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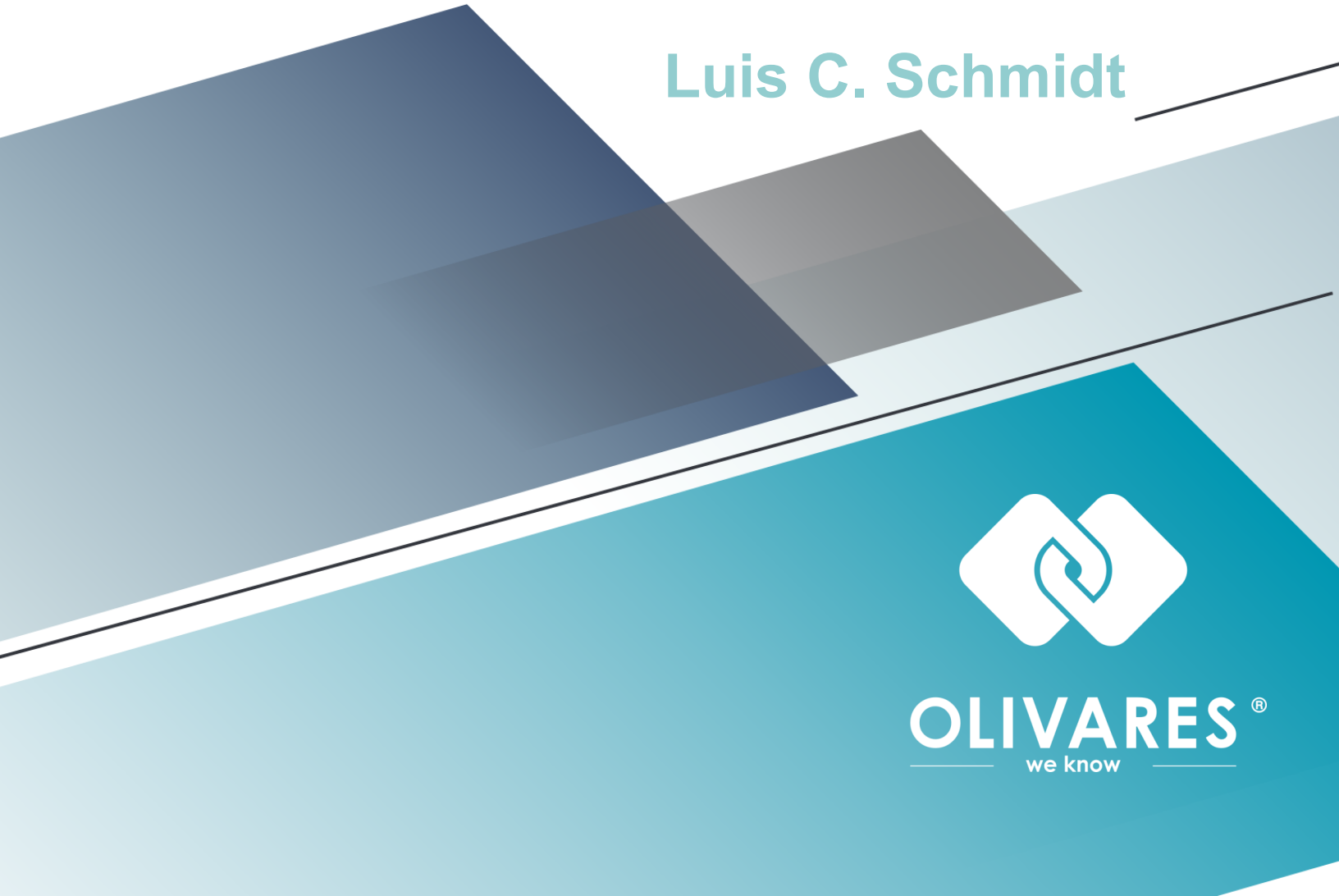

Generative AI, Copyright Law and Public Policy: Balancing the Creation and Use or Exploitation of Artistic Works

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In recent times, copyright law has faced the following issues in relation to artificial intelligence (AI): (i) human authorship as a legal requirement for the "result" generated by AI to be considered a "work." Human authorship exists in AI-generated works when an author intervenes completely and absolutely or, when this is not the case, exercises creative, perceptible, and transformative control to direct the process or to select, arrange, dispose, and/or edit the "AI result"—in this case, an artistic work; (ii) large-scale reproduction of pre-existing works as training data or Text & Data Mining (hereinafter "TDM") for AI systems, including "prompts" (input instructions) and "outputs" (generated or output results), accessible through digital platforms; (iii) exceptions to copyright for TDM, for research or teaching; (iv) "deepfakes" as rights for impersonating one's own image or identity; and (v) algorithmic transparency, as an operational obligation to report on model training or output labeling. The above in aspects such as watermarking for content (which is not limited to works) or AI-generate traceability of logs for auditing AI processes.

I. INTRODUCTIÓN

A. Legal Challenges of AI

AI has crossed the legal threshold with new legal challenges. It has raised questions and faced dilemmas in all fields of law. There is no specialty that AI has not touched and impacted. It has been done from the substantive to the procedural, including law, jurisprudence, and doctrines. Nowadays, AI provides access to accurate and detailed information quickly and expeditiously, which allows for improved processes and reduced task completion times. But not only that, AI has evolved to such an extent that it has generated "results" or "outputs" of creative or aesthetic value, such as artistic works. Generative AI is based on deep learning models that produce works or other results or outputs.

B. AI and Copyright

Copyright follows this trend. In fact, it is one of the legal disciplines in which AI has become most prevalent and has posed the greatest challenge. Programmers have developed systems using algorithms that allow works to be generated as if they had been created by humans. We say they are works because they meet various criteria. These include: i) written text, in the form of novels, essays, scripts, poetry, or computer programs; ii) music, instrumental, sung, or both; iii) graphic production, in the form of architectural plans, drawings, or designs; or iv) audiovisual production, animation, or live action.

In principle, AI systems need human intervention to generate works. However, technologies have advanced to such an extent that they now do so with little or no human involvement. To a greater or lesser extent, AI systems generate, on their own, independent or autonomous results that are not called works because there is no author. This has sparked a debate about the meaning of work, authorship, originality and, in parallel, the legal protection of so-called "AI works." Authorship is not the only problem facing copyright law in relation to AI works. There are others that will be discussed in this paper.

C. Tensions

Generative AI has caused tension regarding copyright. Once again in history, the traditions of droit d'auteur and copyright are clashing to resolve issues arising from new technologies. The former focuses on personal rights resulting from human creativity. The latter focuses on the exclusive right arising from investment in the training of AI models, technologies, or processes. All laws around the world protect human authors. However, in some countries, especially those with a copyright system, the laws also protect the developer, coordinator, or investor of technical works, as if they were the author of artistic works.

II. GENERATIVE AI AND ARTISTIC WORKS

A. Presentation of Technical and Legal Aspects

1. Conceptual Framework. Generative AI, rather than a means of communication, is a highly complex synthesis technology that has brought about a substantial change in the production of works. After "training" models with training data or TDM - "corpus"/"datasets" - the systems can generate diverse "results" in the creative field. AI "learns" in a technical sense: it adjusts neural network parameters to model "patterns." It "thinks" in the sense that it optimizes "loss" functions—it updates parameters that optimize a function.
2. AI operating cycle. The AI operating cycle is described in five phases: i) "curation" and "selection" of "data" (deciding what data to use and why, in terms of quality and relevance) = "lawfulness" (verifying data permission, legal basis, and limits) + "governance" (rules, roles, and controls regarding who selects and complies with legality and how traceability is sought—knowing the sources of information used—and auditing to ensure traces); ii) "pre-training" (learning general representations in corpus and fine-tuning, which is specializing the model for a specific task) = "segmentation" of "tokens" (breaking down the input into minimum computational units or "tokens" of text/NLP, image, audio, and video) + "normalization" (the form of the data before training to reduce noise and irrelevant variability); iii) "training" (adjusting weights to minimize a loss

function and thereby learn useful representations of the data) = "weight or parameter adjustment" (numbers that determine how the neural network transforms its input into output) + "representation learning" (vectors that encode useful features of text and audio, which appear in intermediate layers or "embeddings" and facilitate classification, generation, and semantic search tasks, among others); iv) "evaluation and alignment" (encompassing tests of model capabilities and risk and techniques for adjusting it to standards, including legal and human preferences); and v) "inference" (the model generates an output from "input instructions" or "prompts") and optionally with "RAG" - Retrieval Augmented Generation - (a pattern for searching documents in external databases, as well as retrieving and writing texts).

3. Legal aspects. From a legal standpoint, AI processes or operational cycles normally require technical, temporary, and intermediate reproduction of artistic works. This links it to copyright law. Forms of reproduction serve various purposes, regardless of the operational phase in which they occur, for example: i) copies for non-expressive "analysis" or internal use. In industry jargon, unlike an "expressive" copy, a "non-expressive" copy is one of a technical nature, necessary for the operation of the system and which the user of a work does not perceive, know, or obtain—TDM and embedding are typical forms; ii) "samples" of a work or fragments thereof. In RAG, the operator or provider allows and the user requests the download of a work or fragments or pieces thereof, to view, read, or listen to in some medium, as opposed to when they "calculate" and "decide," without disseminating the work or when they disseminate its sample

reduced to metadata; and iii) "governance"—certificates of origin or other standards to ascertain the origin and history of works used and thus avoid copyright issues. The basic difference between TDM and RAG is that the latter reproduces works or fragments by displaying retrieved pieces, while TDM does so for analysis. In the case of RAG, lawful access to the works is required through the appropriate licenses. TDM justifies a legal exception to the economic right of reproduction because the copy is technical and is made for analysis, without the user's knowledge.

4. Rights or exceptions to rights. AI systems not only make copies in RAG or TDM, but they also make other types of copies during the AI operating cycle. Some are for "sampling," especially in the acquisition or ingestion of works; also in post-processing, dissemination, or distillation. Others are for analysis, traceability, or security; for example: i) to curate, verify, and perform permission or license; ii) to tokenize and normalize; iii) to annotate or label; iv) to package or take snapshots of datasets; v) adjusting weights; vi) checkpointing models; vii) evaluating—sometimes the evaluation is published; viii) aligning; ix) indexing, responding, or inferring, with or without RAG; and x) monitoring, security, or backups. The above cannot be ignored when defining the legal rules that diverge when the user of works needs to obtain authorization from copyright holders or when legal exceptions apply.
5. What should the law say? International treaties and national copyright laws are structured on the principles of economic and moral rights. There are nuances depending on whether the country uses the droit d'auteur or copyright system.

However, all jurisdictions require at least a minimum of human creative activity, and therefore rights may vary. According to international treaties, there are four economic rights of use or exploitation: reproduction, distribution, public communication, and transformation. From these four pillars, a wide variety of modes of use or exploitation emerge, dictated by each particular industry. With rare exceptions, treaties or national laws are specific regarding concrete acts of exploitation. The reason for this is the general, illustrative, inclusive, technologically neutral, and illustrative nature of copyright. AI has brought new forms of use or exploitation of works, especially reproduction; these are listed above. As with other industries or media, the law should not designate each form of reproduction of AI works. It is sufficient for treaties and laws to recognize economic rights to include all acts relating to AI. In any case, the law could be amended only to regulate exceptional situations such as TDM. Legislators around the world must use inclusive and neutral formulas. This is to balance the interests of those who operate AI processes and those who hold rights. The purpose is to legislate with regulatory consistency and legal certainty.

III. AI COMPARED TO OTHER TECHNOLOGIES

A. What Makes Generative AI Different From Other Means of Using or Exploiting Works?

The key differences are:

1. Autonomous works: AI reproduces works in the same way as typical technologies. However, it does so to generate new works, sometimes with little or no human intervention. This differs from technologies limited to reproducing or disseminating what has already been created by humans. AI is not a new technology for disseminating information, but for creating works or pseudo-creating them. The laws are based on the premise that a conscious human author is the sole source of artistic creativity. The copyright system qualifies this by referring to the author of technical works. AI has challenged the idea of the human author, questioning the basic principles and concepts of copyright.
2. Works for mass training: The outputs—results generated by AI—of AI models do not derive from the copying of specific works, but from a corpus made up of millions of works reproduced for TDM, among other processes. All these works are subject to reproduction. On the other hand, AI does not transform original works from a recognizable or specific source, nor does it produce derivative works.

3. Reproduction and beyond. In addition to reproducing works, AI reads, abstracts, synthesizes, and translates them. This expands the use or exploitation of works and shifts attention to other areas, including "diffuse" derivative works or market substitution without "identifiable" copying. AI cannot be defined as a simple tool for reproducing works. It offers something more.
4. Multifaceted ambiguity. AI can create autonomous works without human intervention. This ability impacts traditional notions of work and authorship. The impact manifests itself ambiguously in creative, functional, legal, symbolic, and epistemic spheres. AI does not guarantee traceability in the generative processes it undertakes. New modes of access strain copyright in form and substance. In this regard, security and governance mechanisms have been developed to establish controls against multifaceted ambiguity.
5. Embedding or TDM. AI differs from classic forms of exploitation in that it performs embedding or TDM. Both TDM and embedding involve indirect reproduction of works in a computer's intermediate memory. TDM is a process of reading data from temporary technical copies, which are obtained to extract patterns (rules, guidelines, or examples). Embedding, on the other hand, is a non-"expressive" numerical vector, which starts by copying works or data in order to read them and calculate the vector used to perform TDM. The reference to "expressive" alludes to the numerical vector's inability to create. Neither TDM nor embedding can copy a work, at least not directly. Copying or reproduction is rather prior and therefore

indirect, because it occurs prior to embedding or TDM. In any case, under copyright law, indirect copying of works constitutes an act of reproduction, as if it were direct.

6. Synthesis of deepfakes. AI can manipulate, simulate, or impersonate a person's voice, image, or other identifying features. It can also replace people with fake images or voices. Victims of deepfakes look real in photographs or videos, but their physical image, voice, or identity does not correspond to reality: they do or say things that are different from the real person.
7. Algorithmic transparency. There are differences between AI and other technologies for various reasons: i) synthetic source information, model version, and AI auditing, as opposed to the DRM system of typical digital technologies; ii) AI processes, models, and metadata, as opposed to copies. Physical or digital aspects of other technologies; iii) in AI, diffuse transparency due to the source-result link and label that corrects it, as opposed to the obvious source (CD, signal, file) of other technologies; and iv) in AI, security review audits carried out by users and technical authorities, in addition to owners and platforms.

B. Practical Taxonomy Proposed By AI Because It Is Different From Other Technologies

1. It is difficult to know who is the author of AI works when an AI work is produced by human creation and AI, carried out under verifiable human creative direction, as opposed to the automatic generation of another AI work, in which there was no creative control. When is there sufficient human contribution in these cases?
2. Works reproduced for AI model training must be lawful. Those responsible for the operation of AI systems must have the authorization of the relevant copyright holders.
3. It is important that researchers and teachers be able to use TDM, without the obligation to obtain authorization from rights holders, to reproduce works in order to operate AI systems. This applies to the training or TDM stages and inference of the already trained model. In this regard, it matters whether the reproduction is technical (such as RAM, cache, embedding) or expressive.
4. There is no derivative AI work, because there is no other unrecognizable original work, when TDM is done as part of a creative process. It is not known whether a work was reproduced among millions of others.
5. What happens if the voice of a singer is "simulated," "impersonated," or "cloned" (as they say in the industry, without the law recognizing equivalent meanings) to perform unreleased music? Or the image of a politician or celebrity? Or the identity of an ordinary person?

6. Which laws should regulate algorithmic transparency, traceability, or governance: copyright law or AI standards? There is a similarity between AI and technologies such as digital or television: both involve the need for technical, temporary, or caching copies. These copies are not perceived by users and are made as part of a technological process. The legal exceptions adopted in the world of television or digital technology serve as a precedent for legislators regarding AI.

C. From Technical To Legal Language

1. Differences. The language used in the communications and media industries is important to copyright law, but it does not determine it: copyright law redefines technical concepts to express them in its own code. It is not the other way around. Each medium has developed a grammar to optimize links and protocols, in accordance with guidelines and structures. Copyright law integrates all technical languages and classifies them in a single discourse, without mentioning specific names. Naming them would only complicate the drafting of international treaties and national laws. This is due to the exhaustive, inclusive, and general nature of this legal discipline, whose terminology accommodates all technologies. It would not be possible to use a casuistic style, in which the law sets out the language of each industry, unless necessary.

   For copyright purposes, media refers to the reproduction, distribution, public communication, or transformation of works. Media also makes

works available to the public, especially in the digital sphere, acting as a bridge between reproduction and public communication. Media differs in terms of its technical features and emerging language. However, at the same time, the criteria are unified in the four criteria set out above. For example: i) book (printed medium), "reproduction" of written or graphic work + "distribution," for sale or rent, in physical copy; ii) radio (audio medium), "public communication," through broadcast, transmission, or retransmission of radio works, in radio space; iii) TV/streaming (audiovisual medium), "reproduction" of audiovisual works in databases + "making available" + "public communication" through streaming + subsequent temporary "reproduction" in the user's computer's intermediate memory; iv) networks/UGC (hybrid digital medium), "reproduction" of written, graphic, sound, or audiovisual works in digital records for databases + "making available" + "public communication" + "reproduction" or downloading in the permanent memory of the user's computer. International instruments such as the Berne Convention and WIPO treaties incorporate the above into their structure and language, without mentioning names or technical concepts. New technologies have forced international legislators to revise treaties or adopt new ones, and they have done so using their own terminology. The most recent case is that of digital technology. The WIPO treaties were designed for this purpose. The way to resolve technical issues was to broaden the scope of rights such as reproduction or public communication. Likewise, the right of making available was incorporated as a preliminary step to the public

communication of works. AI processes are similar to digital ones: the legal concepts developed for this technology serve that one.

2. Language in TDM and inference. In generative AI, TDM may require the technical and temporary "reproduction" of artistic works to calculate the embedding of the corpus and the prompt, thereby converting the work into a numerical vector that can be used to extract patterns. In the inference phase, it can perform a second technical "reproduction" to execute a trained model that obtains the generated results. The output of a result/work may involve acts of "making available" and "public communication" via digital networks. When "reproducing" works for TDM, the AI model is most likely to generate a new work—if there is human creative control—a derivative work—if it recognizes a pre-existing work—or a diverse result not attributable to a human author—if the creation is automatic.
3. Hybrid technology. AI is a hybrid technology, like digital networks, although it is not a means of communication. AI processes relevant to copyright also involve acts of reproduction, making available, or public communication. TDM, embedding, and inference are modes of indirect reproduction of works. On the other hand, concepts such as "results," "input," "output," "creation," or "content" are not relevant to copyright, unless the results of an AI process constitute an artistic work. Like other technologies, all technical concepts related to AI systems and their processes that have to do with copyright, because the results represent artistic works, fall within the parameters of that area of law.

With few exceptions, there is not a single technical concept that does not find a place within copyright law. Legislators must weigh the use of technical AI concepts in the law. This should be done in terms of a public policy that responds to copyright considerations.

IV. Public Policy On The Exchange Between AI And Copyright Legislative Agenda

Lawmakers around the world are analyzing changes to national laws based on the intersection between AI and copyright; Mexico is doing so as well. On the other hand, courts in some countries, including the Mexican Court, have resolved disputes and established criteria that mark the encounter between medium and work. The issue is the five axes outlined above. The global trend is not uniform, but it does show converging patterns.

Any legislative agenda must be geared toward regulatory balance and consistency: i) balanced to avoid overregulation, unnecessary, fragmented, and dominant technical control, favoring what is legally relevant and logical in terms of distribution and harmony; ii) consistent in terms of technical and systemic soundness, with respect for legal language in general and copyright law in particular; iii) avoiding generalization based on exceptions. The fact that technology poses challenges does not imply that the law needs to be reformed,

especially if it offers effective solutions. Legislating on AI in copyright law is only justified if the problems are unsolvable under existing law. The purpose of the reform must be specific, written in technical language, and based on comparative, international, and constitutional evidence. It should not exclude doctrinal alternatives: poor drafting can close off useful future avenues of interpretation (i.e., collective work, sui generis protection, symbolic attribution, among others).

A. Australia

1. General approach: Strong debate between flexibility for AI and protection of the creative sector.
2. Key actions: i) Proposal by the Productivity Commission to introduce a TDM exception—inspired by Japan and the EU; ii) discussion on transitioning from fair dealing to fair use; and iii) creative sector—writers, publishers—rejects excessive expansion of exceptions.
3. Specific actions: In August 2025, the Productivity Commission published a preliminary report (Harnessing data and digital technology). This includes a proposal to amend the Copyright Act 1968 to adopt a fair dealing-type exception in relation to TDM. The exception would allow AI models to be trained using protected works, always under the principle of legal access. Australia currently operates a fair dealing system, limited to the specific use of works, unlike the broader fair use system in the US. The Productivity Commission suggests moving to a fair use-type system, which is more adaptable to the digital environment and developments such as AI.

4. Sector debate: The creative sector has spoken out against the bill and the exception in particular. It argues that allowing free TDM would benefit large technology companies and harm authors. For its part, there is pressure from the technology industry. Executives such as Scott Farquhar (co-founder of Atlassian) have warned that the current regime could slow investment in AI in Australia if access to protected works is not freed up under a modern TDM exception.
5. Current status: i) Consultation remains open; no reform approved; ii) the government has not yet decided on the way forward; and iii) the minister has stated that there are no immediate plans to significantly alter existing copyright laws.

B. Canada

1. General approach: The process is in the diagnostic and broad debate phase, with an institutional and pluralistic approach.
2. Key actions: i) Public consultation "Copyright in the Age of Generative AI"; and ii) document "What We Heard" collects concerns about authorship of AI-generated outputs, TDM, liability, and presumptions of infringement; and iii) proposed general AI law (Artificial Intelligence and Data Act-AIDA), which is pending approval.
3. Proposals under analysis: i) expanding fair dealing; ii) presumptions of infringement with respect to outputs or results; iii) defining exceptions for non-expressive or technical analysis; iv) legal presumptions for cases in which an AI output is very similar to a protected work, with ideas for

compensation; v) clearer rights in AI outputs; and vi) specific regulations on the chain of responsibility.

4. Voluntary Code of Conduct: In 2023, the Voluntary Code of Conduct for the responsible development of generative AI was presented.
5. Current status: i) Canada has not passed specific reforms on copyright and AI, but the debate is well advanced; and ii) legislative discussion will resume shortly, particularly on a new version of AIDA or a reform of the Copyright Act.

c. United States of America (USA)

1. Copyright Office Initiative. In early 2023, the Copyright Office launched an initiative to analyze issues related to AI and copyright. It published a three-part report. Part 1 (July 2024): on digital replicas ("Digital Replicas" or "Deepfakes"). Part 2 (January 2025): addresses copyright protection for generative AI outputs. It concludes that current principles are sufficiently flexible and adaptable to interpret their application in favor of generative AI, provided that there is a human author with "substantial creative contribution." This author must have had effective creative control, for which it is not enough to write a prompt. It does not propose to create a sui generis regime or to modify the notion of authorship. Part 3 (pre-publication in May 2025): addresses generative AI training, specifically the legality and transparency of the use of protected works and exceptions to rights.

2. Key public policy lines. Essentially, no decision has been made to introduce a sui generis regime for AI outputs. The approach is rather to evaluate, on a case-by-case basis, the dominant criteria of human authorship. It is about knowing what to do from a legal standpoint with the non-artistic results of generative AI. The prompt alone is not enough to determine authorship. Perceptible human creative control is required in the output.
3. Another important initiative is the Generative AI Copyright Disclosure Act (from California but proposed at federal level). It aims to require reporting on protected works used to train generative models.

D. Japan

1. General approach: In Japan, there is growing concern about the commercial use of protected works without authorization or remuneration. There is a clear legal framework for AI training, with technical and administrative flexibility and exceptions for TDM that seek to stimulate innovation.
2. Key actions: i) Since 2019, Article 30-4 of the Copyright Act allows the use of works for "information analysis" or "non-expressive analysis," including TDM, without prior authorization; ii) General Understanding document (2023), a self-regulatory code between the government, the cultural industry, and the technology sector; and iii) enactment in 2025 of the General Law on AI (AI Bill), which establishes a framework for ethical and strategic development.

3. Specific actions: 2020 reform of the Copyright Act (Article 30-4), which allows the reproduction of works for "non-expressive" analysis purposes, in particular TDM, without requiring authorization. Works reproduced for public communication are excluded from the exception.
4. Voluntary General Understanding: The Japanese government, together with the cultural industry, published the document General Understanding on AI and Copyright, which recognizes that: I) generative models tend to produce AI works that potentially infringe copyright;
   II) Promoting the adoption of measures to punish rights violations.
5. Legal framework. In May 2025, the Japanese parliament passed the "Act on Promotion of Research and Development and Utilization of Artificial Intelligence-Related Technologies" ("AI Bill"), a comprehensive law to promote AI that, while not directly reforming the Copyright Act, creates a general regulatory framework on the responsible development and use of the technology.
6. Emerging tensions: i) Litigation has arisen over the use of news articles in training; and ii) media groups such as Nikkei and Asahi Shimbun have initiated litigation against platforms such as Perplexity for unauthorized reproduction to train generative models.

E. United Kingdom

1. General approach: Seeks to strike a balance between protecting creators and enabling technological innovation.
2. Key actions: i) National consultation on copyright and AI (2024–2025); ii) proposal for a commercial TDM exception, with opt-out by authors; iii) evaluation of extended collective licensing systems; and iv) strong pressure from authors and artists (Paul McCartney, Dua Lipa) demanding transparency and compensation.
3. Current status: i) Under debate. No specific reform has been approved; ii) The discussion framework is moving toward a conditional exception for AI, disclosure rules for training, and compensation via collective licensing.

F. European Union (EU)

1. AI Act (EU Regulation on Artificial Intelligence). Approved in 2024, it came into force on August 1. Its implementation is staggered. Transparency requirements were imposed for generalized AI from August 2025 and critical models from 2026. It includes obligations on: i) transparency of the use of protected works in training; and ii) watermarking of AI-generated outputs. The structural approach emphasizes transparency, traceability, and rights of rights holders.
2. European Parliament studies. In July 2025, the JURI Committee published a study on the impact of generative AI on EU copyright law. Conflicts were identified regarding data/work training and TDM exceptions.

The legal status of AI works was analyzed and far-reaching reforms were suggested. The current regime has been debated. Among other mechanisms, mandatory remuneration rights for authors have been proposed. It is also proposed to review the exceptions to the economic right of reproduction.

3. Codes of good practice. Europe launched a voluntary, non-binding regulation of good AI operating practices. Its purpose is general for the industry. The European AI Office signed the General-Purpose AI Code of Practice (GPAI), covering aspects of transparency, copyright, and security, to encourage providers of general-purpose models to align with the AI Act.

G. Mexico

1. General approach: Congress is working on an AI agenda. There is still no Mexican "AI Act" or reform of the Federal Copyright Law (LFDA, as per its initials in Spanish). In this regard, protection alternatives are being explored, as well as guidelines for AI in different areas. Mexico is in the phase of analysis and discussion forums, with guidelines for the development of an integrated AI law, in addition to reforms to the LFDA.
2. Comparative actions: i) The US is moving toward comprehensive federal legislation; ii) Japan has adopted a stable TDM exception and pro-innovation policy; iii) EU: its project is in the implementation stage; iv) Mexico is in the pre-legislative stage. Both the Chamber of Deputies and the Senate are studying the multiple initiatives received, but there is still no comprehensive AI framework.

3. AI Law: In 2025, several initiatives have been presented: the "Federal Law for the Ethical, Sovereign, and Inclusive Development of AI" in the Chamber of Deputies and a proposed regulatory framework in the Senate. The initiatives are under discussion. The Federal Law initiative is based on guidelines from UNESCO, the OECD, the Council of Europe, and the European Commission and adopts an approach clearly aligned with the EU's AI Act.
4. Reforms to the LFDA. There are several official initiatives—in the Chamber of Deputies and the Senate—to reform the LFDA on issues related to AI. All of them lack legislative technique and effective wording. One that stands out is on dubbing and voice-overs, published in the Gazette on April 24, 2025. It modifies the LFDA, the Federal Cinematography Law, and the Federal Labor Law to grant rights to voice actors against the "cloning" (sic) of their voices through the use of AI. It seems very disjointed. It attempts to equate voice acting with artistic performance, which is not legally sustainable.
5. Disadvantages of the LFDA initiatives: i) they over-regulate or unnecessarily repeat what is already well established and structured or what does not need to be changed; ii) they undermine the principles of technological neutrality, generality, and illustrative nature; iii) they legislate with poor technique; the wording is vague and confusing; iv) they do not articulate operational solutions: they impose obligations without a functional structure; iv) they hinder scientific or artistic research with AI; v) close useful doctrines without opening compensatory mechanisms; v) break the logic of the LFDA as a general, flexible, and evolving law.

6. Specific risks. While other countries adopt a strategy of legal flexibility with technical control, Mexico seems to be betting on a strategy of legal control with deficient technology, which may cause greater insecurity and inhibition than certainty or balance.

V. About The AI Operating Cycle: Considerations For Law Reform

A. AI Works And Human Authorship

1. Authorship of AI works: There is no global consensus on granting rights to authors of AI works.

   There is debate about the authorship, both assisted and autonomous, of AI systems. Most countries have denied protection to so-called AI outputs lacking human authorship. This is in accordance with international treaties such as the Berne Convention, as well as local laws. Europe has imposed the requirement of human authorship, which has been upheld by courts in cases such as Infopaq (2009), Painer (2011), and Football Dataco (2012). The United States of America ruled in Feist Publications, Inc. v. Rural Telephone Service Co. (1991) that all works require a minimum of "personal expression." More recently, courts in the US and Mexico have denied registration to AI works. See cases. US courts denied registration in previous cases such as Naruto v. Slater (2018), the Indonesian macaque monkey who took an artistic selfie. For its part, in 2025, the

Supreme Court of Mexico confirmed the refusal to register the portrait of Gerald García Báez, made by an AI system called Leonard.

2. Protection of AI Works: Some protection solutions for AI works are: i) copyright: in countries whose laws offer protection to collective works or extend the notion of authorship beyond human beings, such as the United Kingdom. British law attributes authorship to whoever makes the "necessary arrangements" to create an artistic work (UK, Section 9(3) CDPA, 1988). Under the notion of "necessary arrangements," a human being is considered the author, but so is a moral entity or perhaps a machine. In some countries, such as Mexico, copyright protects traditional and non-traditional works, such as technological creations that are generally made by legal entities (i.e., computer programs, databases, or audiovisual productions). ii) Rights related or neighboring to copyright: This constitutes a solution outside of copyright but related to it. In countries such as Spain, databases and other technical creations do not belong to copyright, but to related rights. It does not seem unreasonable to include AI works in this category. Doing so reduces legal problems related to human authorship. Under this assumption, concepts such as collective or commissioned works do not apply, because they belong to the realm of copyright, but are protected by law in parallel; iii) sui generis rights, such as European database rights (which differ from Spanish rights). This is a right that protects the investment or technical aspect of a creation, rather than the artistic aspect. It is more pragmatic and less romantic or symbolic than the right to artistic creation. Creativity based on investment, in other words. The processes of "creation" of AI works seem to fall into this category. Mexican law does not contemplate sui generis rights. There is

only protection of copyright or related rights. Mexican copyright protects computer programs or databases, which are technical creations in themselves. Related rights, on the other hand, cover phonograms and television signals, which are also technical in nature; iv) industrial property rights or contracts. In the absence of copyright, related rights, or sui generis protection, industrial property can take care of certain "results" of AI. To do so, it can use patents or trade secrets.

3. Mexican reforms: Among the initiatives currently underway, particularly those related to the protection of AI works, it can be observed that Mexico over-regulates and is closed to flexible doctrines, placing it in a more restrictive position than most of the countries mentioned above. This is because both the law and the Court impose a requirement of human authorship for the protection of works. This closes off avenues of protection for AI works through concepts such as sui generis rights or collective works. The scope of protection is so narrow that legislators do not seem concerned about whether it is appropriate to protect AI works, as is the case with computer programs or databases. In such cases, the "authors" are not traditional and their "works" are more technical in nature. The method of creation is not artistic and is the product of the selection, arrangement, or arrangement of information, data, or works. In this scenario, the "authors" act as directors of a technical project, with a creative result that may be artistic, rather than acting as typical artists, composing, writing, or painting.
4. Co-creation contracts: Creators and producers of rights to a work assisted by AI systems may enter into contracts for the creation of an AI work. In

such cases, AI is a tool to support the human creator. Creative directors, AI operators, data curators, and rights managers are involved in the process. Some of these subjects may be considered authors of the AI work, especially those who exercise substantial and perceptible creative control. They will not have contributed sufficient creativity if they only enter prompts or do not perform editing or other creative contributions. Their participation may take place under paid collaboration, as independent authors or in a collective work. If the result is not a work, because the creative participation is not relevant, the parties may agree among themselves on the exploitation rights. Curators may be responsible for data control, legal matters, TDM, and RAG, as well as governance and auditing. There may be trade secrets regarding weights or other elements. Rights managers may be responsible for "clearing" any work used or the image or voice of individuals.

B. Reproduction Of Works For Training Or TDA

1. Licensing of works and ECL. This analysis concerns the possibility of licensing the right to use works for reproduction in model training. Reproduction may be for datasets. In these cases, the license is for reproducing third-party works in order to obtain another result from the selection, arrangement, or arrangement of works. Likewise, reproduction of works may be for prompts. It may be for outputs, on sites or platforms, for example, libraries or archives, that offer works to read, listen to, or view. When catalogs are very large and individual treatment is impossible,

the recommended license is an ECL, which is in force in the law of some European countries. The ECL facilitates or simplifies the procedures for the mass use of works. For example, to train models or index newspaper or music archives.

2. Market solutions and standardized agreements: i) Collective licenses. Some European countries provide for collective licenses, such as ECLs (extended collective licenses) or "one-stop shop" licenses. Under ECLs, a collective management society grants "block" licenses for the use of large repertoires, without analyzing each work individually, for the purpose of demonstrating rights. Such licenses also cover non-members, who have the right to opt out and share in royalties; and ii) standardized agreements: with clauses for the use or exploitation of works in data sets, training/fine-tuning, RAG, or image and/or voice. The LFDA does not provide for ECL licenses. Collective management societies must legally represent affiliates. There are also no "opt-out" exclusions. This opens up an opportunity to change the law.
3. Transparency and attribution: i) Transparency obligation to report which works were used in model training and what traceability was contemplated; and ii) attribution to recognize sources when fragments are shown or when required by contract. In particular, for compliance or accountability.
4. Mexican activation: In Mexico, transparency and attribution are implemented through contracts or consumer or personal data laws. The future AI law should serve to regulate this in a general sense.

5. AIPPI Resolution. In 2025, the International Association for the Protection of Intellectual Property (AIPPI, as per its initials in Spanish) proposed a balanced international framework that: i) protects the rights of authors and owners; ii) recognizes the functional role of AI and the need for access to data/works; iii) promotes a system of exceptions for training models with works, based on the Berne Convention, particularly the rule in Articles 9(2) and/or more specific rules, such as the TDM exception; and iv) requires transparency, compensation, and shared responsibility.

C. Copyright exceptions for TDM for research or teaching

1. TDM concept: specific exceptions for model training in AI systems. From a copyright perspective, TDM is based on technical and intermediate reproduction, carried out for the operation of the AI system. Its purpose is not expressive. Nor is it done for the purpose of disseminating or distributing the works being trained. TDM presupposes that those responsible for operating the AI system and training the model use works with the proper authorization of the rights holders.
2. Research or teaching: The condition for justifying the exception for the use of works for TDM is based on the premise that those who train data do not always seek a commercial result. Some do so as part of ad hoc scientific or artistic research or for teaching or instruction in schools or universities.

3. TDM and the law: In most legal frameworks for model training or TDM, artistic works are reproduced. An exception is justified for the use of works for research or teaching. In this regard: i) EU Directive 2019/79 recognizes that TDM involves acts of technical reproduction (Articles 3 and 4), but creates exceptions for research or commercial uses with output; ii) the US Copyright Office has also discussed it as technically necessary reproduction, although subject to fair use analysis; and iii) in Japan, Art. 30-4 expressly allows such acts without considering them to infringe the right of reproduction, if they are for non-expressive analysis.
4. TDM does not produce results: TDM does not generate "expressive" or aesthetic output like an AI work. Its purpose is analytical, not creative. The output of TDM is a statistical model, a network of correlations, or a set of metadata. When a generative model produces a work, the output is creative, not pure TDM.
5. Mexican activation. The LFDA does not provide specific exceptions, so acts of TDM may constitute infringement unless authorized under the terms of the law. The definition of reproduction is broad and flexible, in accordance with international treaties, which allows for technological evolution, but requires reasonable legislative or judicial interpretation so as not to create unnecessary obstacles. Unlike other issues at the intersection of copyright and AI, the TDM exception is one that legislators must study for implementation purposes. The same applies to other forms of internal and intermediate reproduction that occur within the AI operating process.

D. Deepfakes as illegal

1. Deepfakes/identity: protection as personality rights—voice, face, image—with safeguards for parody, satire, and public interest. Protection against deepfakes: the case of Denmark. This country is preparing a reform to grant citizens rights over their voice, face, and identity in general against deepfakes or replicas generated without their con. The Danish bill provides for penalties for platforms and exceptions for parody or satire. For their part, the laws of the states of the American Union provide for applicable solutions against so-called "digital replicas." They serve to combat identity theft, both in the right of publicity and the right of privacy.
2. Mexican activation: The chambers of the Congress of the Union are analyzing changes to Article 87 of the LFDA. This provision establishes a right to one's "portrait." Case law has expanded this concept to include both static and moving "images." At the same time, the LFDA considers infringements in the area of commerce to be punishable offenses relating to the right to an "image." The current reform attempt is to add the word "voice" as part of the "image." However, both "image" and "voice" are part of a person's "identity." Any reform should take this situation into account. On the other hand, it is questionable whether the right to one's "image" or "voice" and, above all, "identity" should be part of the LFDA. These are personality rights, which are unrelated to copyright. Regarding "deepfakes," it is unclear whether the LFDA provides protection against the impersonation or falsification of any personality or identity trait, or merely the unauthorized use of people's "image" and even their "voice."

Finally, there is nothing in the LFDA related to marking, credentials (C2PA), or model traceability.

E. Algorithmic Transparency

1. Transparency and watermarking: these should fall outside the scope of copyright—AI laws or standards. Countries are studying ways such as mandatory remuneration, specific exceptions, or sui generis mechanisms, especially in the EU. The aim is to achieve proportionality and legislative flexibility. The intention is to avoid closing the door to innovation, regulating only what is necessary, in a technical and contextual manner.
2. Key proposal: Transparency and collective licensing. Consideration is being given to creating collective licenses to compensate authors who are unable to negotiate individual contracts. An obligation of transparency regarding the data used in training is also being discussed.
3. Transparency: Countries such as the US and EU seek clarity on the use of protected works in training (e.g., disclosures, watermarking). China regulates generative services, requiring labeling, restrictions on personal data, and rules on socially-aligned content. Other countries (Australia, UK, Canada) are conducting studies, public consultations, or guidelines to identify whether specific copyright reforms are required.
4. Mexican activation: There is no general obligation to mark or label AI outputs, nor is there a comprehensive governance framework. Even so, there are useful anchors in the LFDA, although limited to the protection figures of that legal system.

In other areas, the Mexican legal system protects: i) Technological Protection Measures (TPM) and Rights Management Information (RMI). It does not require them to be marked, but it does penalize their removal or alteration. This may be useful for C2PA or invisible marks, such as RMI/TPM, but not as a universal mandate; ii) personal data (LFPDPPP / LGPDPPSO); iii) transparency and lawfulness of processing, privacy notice, security, minimization. It serves for governance—data traceability, legal bases—; iv) consumer protection LFPC/PROFECO). It prohibits misleading advertising. May require clear information to the consumer — i.e., notices generated or altered by AI in advertisements—but is not a technical AI regime; v) contracts, compliance, and standards; vi) contracts, internal policies, ISO (27001, 42001 when adopted), may incorporate C2PA, traceability, notice and take down. These are voluntary or agreed upon, not mandatory. Today, watermarking, labeling, and governance are not regulated in Mexico. There is support from the laws cited above, but a special regulation is needed to integrate this universe, for issues of proportionality and auditing.

V. Conclusion

AI has challenged the law, and copyright law in particular. There is research to be done and questions to be answered. Specific changes to certain laws are needed. In general, copyright laws are structured according to principles that allow for the resolution of conflicts and problems relating to AI works, among

other situations raised by AI. It is necessary to understand the intersection between technology and copyright in order to undertake the necessary changes to the law, which in principle are few. The world is moving forward on these premises, including Mexico. Effective results will be seen in the coming times. It is necessary for legislators to follow a public policy aimed at adopting regulations, with coherent and balanced rules, to achieve the objectives set.


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