds., 2024).

[150] See, as an example, the viral sensation of Charli XCX's "Brat" promotional campaign: Ed Lloyd, *Charli XCX's Brat campaign should turn you all green with envy* The Drum *at* https://www.thedrum.com/opinion/2024/07/23/charli-xcx-s-brat-campaign-should-turn-you-all-green-with-envy. or the highly publicised Tik Tok vs Universal dispute: Ben Sisario, *TikTok Just Lost a Huge Catalog of Music. What Happened?* The New York Times *at* https://www.nytimes.com/2024/02/01/arts/music/tiktok-universal-music-explained.html.

of compositional expression are not understood or covered by copyright. As such, creative markets around genres such as techno or trance are extraordinarily lucrative worldwide while existing broadly free of similarity-based litigation.[151] Rather, similarity is the name of the game within some genres, built on seamless flows of trance-like repetition.[152] As such, it is clear that copyright is not necessary for *all* types of cultural production, especially cultural production that is *cheap*. As GAI tools render ever more cultural products cheap to produce, the number of products that require incentivised production is reducing.

Drastically lowering the technical barrier to entry in creating works will also itself change which works we value. Works that may once have been considered interesting will now be rendered generic. Yet, creative practice will also be opened to others who previously found the skills required alienating. For example, music aficionados who were previously without technical musical skill will be able to use their depth of knowledge and ability to communicate to develop exciting new works purely through text direction. Why should they not hold rights over the innovative new works they labour over?

Thus, there are significant questions as to the effect on creative markets if exclusive rights can be granted over massive amounts of content. Naturally, if substantial similarity tests find weak similarities to infringe without adequate defence, then copyright may incentivise "copy-mining", wherein actors seek to create as much content as possible in the hopes of being able to claim rights to valuable content later. It is important, then, that current large rightsholders (such as the major labels who hold massive percentages of valuable music rights) are not able to utilise the rights that they already own to create masses of content to entrench their dominant positions, at the expense of the public domain. If stronger similarity thresholds between works must therefore be allowed to avoid this outcome, what should these new thresholds be? How should substantial similarity tests be redesigned, where similarity may be incidental?

Admittedly, whether "copy-mining" is truly a risk remains to be seen. Creators without any profile who are responsible for massive amounts of content may be vilified as bad actors and not taken seriously for their claims. However, this is not true of creators with a high profile. If Taylor Swift started releasing a new record every day due to the newfound efficiencies of GAI tools, she might be taken more seriously if she were to claim that another artist had

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[151] Nyshka Chandran, *Clubbing Is Becoming Big Business. What Does This Mean for Dance Music?* Resident Advisor *at* https://ra.co/features/4235.

[152] ROBERT FINK, REPEATING OURSELVES: AMERICAN MINIMAL MUSIC AS CULTURAL PRACTICE (University of California Press. 2005).

infringed upon her work. Dan Burk has argued that in the age of GAI tools, authenticity will be of critical value.[153] Yet, authenticity comes in many forms, not least of which is an official stamp of approval. High profile artists could still have trusted expert curatorial teams sifting through generated content all day, choosing the catchiest works, and attaching their voices to them. Perhaps this would be considered heretical by their fans, but perhaps not. Pop stars have often been poster children for music created by others. What will likely matter most is the quality of the output. Thus, those with the most money may be able to hire the best teams to curate and arrange the highest quantity and quality of new output.

Thus, weak similarity thresholds, like *feel*, cannot be maintained if they allow powerful actors to "copy-mine" the public domain. Of course, over-releasing by artists may dwindle the value of their products, and easily generated works will likely lose the interest of the public at large. While great exciting works that impress the public will still be created (some created using GAI tools and some not), the vast majority of (non- and GAI-assisted) works will remain of marginal value, never subject to any litigation. It is unclear then whether an abundance of content will lead to an abundance of frivolous infringement claims. Still, the role of copyright in an age of unforeseen creative gluttony and fluidity demands that the walls we build around works will need to change in character. How then should the copyright system be redesigned in order to avoid the exploitation of GAI tools at the expense of the public domain while still being able to protect creators from undue exploitation of their work?

These are trying challenges, yet they are ill-served by doubling down on an uncertain economic landscape where each work *may* hold copyright, to be determined on a case-by-case basis within the infinite spectrum of potential GAI-use cases. It is not the role of the copyright system to judge the legitimacy of an artwork, nor the process of the artist, nor to dictate the tools that the artist is allowed to use in the creation of their work.[154] Yet, the GAI dichotomy approach taken by various judicial systems is not only wrong in its intent, it is practically impossible to coherently enforce. If we were faced with a glut of creative works beforehand, this glut is to represent but a fraction of the massive amount of works to be developed. To throw each into a state of uncertainty undermines that which copyright was built to protect: both the dignity of innovative creators and the creative economy itself.

To protect these interests, we must accept the new modes of creative production as a reality and refrain from absurdly demanding artists to plead their case for authorship of their works.

[153] Dan L. Burk, *Cheap Creativity and What It Will Do,* Vol. 57 GEORGIA LAW REVIEW, 1673 (2023).

[154] *Supra fn* 81Lee, FLORIDA LAW REVIEW, 33-37 (2024);Robert A Gorman, *Copyright Courts and Aesthetic Judgments: Abuse or Necessity,* 25 COLUM. JL & ARTS, 1 (2001).

We otherwise incentivise innovative artists to deny their use of state-of-the-art creative tools, and to hide the entirety of their output for fear of revealing their GAI-assisted productivity. As these tools challenge core foundations of our copyright frameworks, we instead should focus our efforts on ascertaining which elements of copyright frameworks are able to sustain their purposes in relation to foundationally shifted modes of creative production, and which are no longer functional.

It is to these questions that we now turn in the next Chapter.

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