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Copyright implications of Artificial Intelligence

Master`s thesis

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Tallinn 2024

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Abbreviations

AI - Artificial intelligence

EU- European Union

U.S.A – United States of America

CAHAI - Ad hoc Committee on Artificial Intelligence

WIPO - The World Intellectual Property Office

SVM - Support Vector Machines

PCA - Principal component analysis

TRIPS - Agreement on Trade-Related Aspects of Intellectual Property Rights

TDM - Text and data mining

CDPA - Copyright, Designs and Patents Act

UK – United Kingdom

PDPB - The Personal Data Protection Bill

DPA - Data Protection Authority

GAN - Generative Adversarial Network

FSEK - Turkish Law on Intellectual and Artistic Works

CJEU - Court of Justice of the European Union

CONTU - The Commission on New Technological Uses of Copyrighted Works

USPTO - United States Patent and Trademark Office

WTO – World Trade Organization

LIAC - Law on Intellectual and Artistic Works

Important acknowledgement about thesis:

I would like to express my sincere gratitude to all Law Department members of University of Tartu for their valuable guidance throughout my academic journey in International Law and Human rights programme.

In the course of writing thesis, different AI and Grammar tools have been used in order to correct grammatical mistakes, developing my ideas, using correct sentence structures and shortening sentences.

Chapter 1. Introduction

It is impossible to imagine today`s world without technologies. That is the reason why we can call 21th century as "The age of Technology". And also it is difficult to think about Information Technology without Artificial Intelligence. Artificial intelligence refers to the creation of technical devices that can think and make decisions like humans, aiming to apply human logic in machines. Artificial intelligence also refers to modern systems that model human thought processes, psychology, and real intelligence. The primary goal of creating artificial intelligence has been to ensure that problems traditionally solved by humans can be solved by machines. For example, scientific, economic, physical etc., both long-term and daily problems.

The high speed of development of AI brought so many advantages, so many processes are now automated, which made it easy for humanity. We can see AI`s pros in our everyday lives such as automation, increased productivity, enhanced healthcare, etc. While we see and use the help of AI in our everyday lives, it is also very important to think about its disadvantages. According to scientists, policymakers if humanity can not keep control of AI`s development, it may cause serious problems for whole world. Elon Musk stated that today AI is a bigger threat for world, even than Nuclear weapons. Right now these threads are not real threads or they are not yet visible. But the world already challenging with legal issues AI already brought with itself, such as Intellectual property rights, privacy and data protection issues.

In its daily operations AI needs to use some data, which belongs to companies, people, governments. In the past, determining what a computer should do was done by a programmer coding algorithms in a programming language. However, today, instead of writing programs for some tasks, data containing what needs to be done is collected, and a learning program, along with a learning algorithm, automatically adjusts to meet the requirements specified in this data. Thus, artificial intelligence takes on a structure that can learn from its own experiences and produce results that even its designers did not foresee. The rapidly evolving nature of AI suggests that progress will not be limited to the advancements listed, and even greater advancements will occur in the future. Indeed, scenarios suggesting that AI will surpass human intelligence or pose a significant threat to humans are not confined to science fiction movies; these concerns are also voiced by scientists.

Although the future developments in the field of artificial intelligence and whether these machines can replace humans remain as a mystery, today, artificial intelligence is capable of producing products that could be considered works of art if they were created by a human. These products often require a vast amount of data to be generated. This situation has brought about some discussions within the scope of intellectual property.

These discussions can generally be examined under two main headings. The first is the possibility of using data with the quality of a work in machine learning, which may infringe on the intellectual property rights of others. The second is the determination of whether the product produced by artificial intelligence can be considered a work when artificial intelligence creates a product. Additionally, if the relevant product is considered a work, it must be determined who the copyright holder will be and who will use the rights.

In order to understand the discussions related to the Intellectual property and Artificial Intelligence firstly we need to understand what is AI, the necessity of human intervention, the principles of working of AI, regulations, frameworks of different legal systems both in national and International scope.

The outcome obtained here will lead to a discussion in the continuation of the thesis on whether the existing legal system is sufficient to protect such products and whether it is necessary to protect the product under intellectual property rights and the importance of intellectual property protection in the context of theories of justification for protection when a product is created by artificial intelligence. It is noted that this discussion has led to significant differences of opinion in the doctrine, with each view being supported by strong arguments and no consensus being reached on the issue.

The attempt of safeguarding artificially intelligent products through intellectual property rights does not resolve all debates. It instead prompts inquiries into who will hold the copyright. The most important issue to consider is to find out whether a human or the AI itself have to be deemed as the holder in question when evaluating intellectual property protection. İt is more interesting when it comes to the cases where humans have ownership, determining which individual should get this title becomes important. If none of these creations can obtain get protection of work protections and other resolution options must surface, it's necessary to assess the role of Law in shaping technological advancement and implementing new legal guidelines. And to sum up, proposed solutions for any arising matters about this issue will be examined in the next parts of the thesis.

Statement of Issue

The current intellectual property regulations face a unique challenge-harmonizing with the distinct hurdles presented by AI-generated innovations. While copyright law typically protects creations showcasing ingenuity and inventiveness, enforcing these principles on AI-produced works is a novel and complex task. The legal identity of an AI as a creator and the distribution of ownership between developers, society at large, and the systems themselves pose unprecedented legal predicaments.

The probability of AI algorithms infringing on existing intellectual property rights or exacerbating biases and discrimination adds to the complexity of legal matters. However, as creative processes and decision-making systems increasingly incorporate AI technologies, there is a vast potential for AI to enhance innovation and creativity. It is imperative to create coherent legal frameworks that harmonize this potential with safeguarding measures as well as ethical considerations.

Given the complexities posed by AI-generated works, this thesis undertakes a comprehensive investigation and evaluation of their legal ramifications in relation to intellectual property law. Through an in-depth analysis of applicable precedent, legislative advancements, and academic discourse, this research aims to enhance comprehension of the dynamic interaction between AI technology and intellectual property rights. It culminates in proposals for those involved with policymaking decisions or who have a vested interest within these fields.

Main Research Questions

What are the legal and intellectual property issues surrounding the use of data in AI, particularly concerning copyright ownership and infringement?

How do international agreements address the concept of copyright ownership in AI-generated works, and what are the implications for creators?

What legal frameworks regulate the use of data in AI, and how do they impact the rights of creators and users?

What is the current status of AI-generated works in terms of originality and distinctiveness criteria, and how are they protected under existing legal frameworks?

How do existing laws address the issue of protecting products generated by AI, and what challenges arise in determining copyright ownership in AI-generated products?

What alternative solutions exist for protecting products generated by artificial intelligence as works, and how effective are they in addressing legal and ethical concerns?

How can unfair competition protection, related rights protection, and unique rights protection be applied to AI-generated works, and what are the potential implications for creators and users?

These questions will help to dive into the topic and understand its fundamentals, and according to these questions the thesis will be structured.

Chapter 2. Works Used as Data in AI

2.1 Understanding of AI

In contemporary times, there isn't a universally accepted definition of artificial intelligence. The concept encompasses abstract elements and a wide range of systems, from translation programs to autonomous vehicles, each with its own distinct qualities and levels of risk. While it may not be imperative to define every concept, determining the meaning of artificial intelligence seems useful from a legal standpoint. When formulating a definition, it's important for it to be comprehensive, meaning it includes essential aspects while excluding those beyond its scope.

It should be sufficiently clear, practical, and enduring, avoiding the need for frequent updates to accommodate changes.

The Council of Europe has established a temporary committee called the "Ad hoc Committee on Artificial Intelligence (CAHAI)" regarding artificial intelligence. In the "Feasibility Study" prepared by CAHAI, artificial intelligence is defined as "a higher concept generally associated with the abilities that are commonly and currently attributed to human intelligence and various computer applications based on different techniques." The document also notes the absence of a universally accepted definition of artificial intelligence[1].

Within the European Union (EU), the European Commission has presented a proposal called the "Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence [2](Artificial Intelligence Act)" or shortly "Artificial Intelligence Regulation". In this proposal, an artificial intelligence system is defined as software that produces outputs such as content, predictions, or decisions that affect the environments they

[1] https://rm.coe.int/cahai-2020-23-final-eng-feasibility-study-/1680a0c6da
[2] https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52021PC0206

interact with, developed with one or more of the technical approaches presented in Annex 1 and directed towards goals created by humans.

Additionally, another regulation presented by the European Commission, stated to be part of a package of measures aimed at promoting the proliferation of artificial intelligence in Europe alongside the Artificial Intelligence Regulation, is the "Proposal for a Directive of the European Parliament and of the Council on Adapting Non-contractual Civil Liability Rules to Artificial Intelligence." In this regulation, it is emphasized that artificial intelligence is a technology that can provide a range of opportunities contributing to various benefits in all areas of the economy and society.[3]

The World Intellectual Property Office (WIPO) defines artificial intelligence as a computer science discipline aimed at developing machines capable of performing tasks typically associated with human intelligence, either with limited human intervention or entirely without human intervention. [4]This definition aligns with the fundamental debate underlying the topic of this thesis, which revolves around whether products created by humans using artificial intelligence should be eligible for intellectual property protection. Given this consideration, we agree with this definition for the purposes of this thesis.

Another aspect to consider in the provided definition is the concept of intelligence. However, the greatest challenge in understanding what artificial intelligence entails lies in the ambiguity surrounding the concept of "intelligence."

2.2 Classification of AI

Artificial intelligence is classified into various categories from different perspectives. One of these classifications is based on the different levels of development of artificial intelligence, which are narrow/weak artificial intelligence (artificial narrow intelligence/artificial weak intelligence) and general/strong artificial intelligence (artificial general intelligence/artificial strong intelligence).[5]

Narrow/weak artificial intelligence focuses on performing a specific task and operates autonomously within the limited scope defined for it. On the other hand, general/strong artificial intelligence aims to replicate the human brain entirely, being capable of understanding,

[3] https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52022PC0496
[4] https://www.wipo.int/about-ip/en/frontier_technologies/ai_and_ip.html
[5] https://ai100.stanford.edu/gathering-strength-gathering-storms-one-hundred-year-study-artificial-intelligence-ai100-2021-study

perceiving, and learning like a human[6]. Currently, all existing artificial intelligence applications are examples of narrow/weak artificial intelligence.

Although there is no example of general/strong artificial intelligence yet, significant strides have been made in broadening artificial intelligence systems through their ability to self-learn and generalize, indicating progress towards achieving more general artificial intelligence capabilities

In academia, another perspective categorizes artificial intelligence into four types based on its fundamental objectives. The first of these distinctions is "reactive artificial intelligence," which is characterized by not having memory, [7]not using past experiences, directly perceiving the current context, and therefore always giving the same responses to a given situation. The positive aspect of this type of artificial intelligence is noted as its output being stable and reliable.

The second type, "limited memory artificial intelligence," relies on limited information based on past experiences and applies them to current data. The third type, "theory of mind artificial intelligence," derives its name from the theory that living beings have certain emotions and thoughts that can be observed in their behavior. This type of artificial intelligence uses advanced technologies to understand human emotions.

Lastly, "self-aware artificial intelligence" is conscious and is also referred to as human-interaction AI or human-aware AI. While examples like Deep Blue represent the first type of artificial intelligence, which plays chess, and self-driving cars exemplify the second type, there are currently no examples available for the third and fourth types of artificial intelligence mentioned.

What is Machine Learning?

The advancements we see today don't happen miraculously. Behind all these developments lies the concept of machine learning. Machine learning, one of the technical terms under the umbrella of artificial intelligence, entails the ability to produce similar outputs when faced with similar inputs. [8]To exemplify this learning process, consider the task of unnecessary email filtering. By analyzing previous emails and identifying suspicious expressions. These could find unnecessary

[6] https://dokumen.pub/the-cambridge-handbook-of-artificial-intelligence-1st-edition-0521871425-9780521871426-0521691915-9780521691918-1139046853-9781139046855.html
[7] https://dokumen.pub/learn-computer-vision-using-opencv-with-deep-learning-cnns-and-rnns-1st-ed-978-1-4842-4260-5978-1-4842-4261-2.html
[8] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4185327

content, also can predict whether an incoming email is irrelevant based on whether it contains suspicious expressions.

Automated techniques are used in the process of machine learning to identify significant patterns in data. This allows machines to learn how to perform complex tasks like speech recognition and image detection, which would be difficult for humans to program directly. By overcoming the limitations of traditional coding approaches, machine learning is an efficient and effective method for developers. It enables them to break free from the constraints of traditional frameworks. However, the effectiveness of algorithms integrated into computing systems depends on the quality and quantity of training data. The higher quality and quantity of training data, the better outputs can be produced by machine learning algorithms.

To discuss learning effectively, it's important to rely on broad generalizations more than individual examples. This approach involves employing inductive reasoning to arrive at comprehensive conclusions. In the context of machine learning, which entails identifying significant patterns in data automatically, machines are expected to generate consistent outcomes based on input . For instance, an email filtering task demonstrates this type of learning process where machines predict whether incoming emails are unnecessary by detecting suspicious patterns.

When it comes to humans, learning occurs through neurals, and a healthy human brain have numerous neurons connected to each other through synapses. These interconnected neurons receive input via electrochemical signals from connected neurons through synapses and fire when a sufficient electrochemical signal is received, essentially sending signals to other neurons to which they are connected.

One of the most popular types of prediction rules in machine learning today is artificial neural networks, which draw inspiration from the human brain. Generally, a neural network consists of interconnected neurons through synapses, where each synapse represents a numerical weight (e.g., 0 for "not connected"; 1 for "highly connected") that determines the influence of neurons on each other and which output corresponds to which input. There are layers arranged in sequence, where each signal from the previous layer is taken as input by neurons. Having many layers in the network brings up the concept of "deep learning."[9]

Deep learning is a subfield of machine learning, which involves methods used to express models at various levels of abstraction from raw inputs to outputs. In deep learning, neural networks have many layers that allow learning, with lower layers near the data input learning basic features while higher layers learn more complex features derived from lower layer features. Starting from the simplest level, such as pixels, each layer focuses on different basic elements at different levels of abstraction (e.g., longer lines, corners, intersections), culminating in the

[9] https://www.deeplearningbook.org/contents/ml.html

identification of an image, for example. The complex structure and unexplainable decision mechanism of the model in deep learning are significant points.

Indeed, this complexity makes it challenging to determine how artificial intelligence arrives at a specific output from given inputs.

Machine learning is fundamentally divided into three categories: supervised learning, unsupervised learning, and reinforcement learning. This distinction is crucial for identifying human intervention in the process of creating a product by artificial intelligence.

Machine learning, which involves the machine learning from its own experiences, enables the emergence of more advanced machines over time. Machine learning, and artificial intelligence in general, although difficult to understand and analyze, occurs within a certain system. [10]The usefulness of the learning process largely depends on how the learning task is formulated, and the human factor has not yet been completely excluded from this process. Depending on the algorithm used, it is possible for artificial intelligence to produce outputs that are different from and unforeseen by the inputs and information provided by AI designers. For example, incorporating elements of randomness into the processing can lead to unpredictable/creative outputs by artificial intelligence. Furthermore, some artificial intelligences are said to develop their own algorithms and evolve. These decision-making processes, which cannot be fully explained by humans, have given rise to the concept of "black boxes."

Based on the explanations provided, artificial intelligence can be classified by its intellectual property protection features. These include processing copious amounts of data, learning patterns, creating outputs that showcase creativity, operating autonomously and independently as well as producing novel results. Given AI's ability to process vast quantities of ever-changing information raises questions about protecting IP rights infringement. The focal points regarding whether or not products generated from artificial intelligence should categorize them into works are: The capacity for machine learning based on past trends, Generating creative outputs beyond simple copying inputs which were given, Autonomy in executing tasks with minimal human intervention, The capability to produce unforeseen output divergent from an engineer's input.

There are three primary categories that machine learning can be classified into:

Supervised, unsupervised and Reinforcement Learning[11]

[10] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3465577
[11] https://towardsdatascience.com/what-is-machine-learning-a-short-note-on-supervised-unsupervised-semi-supervised-and-aed1573ae9bb

The supervised learning system in machine learning is concerned with the heavy dependency of labeled data to train the algorithms. In essence, this entails having a particular label or target variable associated with each data point present within the training dataset. These are either an accurate representation of the correct output or desired prediction for that input feature. Such labeled data can effectively guide the algorithms to correctly map input features to their respective output values at the developmental stage of an algorithm.

Supervised learning is the technique of developing a model that can precisely predict the results of new information inputs by recognizing patterns and correlations in the data. Such methods usually focus on adjusting model parameters iteratively to minimize deviations between anticipated outcomes and authentic training set labels.

Supervised learning techniques usually encompass a large number of algorithms and methodologies, each implemented for a highly specific type of data and task. Common examples of supervised learning include:

The linear regression algorithm effectively predicts the output continuous value by implementing a linear equation model that relates input features to its corresponding outputs. In this case, the primary purpose is to minimize the square differences between the predicted and real results so that it can enhance its capacity to give precise predictions.

Logistic regression, though the name suggests a relation to regression, is actually mainly used as a tool in classification tasks which have to predict binary categorization. It basically works by computing the likelihoods of an input datum's chance of being in one class over that in another by probability that the feature attributes give, using logistic modeling. Another unsupervised learning algorithm, decision trees, finds a variety of applications. They produce models of feature space shaped like trees, where the internal nodes of the tree indicate choices based on a particular characteristic value, and each leaf node is associated with class labels or regression statistics. The reason for such great popularity of decision trees in classification and regression tasks is their simple interpretive and intuitive quality.

Random Forests involve the task of combining many decision trees to have improved predictive accuracy. It involves training each of those trees on a different, randomly chosen subset of the entire data, and thereafter, making predictions with them before the general Random Forests model pools their predictions together. Accordingly, the method used reduces the overfitting risks and increases the precision of generalization.

Support Vector Machines (SVM) is an instance-based algorithm. Its strength comes from the method it applies, whereby it attempts to find the best hyperplane that can separate the various

class data points in a feature-filled large area. SVM uses maximal gap archetypes to minimize human errors in case of any classification errors during this process.

There are many supervised learning algorithms and techniques available to the machine learning practitioner, but only a small sample can be mentioned here. Selection of the best algorithm for a given situation depends on variables such as the characteristics of the data set, the complexity of the task, and the performance metrics that are sought. With a broad spectrum of applications—from the field of healthcare and finance to natural language processing and computer vision—machines using supervised learning can make very accurate predictions while analyzing a broad range of information.

Unsupervised learning is a critical machine learning technique, in this case, whereby the model derives patterns from unlabeled data without explicit guidance or supervision by external sources. Supervised methods use labeled examples of the data that is available in order to make predictions regarding target attributes. This is a characteristic that makes this mode very useful for applications requiring access to annotated datasets, usually very hard or expensive to obtain.

Unsupervised learning tries to derive structure within the data, which is mainly performed by clustering the data, detecting associations, or anomalies. In contrast, unsupervised learning algorithms extract representations and insights from the inherent patterns found in the data, rather than guiding themselves based on any predefined categories.

Clustering is a general technique in unsupervised learning whereby data points group together in distinct sets or clusters by closeness and similarity. This technique helps group the similar data points in such a way that intrinsic patterns in the information regarding its basic constituents are highlighted, or in other words, it provides enlightening knowledge.

Unsupervised learning is important in reducing the dimensionality of a dataset while still keeping its essential characteristics. This is through the methods of seeking out pertinent patterns from the data while excluding those attributes of the data that may be redundant or not meaningful, in order to ease analysis, either manually or by machine.

PCA is often used in the reduction of the dimensionality of large datasets. The basic idea of the approach revolves around projecting high-dimensional data to a subspace of lower dimensions while still retaining the maximal variance within the projected data. It leads to low complexity while not losing relevant information, by choosing only important dimensions through the analysis of PCA.

Association rule mining is considered an important task in unsupervised learning because it finds interesting relations between variables in large databases.

In order to achieve this, the Apriori algorithm and other algorithms structurally similar to it are used in identifying frequent itemsets and deriving useful rules that describe co-occurrence patterns found in the dataset. State-of-the-art, wide-usage unsupervised learning techniques find applications in the following diversified fields: market basket analysis, anomaly detection, recommendation systems, and data visualization. They offer critical insights in deriving actionable intelligence from an organization's valuable data assets by accessing hidden patterns and structures within available information stores through unsupervised algorithms.

With the increasing volume of unstructured datasets and complexities each passing day, the dependence on unsupervised learning techniques is bound to increase for the easy extraction of vital knowledge from such datasets. Reinforcement learning (RL) is a type of machine learning focused on how agents or decision-makers gain knowledge of successive actions by interacting with their environment. Where supervised and unsupervised approaches require labeled data sets or patterns within the labeled ones, RL requires rewards and punishments that give the feedback facilitating the educative process for the agent.

Reinforcement learning concentrates on an essentially centralized notion: the independent agent senses the surroundings, makes some sense, and takes action with feedback from the environment. The environment includes all uncontrolled factors for a certain entity acting in external systems or worlds. The overwhelming goal of such an agent is to develop policies that correlate the states (representations of their settings) with actions that result in maximal rewards over time accumulation.

It follows that an important aspect of reinforcement learning is the role of reward signals, which essentially are concerned with states or actions and therefore help the agents learn how to optimize cumulative rewards at various points in time. Through exploration, monitoring outcomes, and adjusting based on previous experiences, these values help agents optimize their policies through trial-and-error methods for long-term success.

A fundamental challenge the agent has to tackle in this exploration-exploitation dilemma in the field of reinforcement learning is to successfully balance acting upon the exploration of the unknown, possibly superior options and exploiting the well-engrained and familiar behaviors that promise large payoffs. Addressing this challenge effectively has given rise to a variety of experimentation techniques including the epsilon-greedy or Thompson sampling approach, all with the aim of finding a harmonious balance between these conflicting demands.

There are two main classes of reinforcement learning algorithms: model-free and model-based. The former, such as Q-learning and SARSA, both learn from experience by estimating a policy or value function.

On the other hand, with dynamic programming and Monte Carlo methods, explicit models of environmental rewards are constructed along with transitions for optimal policies determination purposes. Deep Reinforcement Learning (DRL) is one of the subfields in artificial intelligence that have really made it in this world. What makes it so successful is the fact that it incorporates reinforcement learning with deep learning or neural networks. It allows for the derivation of complex and multi-dimensional policies directly through acquisition from raw sensory inputs of the sensor data or images.

DRL has shown its effectiveness in various fields, such as video gaming, robotics, natural language processing, and self-driving cars, testifying to the accomplishments of the learning method. Reinforcement learning is highly beneficial in finance, health, and robotics; also, in recommendation systems. The technique presents a wide variety of benefits and covers training of self-regulated agents in gaming to bettering control mechanisms under practical settings. Its flexibility has made it be a necessary tool in dynamic environments, where the learners can optimally make choices in conditions of uncertainty or even change. As the researchers proceed with their activities on the reinforcement learning techniques and algorithms, new opportunities along with their adaptability further arise toward complex decision-making solutions that would, in fact, surpass traditionally used methods by the teams/projects/departments/units from Intelligent Decision Systems (IDS) at the respective corporations worldwide and meet the needs that are actually demanded!

Intellectual Property and Infringement issues in AI

When examining the provisions of the Berne Convention for the Protection of Literary and Artistic Works (Berne Convention), which is one of the leading international texts regulating intellectual property protection,[12] it is noted that the concept of work is not defined. However, the creations considered as literary and artistic works are listed without limitation in Article 2 of the Berne Convention. Although the agreement text does not define the concept of work, it is stated that the term "work" expresses intellectual creations. Additionally, various attributes such

[12] https://www.wipo.int/edocs/pubdocs/en/copyright/615/wipo_pub_615.pdf

as "originality" and "creative thought product" are mentioned in different paragraphs of Article 2 of the Berne Convention.

In Article 9/2 of the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), the scope of protection is defined as the expression of ideas, rather than ideas, methods, principles, or mathematical concepts[13]. However, the definition of the concept of work is not provided here either. This regulation leads to difficulties and differences of opinion in determining when an expression can reach the level of a protected work.

It seems useful to examine the provisions of other legal systems, which stand out with their developments in the field of artificial intelligence and may contain special regulations in this regard, as well as in new regulations that may be considered. Generally, looking at the definition in other legal systems reveals that the criterion of originality is given for a work to be considered. However, though the EU regulations do not give a definition of a work, a number of court decisions have mentioned that a work needs to have originality for protection under intellectual property law. Article 12/1 of the French Intellectual Property Code goes a step further to explain how the various categories of works are covered, emphasizing the fact that: "All works by authors will be protected whatever their expression format may be, whatever may be their purpose or their essence." Conversely, Article 12/2 extends such protection outside a limited list, referring to examples that illustrate its scope, while at the same time section two (2) of the German Copyright Act largely classifies creative output amidst avoiding any narrowed listing thereof.

The United States legal system also contemplates whether a work meets the standard of originality to receive consideration. According to the US Copyright Law, for work to be considered eligible, it should be original and possess physical integrity, although the parameters of "what constitutes as original" are not stated within the text.

The Japanese Copyright Law, which contains special provisions related to artificial intelligence and stands out with its advancement in the field of artificial intelligence, defines a work as a creative expression of thoughts or emotions that belong to literary, academic, artistic, or musical fields. In Article 10 of the law, examples of products that can be considered as works are provided.

[13] https://www.wto.org/english/docs_e/legal_e/27-trips.pdf

The concept of copyright ownership in International Agreements

When examining international agreements regarding the determination of copyright ownership, it is observed that the concept of copyright owner is not defined in the Bern Convention. However, the WIPO Guide prepared for explaining the provisions of the Bern Convention suggests that the reason for not defining the concept of copyright owner in the Convention is the different definitions of copyright owner in national laws. While some states recognize only natural persons as copyright owners, others recognize legal entities as intellectual property rights holders, and some may impose conditions for copyright ownership not foreseen in other legal systems. Nevertheless, the prevailing view is that the copyright owner mentioned in the Bern Convention is a natural person. Consequently, the expression of lifelong protection in the Bern Convention, the provision of copyright ownership by legal entities when discussing copyright ownership of cinematographic works in Article 1, and the exclusivity of moral rights being interpreted as applicable only to natural persons suggest that copyright owners must be human beings. However, it is also possible to interpret the avoidance of providing a definition of copyright ownership in the Bern Convention and leaving the recognition of legal entities as copyright owners to the national laws of member countries as indicating that being a human is not a mandatory requirement of the agreement.[14]

In other legal systems regarding copyright ownership, the definitions are generally based on the "creator doctrine". For example, Article 11 of the French Intellectual Poperty Code states that the owner of a copyrighted work is exclusively entitled to non-material property rights based solely on the act of creation, emphasizing the relationship between creative activity and copyright ownership. Article 13 of the same law regulates that the copyright owner is considered to be the person whose name is disclosed under the work unless proven otherwise. In the UK Copyright, Designs and Patents Act, Article 9, and in the Japanese Copyright Law, Article 2, it is stated that the copyright owner is the person who created the work. Similarly, in the German Copyright Act, Article 3 specifies that the copyright owner is the creator of the work, and Article 2/2 states that the work is the intellectual creation of the copyright owner. While the status of copyright owner is primarily attributed to the natural person who creates the work, some legal systems include exceptional provisions that encompass entities other than natural persons, such as legal entities. For instance, in U.S. law, although the copyright owner is generally considered the creator of the work, when it comes to "works made for hire," someone other than the creator may be considered the copyright owner.

[14] https://www.wipo.int/edocs/pubdocs/en/copyright/615/wipo_pub_615.pdf

Using data for creating a work in AI. The rights of Creator

When explaining machine learning, which underlies artificial intelligence, it has been noted that, in today's technology, instead of writing programs for certain tasks, data containing what needs to be done is collected. The learning program is then automatically adjusted to meet these requirements using a learning algorithm. Therefore, data occupies a significant place in machine learning, and millions of photos, texts, videos, audios, and other types of data are used in the application and development of artificial intelligence.

The digitization of all kinds of information has led to the creation of a large amount of data. Within this data heap, the need to extract useful data has brought attention to text and data mining (TDM), [15]a type of machine learning requiring processing large volumes of data to identify patterns and extract relevant information. TDM primarily involves four stages: data access, data copying, analytical processing, and utilization.

TDM is utilized across various fields, from linguistics to art, and is also employed in artificial intelligence education, with the current and potential development of AI being dependent on it. [16]Considering that search engines, which are essential tools for accessing information in our daily lives, are based on text mining, it is evident how important mining activities are even for everyday life.[17]

In the realm of intellectual and artistic works, just as humans draw inspiration from previous works to create new ones, using data is necessary for producing a product by artificial intelligence[18]. However, it is possible for the data used and processed in machine learning to be protected under intellectual property rights. This process raises concerns about intellectual property infringement due to partially or entirely copying works. [19]Approaches to this issue vary across legal systems. Anglo-Saxon law generally focuses on protecting economic rights and includes broader exceptions to the rights of creators, while Continental European law concentrates on moral rights, and there is reluctance to restrict the rights of creators. French law, for instance, emphasizes the rights of creators with the use of the term "droit d'auteur" (author's right), while English law uses the term "copyright" to define a range of special rights for creators such as authors, artists, architects, musicians, singers, dancers, publishers, music producers, and film producers. However, in some legal systems like those of the United States and Israel, text

[15] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3452376
[16] https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3452376
[17] https://webarchive.nationalarchives.gov.uk/ukgwa/20140603125140/http:/www.ipo.gov.uk/ipreview-doc-t.pdf
[18] https://www.europarl.europa.eu/RegData/etudes/IDAN/2018/604941/IPOL_IDA(2018)604941_EN.pdf
[19] https://core.ac.uk/reader/228611490

and data mining are considered under fair use/dealing, while others have purpose-based limitations. For instance, Canada has exceptions for research purposes, and the European Union has introduced regulations allowing text and data mining within certain limitations. [20]Japan has also made legislative changes to allow text and data mining, and Singapore has added mining activities to the list of exceptions to intellectual property rights.

Different legal frameworks regulating the use of Data in AI

In the discussions regarding intellectual property infringements with artificial intelligence (AI) under U.S. law, the fair use principle is considered within the framework of U.S. copyright law[21]. The basis of the "fair use" principle regulated in Section 107 of the U.S. Copyright Act lies in the question of whether the use serves the purpose of promoting creativity for the enlightenment of the public. The provision specifies that the use of a copyrighted work, regardless of the provisions of Sections 106 and 106A, for purposes such as criticism, commentary, news reporting, teaching (including multiple copies for classroom use), scholarship, or research, including uses in copies or phonorecords, or by any other means specified in that section, is not an infringement of copyright. The provision further outlines factors to be considered in determining whether the use of a work falls under fair use. These factors include the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes; the nature of the copyrighted work; the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and the effect of the use upon the potential market for or value of the copyrighted work. It is emphasized that the principle encompasses both commercial and non-commercial uses, including all types of uses, reproductions, and storage. This flexible approach in applying the fair use principle, without imposing restrictive rules, highlights the importance of examining judicial decisions on a case-by-case basis. For instance, the U.S. Supreme Court's decision in Campbell v. Acuff Rose Music[22], Inc. underscores the case-by-case evaluation of fair use (para. 574-578), emphasizing that the purpose of intellectual property protection is primarily to promote the progress of science and useful arts, and that in some cases, this purpose necessitates the application of the fair use principle. Cases such as Authors Guild v. Google and Authors Guild Inc. v. HathiTrust can provide insights into the relationship between U.S. copyright law and text [23]and data mining. In these cases, the fair use principle was evaluated in the context of Google's Book Search Project and HathiTrust's digital library, where courts considered factors such as the transformative nature of the use and the benefits to society in determining whether the use fell under fair use. These cases demonstrate that the fair use principle allows for the creation of datasets, including those

[20] WIPO, WIPO Conversation on Intellectual Property (IP) and Artificial Intelligence (AI), WIPO/IP/AI/GE201,s.6,https://www.wipo.int/export/sites/www/aboutip/en/artificial_intelligence/call_for_comments/pdf/org_global_expert_network_on_copyright_user_rights.pdf
[21] Rosati, Copyright as an Obstacle or an Enabler?
[22] https://supreme.justia.com/cases/federal/us/510/569/
[23] https://law.justia.com/cases/federal/appellate-courts/ca2/13-4829/13-4829-2015-10-16.html

used to train AI, as long as the works are not made available to the public in a manner that competes with the original works and the resulting data is made accessible to other researchers through a search tool. [24]

In English law, the first exceptional regulation regarding text and data mining in Europe was introduced in the UK. Under Section 29A of the CDPA (Copyright, Designs and Patents Act), titled "Copies for Non-Commercial Research of Text and Data Analysis," a provision was made regarding the circumstances under which copying by a person authorized to access a work legally would not be considered a copyright infringement, and it was stipulated that no contracts could be made to the contrary. Accordingly, it was intended that the copying of a work by a person legally entitled to access it, solely for non-commercial research purposes, as part of a technological analysis and synthesis process of the content of the work, would not be considered a copyright infringement.

The requirement of a non-commercial purpose stipulated in the relevant provision may exclude a significant portion of text and data mining applications from its scope. Developments in expanding the scope of this exception have been observed in the UK. [25]B Public consultations were held by the UK Intellectual Property Office from October 2021 to January 2022, regarding the connection between intellectual property rights and artificial intelligence. The topics covered included computer-generated items, patent application ownership and text/data mining exceptionsIn its subsequent consultation report, it was disclosed that a new exception provision, allowing for unlimited text/data mining, had been scheduled with prior arrangements made to ensure that content holders continued being protected through legal access requirements or other safeguards.

That would open the way for broad and diverse groups of stakeholders. This would open the way for a lot of small businesses on the one hand and cultural heritage institutions on the other, cultural heritage institutions, or other sectors that must be able to have access to the exception because they are not able to license things. Such an exemption will not only help the development of artificial intelligence but will also reduce the difficulty faced by those engaged in the text and data mining processes since it reduces the acquisition of permissions or license time costs. While this new change of policy on the exceptions toward text and data mining rules is being implemented, therefore, the paramount thing for due consideration is that there should be legal access for the rights holders. In turn, giving them more control over the platforms or systems from which the work can be accessed—either through subscription or single fee charging mechanisms—where measures can be put in place to guarantee the system is used for their purpose without a loophole.

[24] Samuelson, Legally Speaking, p.21

In 2016, the European Commission presented a directive under EU law with the aim of enabling lawfully constituted access of research organizations to works and other relevant materials for conducting text and data mining activities meant exclusively for scientific advancement. This move recognized that TDM has the potential to be a very useful tool for examining large amounts of content—much larger than the volumes of standard items such as academic publications or research data sets.

The Directive on Copyright in the Digital Single Market and Related Rights entered into force on June 7, 2019. Its justification is provided in the fifth paragraph of the introduction, nor more or less: "The existing Union legal framework does not sufficiently cover a cross-border dimension for preservation by cultural heritage institutions of works and other subject matter.". [26]The directive introduces two exceptions that member states shall apply in their domestic laws to text and data mining. The first of these is provided in Article 3, and the second in Article 4.

Article 3 of the directive envisages an exception for scientific research organizations and public libraries and museums, allowing text and data mining. This exception applies solely to research and cultural heritage institutions. Furthermore, for the exception to apply, it is required that it be for scientific research purposes and that access to the work or database be legal. Access to data lawfully and the interpretation of lawful access in this context, based on open access policies for accessing content or through subscriptions or other legal means between rights holders and research institutions/cultural heritage institutions, are outlined in paragraph 14 of the introduction.

It should be noted that criticism has been directed at the directive for its limited scope, applying only to research organizations and cultural heritage institutions, and being restricted to research purposes, thus excluding private commercial entities that play a significant role in AI research. The requirement for lawful access to data may not adequately address the difficulties and uncertainties surrounding data access. Indeed, the data used in AI training may consist of millions of works with different owners, making lawful access to data a significant challenge.

The directive provides in its Article 4 for the inclusion of commercial uses as an exception, which thereby falls into the coverage of Article 3 but extends beyond those in Article 3, reaching a larger group of right holders and users. However, paragraph 3 provides that this restriction applies unless the holder of such a right has expressly reserved the right to prevent its exercise. This limitation, therefore, could dissuade from using the exception created in Article 4 and therefore, give an indirect effect on its purpose.

[26] DIRECTIVE (EU) 2019/790 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, https://eur-lex.europa.eu/eli/dir/2019/790/oj

Articles 3 and 4 of the directive introduce some restrictions at the same time for the purpose of simplification of text and data mining. However, these restrictions have, due to their practical effects, ignited discussions within EU legal circles on [27]whether this will be beneficial or harmful.

Going beyond Japan, Turkey, the EU, and the USA is of critical importance in order to take a wider purview for wholesome appreciation of the legal frameworks that govern data usage in AI. Of these, we detail the Indian regulatory environment, which has been proactively laying down mechanisms to deal with contours of AI governance and data management.

India, a rapidly expanding major global digital economy, has recognized the pivotal role of AI in economic growth, innovation, and social progress. On the flip side, the rapid adoption of AI brings with it many data utilization and retention-related legal and regulatory barriers, which will need to be cleared soon.

The PDPB 2019 is pivot to the Indian legal structure in controlling the use of data by AI. The objective is to build a comprehensive regime that would take within its sweep global best practices, ensuring individual privacy and autonomy through the regime, encouraging the responsible handling of data by cutting-edge technology like AI.

"The Proposed Copyright Directive is Inherently Flawed," among other things, argues that the EU Digital Single Market Directive—and a good many other things in it, mind you—contains an abundance of inherent flaws, especially in the case of its proposed copyright directive.

Important provisions under the PDPB include: The rules set by the PDPB follow the principles of responsible, ethical use of the data in AI applications. It draws standards in the ways in which persons' personal data is handled, right from the collection down to processing and storage.[28]

They impose requirements on adherence to consent requirements, compliance with purpose limitations, and implementation of provisions for minimization of data use, as well as provision for accountability measures. To this, PDPB enforces data localization mandates that postulate storage and processing of sensitive personal information within the borders of India. This will be

[27] DIRECTIVE (EU) 2019/790 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL, https://eur-lex.europa.eu/eli/dir/2019/790/oj
[28] https://dpdpa.in/dpa_2021/pdpa2021_compare/chapter1.htm

a step ahead of strengthening data sovereignty to make sure that relevant details for an individual can be kept without relenting over the calls of a third party.

The PDPB establishes the Data Protection Authority (DPA) as a statutory body. They will majorly have the function to enforce and ensure the adherence of data protection regulations, investigate the events of data security breaches, and inflict penalties due to failures of data protection. An essential guarantee of the people's right to privacy and trust in AI technologies, the DPA is a key institution.

The PDPB provides mechanisms in which ease of data transfer across borders is able to be achieved, with due regard given to the protection of individual rights.

These will include prescription of jurisdictional specific regulations, adequacy assessment, implementation of standard contractual clauses and binding corporate rules that help organizations share information across borders without hassle with consideration to full observance of the set laws of privacy without loss in flexibility. The PDPB, therefore, duly makes sure that the data subject's right to be in control of his data is exercised by conferring to him specific rights. Among them are the rights to access, rectify, and erase the said data and to withdraw the permission for handling the data.

Besides this, people may request the ability to access portable versions of their data, therefore giving them more strength towards accountability from managers of AI applications using this private information. As India ramps up its focus on innovation and digital transformation, so does our commitment to protecting the rights of individuals and to developing AI that is trustworthy and responsible.

A special effort toward achieving this objective has been made with the implementation of PDPB, along with specialized regulations like National AI Strategy and National E-Commerce Policy, which deal specifically with addressing concerns related to using data in the applications of artificial intelligence. Finally, the Indian data governance system for AI technology is a huge leap in taking on [29]some of the challenges that fast growth throws everyone's way. Clear regulations and standards that would safeguard the information, provide transparency, and liability through fostering innovation-friendly regulation helped India to emerge as the global leader in upholding ethics governing datasets management related to AI governance. Nonetheless, continuous effort has to be given to adopting and implementing these guidelines and new issues coming up in this dynamic world accelerated by advanced technology of artificial intelligence need to be identified.

[29] https://dpdpa.in/dpa_2021/pdpa2021_compare/chapter1.htm

Chapter 3. The status of AI-Generated works

In recent times, the use of technological tools to create artistic products has gained momentum, although it's not a new development. When examining products created through this method from a historical perspective, it's evident that the AARON project, developed by Harold Cohen in the 1970s,[30] was a significant step. AARON was capable of producing abstract paintings and had its works displayed in various art and science centers such as the Tate Gallery, the Stedelijk Museum, and the San Francisco Museum of Modern Art.

Following Cohen's work, the use of machines in the field of painting continued. The eDavid project, developed by Oliver Deussen and Thomas Lindemeier, combined industrial robot technology, computer graphics, and traditional artistic painting techniques. It could produce paintings using traditional materials and allow for the generation of different outputs through variations in paints, random effects, and changes in optimization parameters.[31]

Another example is "The Painting Fool" by Simon Colton, which generated portraits that reflected the emotional tone of the articles it read. During the "You Can't Know My Mind" exhibition held in 2013-2014, it produced gloomy paintings when reading negative articles throughout the day and vibrant ones when reading positive ones.

The Next Rembrandt project, aimed at creating a new painting reflecting the style of the famous Dutch artist Rembrandt van Rijn, trained an artificial intelligence system using a database of the

[30] Paul Cohen, “Harold Cohen and AARON”, AI Magazine (2016)
[31] e-David, Press Materials, http://graphics.unikonstanz.de/eDavid/?page_id=137

artist's numerous paintings. It resulted in the production of a portrait of a middle-aged, bearded, white-collar man with a hat, facing right. This portrait cannot be classified as a newly created painting by Rembrandt or a copy of his existing works.

In 2018, the art producer OBVIOUS used the GAN algorithm and 15,000 portraits in computer training to create "Portrait of Edmond de Belamy," which fetched a high price at a famous art auction. The Ai-Da project, completed in 2019 and dubbed the world's first robotic artist, has already showcased its works in many parts of the world.[32]

The evaluation of the artistic quality of products created by artificial intelligence in terms of the conditions for being considered artworks.

For products created by artificial intelligence to be considered as artworks, they must possess the specificity of their creator, be the result of intellectual effort, and have taken on a perceptible form in the outside world. Additionally, as mentioned above, it is worth noting that in some legal systems, not all types of works are listed, and the element of specificity is evaluated within the criteria of originality.

The assessment of the artistic quality of products generated by artificial intelligence hinges on whether they fall within the scope of one of the types of works enumerated in the law and their manifestation in tangible form in the external world.

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When considering the products generated by artificial intelligence, such as paintings, music, novels, etc., it's evident that they fall within the scope of recognized art forms, music compositions, scientific and literary works enumerated in laws like the FSEK, provided they have taken tangible shape in the external world, irrespective of the question of who produced them. However, in the future, the emergence of products that do not fit into existing categories of works but are produced using artificial intelligence may raise questions about whether it's appropriate to limit the scope of recognized artistic forms.

Categorizing works and either defining them narrowly or listing examples without categorization each have their advantages and disadvantages. Categorization can provide a roadmap for determining what constitutes a work, as works within these categories typically share common characteristics. Furthermore, limiting the types of works recognized may help prevent the scope of protection from expanding unpredictably.

[32] https://www.washingtonpost.com/nation/2018/10/26/year-old-developed-code-ai-portrait-thatsold-christies/.

On the other hand, refraining from putting works into categories may bring about some uncertainties but allows for a more adaptable environment that can foster the advent of novel kinds of creations. In reality, mechanisms which identify and classify pieces by constraining their assigned categories should progress with time to cater to newly emerging advancements.

This approach has a tendency to fall behind advancements in intellectual property law. Take for example the emergence of cinema around 1895; earlier national regulations and international treaties failed to acknowledge it as a unique form of artistic expression. Yet today's legal structures usually incorporate movies under recognized categories of creative output. Others contend that such classifications only aid in scrutiny and identification, while striving to pigeonhole certain types may be excessively conceptual. Given our dynamic age marked by swift changes, adopting an adaptable approach towards intellectual property legislation appears advantageous both for accommodating emerging requirements and ensuring pertinence over time.

Determining the AI-Generated work

When determining the artistic quality of products generated by artificial intelligence (AI), an evaluation can be made by assessing whether the expression of human creativity is present in the produced items, without expanding the boundaries of intellectual property law in a way that contradicts its principles. In some cases, even in products where AI plays a significant role, human creativity can still be discerned in the outcome. For instance, in cases like "The Next Rembrandt" project and the Tencent v. Yinxun case in China[33], human input can be noticeable in products generated by AI, establishing a connection between the product and individuals. In such cases, without the need for changes in the existing intellectual property system, it is possible to argue that these products possess the characteristics of artistic works through the interpretation of existing rules. To reach this conclusion, the relationship between activities performed by humans and outputs generated by AI must be evaluated in each specific case.

In a report titled "Trends and Developments in Artificial Intelligence - Challenges in the Framework of Intellectual Property Rights" prepared by the EU, it is suggested that if a product generated by AI reflects creative choices made by a human at any stage of the production process, it is likely to qualify for intellectual property protection. A four-stage test for

[33] https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/conversation_ip_ai/pdf/ms_china_1_en.pdfG

determining whether these products are considered artistic works is proposed. The first stage involves the presence of a creation in the literary, scientific, or artistic field, which aligns with the requirements of national laws. Thus, products generated by AI meet this criterion. Therefore, the assessment of whether products created by AI qualify as artistic works relies on the other stages.[34]

The second step is to determine whether products generated by AI reflect human creative effort. Often, human involvement is required throughout processes such as developing AI software, collecting and selecting training data, determining functional features, monitoring the creative process, editing, curation, and post-production. As seen in the Painer case, where it was deemed possible to create a work with the assistance of a machine or tool, products generated by AI fulfill this criterion.

The third step, identified as the most challenging stage, evaluates the originality and creativity of products generated by AI based on whether they incorporate the creative choices of humans during the production process. Drawing from the Painer judgment, assessments are made on a case-by-case basis, considering the design, execution, and editing stages regarding the products.

During the design stage, where the plan or design is created and detailed, many detailed design choices are made, such as selecting the genre, style, technique, materials, tools, format, and more. In the execution stage, which involves transforming the design into rough versions of the final product, AI typically plays a dominant role, but human intervention may still contribute creatively. Finally, in the editing-completion stage, processes like editing, formatting, framing, cropping, color correction, and improvement are performed to transform draft versions into final cultural products. Since AI systems have not yet produced ready-to-publish products, human intervention may still be necessary at this stage. Therefore, while AI systems dominate the execution of ideas, human roles remain significant during the design phase, and in many cases, humans are responsible for the editing-completion stage as well. In such cases, when humans are provided with sufficient creative choices, and assuming that these choices are reflected in the final AI-generated output, the output can be considered an artistic work eligible for intellectual property protection. Conversely, if an AI system is programmed to automatically execute content without any creative input from a human in designing or editing the output, it cannot be considered a work of art.

The final step is the expression of human creativity in the ultimate product. Due to the "black box" nature of some artificial intelligence (AI) systems, individuals responsible for the design stage may sometimes be unable to fully predict or explain the outcome of the implementation stage. However, assuming that such a product falls within the creator's overall intention to produce a work, the black box nature of the process should not necessarily hinder the status of

[34] Hugenholtz, Quintais ve Gervais, Artificial Intelligence and Copyright Law

the final output as a work of art. Indeed, intellectual property protection encompasses works arising from unwanted or accidental acts of creativity, even when there is no precise foresight about the final form or content of the work. Consequently, when it comes to products generated by AI, it can be concluded that the conditions of specificity/originality do not necessarily prevent intellectual property protection.

This four-stage test can serve as a guide for determining whether a product reflects human creative choices at any stage of the production process and thus qualifies for intellectual property protection when generated by AI. In this context, the involvement of individuals in the stages mentioned should be assessed on a case-by-case basis to determine whether they reflect the specificity of the work or meet the criterion of originality. If the connection between the product and the individuals who created it cannot be established, then such products may not benefit from intellectual property protection. Thus, the scope of intellectual property protection in the context of modern technology remains unexpanded in an unpredictable manner, avoiding intellectual property inflation. However, instead of leaving such products entirely unprotected, consideration can be given to alternative forms of protection beyond intellectual property rights. This evaluation is further explored in various possibilities in the continuation of the thesis.

The framework of originality and distinctiveness criteria

Intellectual property law prioritizes originality and uniqueness, especially in the domain of copyright. These standards are crucial for evaluating whether a work is eligible for copyright safeguarding. Nevertheless, different regions and types of works can lead to significant differences when applying these benchmarks.

The application of originality and distinctiveness criteria was highlighted in the landmark ruling of Feist Publications, Inc. v. Rural Telephone Service Co., which focused on whether a telephone directory could be copyrighted. In 1991, this case went before the United States Supreme Court as Feist had created the directory using data from Rural Telephone; however, it was argued that copyright protection couldn't apply because it contained only factual content arranged alphabetically in a standard format - lacking any necessary originality.

Rural Telephone emerged as the victor in a landmark copyright case before the Supreme Court, setting an important legal precedent. Effectively, the Court determined that collating factual data was insufficiently original to warrant protection under prevailing copyright law standards. The ruling reaffirmed established norms: copyrights shield creative expression instead of bare facts per se.

The Infopaq decision is important in terms of harmonizing the application of the criterion of originality throughout Europe. Similarly, in the Football Dataco case, the CJEU stated that for a work to be considered original, it must contain the author's "personal touch" and be created as a result of free choices[35]; it was also emphasized that if there is only one way to express an idea or if there is no possibility of making creative choices, the work cannot be considered original, and labor and talent alone are not sufficient for intellectual property protection. In the Football Association Premier Leagues case, concerning whether a football match can be considered a work, it was concluded that since this sport is performed based on certain rules and does not require creativity and originality, it cannot benefit from intellectual property protection. In the Painer case, for a work to be considered original, it was required to "reflect the personality of the author." For this, the author must create the work with free and creative choices that express their creative skills, and there must be a scope for free movement. In this relevant decision, the CJEU also ruled that through illumination, composition, and background setting, "free and creative" choices could be made, and this could include the author's personal touch. Accordingly:

"When it comes to a portrait photograph, the photographer can make free and creative choices at various points and in various ways during production. In the preparation phase, the photographer can choose the background, the subject's pose, and the light. When taking a portrait photograph, they can choose the framing, the angle of view, and the atmosphere created. Finally, when selecting the snapshot, the photographer can choose among various development techniques or use computer software when appropriate."

Additionally, it is important to highlight that according to EU legislation, the concept of originality does not inevitably entail artistic worth or aesthetic excellence. The laws governing intellectual property safeguard works ranging from high-end artwork down to low-level forms like basic photographs, industrial designs and computer programs. Yet despite this principle, the Cofemel ruling confirmed that possessing an appealing appearance alone doesn't automatically grant a product IP protection[36]. This precedent has implications for determining whether artificial intelligence generated creations will qualify for legal defense if they possess aesthetically pleasing attributes.

[35] Eleonora Rosati, Originality in EU Copyright: Full Harmonization through Case Law
[36] https://www.rpc.co.uk/perspectives/ip/first-uk-court-decision-applying-cofemel/

In the United States, the Supreme Court's instructive Feist decision regarding the determination of originality states that this criterion is the fundamental principle of intellectual property and precedes the Copyright Act. The decision emphasizes that for a work to be original, it must not be copied from another work and must contain a "minimal level of creativity," and products that are so automatic or routine that they require no creativity cannot be considered original. For instance, organizing a telephone directory alphabetically was deemed too automatic to be protected. In the Bleistein decision, the court established that in the context of the purpose of intellectual property, the criterion of originality does not require a connection with fine arts or high culture but only the reflection of an individual personality, for the protection in question. From the cited decisions, it can be seen that in the United States as well, a work does not need to have high aesthetic value to be considered as such.

Applying the Criterion of Distinctiveness/Originality to Products Generated by Artificial Intelligence

Considering the explanations made regarding the specificity/originality criterion in both Turkish law and comparative law, it is necessary to determine whether artificial intelligence outputs meet the specified criteria. Furthermore, in the creation of a product, since the level of computer involvement can vary, it should be examined whether the product was produced with the assistance of artificial intelligence (AI-assisted work) or by artificial intelligence itself (AI-generated work).

In products produced with the assistance of artificial intelligence, AI is used as a tool, similar to a brush used by a painter or a camera used by a photographer, to generate the output. In these cases, the output is considered a work of art because it is the result of human creativity, as the instructions given to the machine determine the output and are clearly planned and identified. On the other hand, products created by artificial intelligence, according to a definition by WIPO, refer to the production of a product by artificial intelligence without human intervention. However, the term "AI-generated works" is considered inadequate to describe these products in some scholarly views.

Therefore, artificial intelligence outputs are categorized into three categories: products produced using artificial intelligence as a tool for humans, products generated by artificial intelligence, and products created solely by artificial intelligence. In the first category, the product is produced with human creative input, in the second category, although the product is produced by artificial intelligence, there is human input in the preparation phase, and in the third category, there is no human input.

Most legal systems specify the specificity/originality criterion while highlighting the connection between the work and the author. Due to this emphasis, the specificity and originality criteria are essentially inseparable from the author. As explained above, the Bern Convention does not explicitly require the author to be a natural person. However, most member countries recognize that authorship belongs explicitly or implicitly to natural persons. Although the Bern Convention avoids defining authorship and leaves the recognition of legal entities as authors to the national laws of member countries, it could be interpreted that the requirement for the author to be human is not a mandatory element of the convention. However, such an interpretation does not necessarily imply that products created by artificial intelligence can possess the quality of a work or that authorship can be attributed to them. Even if legal entities are considered authors, it is observed that the product is initially created by a human, whereas in the case of artificial intelligence, the product is not initially produced by a human.

Products created by artificial intelligence may still require some human intervention. Therefore, it may be inadequate to define these products as produced without human input. Products with partial human intervention and products where artificial intelligence is used purely as a tool differ from each other. Therefore, categorizing products with partial human intervention and products where artificial intelligence is simply used as a tool under the same category may lead to erroneous results when examining the specificity/originality criterion. Consequently, it is appropriate to use the term "products generated by artificial intelligence" in this thesis to refer to products created by artificial intelligence, especially in cases where there is no human intervention or where artificial intelligence cannot be merely classified as a tool.

In the Turkish Law on Intellectual and Artistic Works (FSEK), both the concept of a work and the definitions of the author are based on the author. In the views put forward to define a work, especially as an extension of the specificity criterion due to the intellectual effort, emphasis is placed on the relationship and integrity between the work and the author. On the other hand, the removal of the phrase "natural person" from the definition of the author in the FSEK due to the changes made has sparked discussions about whether legal entities can also be authors. However, it is emphasized that, due to the nature of the specificity criterion mentioned in the provision defining the work, the author of the work must be a natural person. Accordingly, the predominant view in Turkish law is that, based on the elements of specificity and intellectual effort typically associated with humans, works can only be created by humans. Therefore, it is believed that animals, machines, or devices incapable of intellectual activity cannot create works. In fact, one view in the literature asserts that a work is a reflection of the human soul and emphasizes the necessity of its creation by a human among the elements of the work. Consequently, in Turkish law, it is concluded that products created by artificial intelligence, which emerge as a result of an automatic process, where the results are often unpredictable even for artificial intelligence engineers, do not reflect the connection and intellectual effort between real persons, and artificial intelligence itself cannot engage in intellectual effort, reflect creativity, or project its personality onto the work. Therefore, it is concluded that these products cannot be considered works. The Court of Cassation has also emphasized that legal entities cannot be authors, affirming that the author must be a human.

The Court of Justice of the European Union has established criteria for a work to be recognized as such in EU law. These include being an outcome of the author's original intellectual creation, embodying the author's personal style and reflecting their personality. The creator must exercise free and creative choice while producing it, demonstrating their inventive skills with ample room for imaginative freedom. Due to these conditions, products generated by artificial intelligence are considered ineligible as works since they cannot meet those requirements under current prevalent opinion. Certain legal frameworks take human involvement even further; Article 2(2) of Germany's Copyright Act explicitly restricts protection solely on "intellectual creations" produced by humans signalling that only human-authored pieces may receive defense against exploitation without consent or remuneration through copyrights laws within German jurisdiction.

Obstacles to classifying works created by artificial intelligence as original have been seen in US law due to the requirement for "minimal creativity" and the belief that purely automatic or routine products do not meet this standard. There has long been concern about whether these outputs possess artistic quality in America. In 1979, The Commission on New Technological Uses of Copyrighted Works (CONTU) made a distinction between using computers as tools versus having them create something independently when it comes to copyright protection- stating that only minimal human creative effort is needed toward intellectual property safeguards if individual input was at stake during production through means like cameras or typewriters rather than automation. However, there were no specific regulations regarding any foreseeable progression for AI-generated content because none existed yet per CONTU's report. Recently , in 2019, after much discussion around such concerns over ownership rights related specifically with autonomously generated content from machine learning algorithms which produced fully-fledged creations without requiring manual input whatsoever-, The United States Patent & Trademark Office ultimately decided against changing existing laws surrounding IP protections thereof adding finality into what had once seemed unclear territory!

Although US law does not define the author, the US Copyright Office argues that creativity is exclusive to human intellect and asserts the necessity for the author to be human. In a guide explaining the practices of the Copyright Office, it is stated that intellectual property law protects the fruits of intellectual labor found in the creative power of the mind, explicitly indicating that intellectual property protection is exclusively for products created by humans. Accordingly, works created by machines without human creative input cannot be registered as works. The Copyright Office's justification for this acceptance is evident in the Burrow-Giles Lithographic Co. v. Sarony case, where the court ruled that any work that expresses the ideas in the author's mind can benefit from intellectual property protection, concluding that the photograph in question reflected originality, intellectual production, thought, and the author's understanding.

Based on the definition of intellectual property as "the exclusive right of a man to the production of his own genius or intellect," the Copyright Office concludes that the author must be human. Although not directly related to the artistic quality of products created by artificial intelligence, a case worth considering in understanding the US attitude towards products created by non-human entities is the Naruto v. Slater case[37]. In this dispute, a photograph titled "Monkey Selfie" was taken by a monkey named Naruto using photographer David Slater's camera. After the photographer attempted to commercialize the photograph, a lawsuit was filed by the People for the Ethical Treatment of Animals (PETA) on behalf of Naruto, claiming that Naruto was the rightful owner of the photograph and should be granted intellectual property rights. However, the court ruled that animals do not have legal standing to sue for intellectual property rights. Accordingly, terms such as children, grandchildren, which denote humanity, exclude animals that are not legal heirs without marriage or legal ownership rights.

In 2022, an important development occurred in the United States regarding the debate on whether products created by artificial intelligence can benefit from intellectual property protection. Dr. Stephen Thaler applied to the Copyright Office for the registration of a work titled "A New Glance at Paradise," created by an artificial intelligence named DABUS, claiming to be the owner, developer, and user of the work, but the application was rejected on the grounds that the product was not created by a human. In 2022, Dr. Thaler filed a lawsuit against the Copyright Office's decision with the aim of obtaining intellectual property rights for the product. Thus, the debate in the US has not yet been concluded and remains relevant[38].

In my opinion, before reaching a general conclusion that products created by artificial intelligence cannot be considered works, each case should be examined individually. Indeed, since the development process of artificial intelligence and how the choices made by its developers are reflected in the output are often unknown, there can be a perception that it suddenly produces new and interesting outputs. However, these products are usually the result of extensive work, evaluation, and selection processes. For example, in The Next Rembrandt Project, individuals involved in creating a portrait that reflects the painter's style from a database of 168,263 pieces analyzed from 350 paintings by the artist made free and creative choices, which could be considered as expressions of their personalities and characteristics reflected in the product in terms of originality. Likewise, the CJEU ruled in the Painer case that lighting, composition, and background choices can be made freely and creatively, and this can include the personal touch of the author.

[37] Naruto v Slater, No. 16-15469 (9th Cir. 2018), https://law.justia.com/cases/federal/appellatecourts/ca9/16-15469/16-15469-2018-04-23.html

[38] U.S. Copyright Office, Compendium of U.S. Copyright Office Practices (Third) § 306; Abbott ve Shubov, s. 3 vd.; U.S. Copyright Office, “Letter from Copyright Office Review Board, Second Request for Reconsideration for Refusal to Register A Recent Entrance to Paradise (Correspondence ID 1-3ZPC6C3; SR # 1-7100387071), to Ryan Abbott, Esq. counsel for Dr. Stephen Thaler”, 2022, https://www.copyright.gov/rulings-filings/review-board/docs/a-recent-entrance-to-paradise.pdf

Tencent v. Yinxun case in China demonstrates a connection established between products created by artificial intelligence and the individuals involved in the creation process, leading to a conclusion. In this case, a lawsuit was filed by Tencent against Shanghai Yingxun Technology Company, claiming that the publication of an article written by an artificial intelligence called Dreamwriter AI Writing Robot constituted a copyright infringement. The court ruled in favor of Tencent, stating that the software automation reflected the choices of the plaintiff, and the expression reflected in the article was a result of personal adjustments and preferences of the plaintiff's employees. [39]The court also found the structure of the article meaningful and logical, thus concluding that it was original and awarding damages against the defendant. This case is significant in demonstrating the possibility of copyright protection for products created by artificial intelligence as works of art and literature.

In English law, there is a specific provision related to the protection of products created by artificial intelligence as works. Section 9(3) of the CDPA (Copyright, Designs and Patents Act[40]) states that the person who makes the necessary arrangements (arrangement) for the creation of a literary, dramatic, musical, or artistic work by a computer is considered the author of that work. Computer-generated works are defined in section 178 of the CDPA as works created by a computer without the creative contribution of a human being. This regulation primarily concerns the determination of authorship status, which will be revisited in the section on determining authorship status in products created by artificial intelligence.

In legal systems where products created by artificial intelligence are interpreted as not being considered works due to the lack of human-like qualities in artificial intelligence, the emphasis is mainly placed on the concept of creativity to discuss the possibility of intellectual property protection. Indeed, creativity emerges as one of the common concepts highlighted in the distinction between humans and artificial intelligence. Therefore, it is essential to determine the meaning of creativity, which plays a crucial role in whether products created by artificial intelligence can be recognized as works.

Creativity is defined in various ways. According to one definition, creativity is the ability to innovate, create new behaviors, invent new things, or design new ways to use old things, and creativity is complemented by common sense, which is said to be an understanding of physical and social environments. Artificial intelligence systems have been developed today that can recognize human emotions and react to them in various ways. For example, there are artificial intelligence systems that monitor a person's breathing rate, detect the speaker's pace, intonation, and vocabulary. With advancements in artificial intelligence, it is also likely that artificial intelligence will be able to respond to physical and social environments similar to humans in the

[39] https://www.wipo.int/export/sites/www/about-ip/en/artificial_intelligence/conversation_ip_ai/pdf/ms_china_1_en.pdf
[40] https://www.legislation.gov.uk/ukpga/1988/48/contents

future. However, another definition describes creativity as the ability to produce new, surprising, and valuable ideas and works, suggesting that artificial intelligence can also exhibit creativity. These definitions particularly focus on the element of innovation. When creativity is considered in conjunction with the element of innovation, it seems possible to say that these products exhibit creative qualities, especially given the development of techniques such as GAN and CAN, which enable artificial intelligence to produce new products.

On the other hand, one view in the literature suggests that creativity is one of the things that make humans human and asserts that artificial intelligence has not mastered daily creative skills. Indeed, artificial intelligence cannot model emotions, motivation, or irrationality, cannot ask questions as the first step in the creative process, and evaluations and selections are often made by a person. Accordingly, if creativity is considered as one of the things that make us human and is associated with human creativity, it can be argued that artificial intelligence is not a creative subject.

However, some scientists claim that the human brain is also a kind of information processing device, indicating that learning ability is computational. In this regard, it can be said that there is no consensus on what creativity means and whether an artificial intelligence will produce creative works. The concept of creativity is abstract; humans tend to separate themselves from other species by claiming to be creative; however, it is argued that this approach offers a romantic perspective and is a result of human speciesism. Indeed, the production of products by artificial intelligence that cannot be distinguished from those produced by humans calls into question the assumption that creativity can only be unique to humans. A view that is somewhat akin to the adaptation of the Turing Test to the realm of creativity suggests that when products created by artificial intelligence are evaluated for intellectual property protection, an objective approach that considers the work should be adopted. Accordingly, if a product generated by artificial intelligence cannot be distinguished from a human's work and its aesthetic value can be evaluated equally with similar works created by humans, it can be said that the product is creative. Indeed, here, the focus is on the outcome rather than the process. For example, in Russia, a company used an artificial intelligence named Nikolay Ironov in various projects such as designing a brand logo, but the fact that the designs were produced by artificial intelligence was kept secret for a while; nevertheless, these works were able to attract the interest of many people. This example shows that some products created by artificial intelligence may not be easily distinguished from those created by humans when viewed objectively and may have artistic value. [41]

On the other hand, adopting an outcome-focused approach to evaluating these products for intellectual property protection and disregarding the importance of the creative process in the

[41] Vanessa Bates Ramirez, “This Russian Firm’s Star Designer Is an AI-but No One Knew That for a Year, Singularity HUB (2020), https://singularityhub.com/2020/07/24/this-russian-firms-stardesigner-is-an-ai-but-no-one-knew-that-for-a-year/ (Erişim Tarihi: 29.08.2022); Ayr. bkz. https://ironov.artlebedev.com/?utm_source=studio&utm_medium=main_com&utm_campaign=menu#works

creation of a work may lead us to exceed the boundaries of intellectual property protection or unpredictably expand the boundaries of this area. Indeed, adopting a result-oriented approach may lead to questioning whether objects created by natural forces, although aesthetically pleasing when viewed objectively, can be accepted as works. Objects created by natural forces are not considered works. Therefore, it is possible to say that although a work may have artistic value as a result, it may sometimes remain outside the scope of intellectual property protection.

Until an objective study is conducted, it may not be realistic to exclusively attribute creativity to humans. Similarly, simply asserting that AI possesses creative abilities is also unfounded. Thus, it would be advantageous to analyze the repercussions of classifying products produced by AI as artworks or not, and evaluate their implications on intellectual property law. This analysis should contemplate both rationales for seeking protection under said laws and practical applicability while adhering to fundamental principles and objectives of such legal frameworks.

The issue of Protecting products generated by AI

Intellectual property laws, encompassing artistic and literary creations, are gaining greater economic and cultural significance. Numerous enterprises now hinge their financial success on the safeguard of intellectual property rights whilst a growing cohort of legal professionals specialize in resolving related disputes. In this vein, lawmakers across the globe are vigorously scrutinizing current intellectual property legislation.[42]

In addition, considering the constantly evolving and broadening scope of this industry, current regulations may prove insufficient. This requires legislators to revise them in order to align with present circumstances.

By providing protection through intellectual property rights, states promote economic development, offer support for technological innovations, and attract investments that will create new jobs and opportunities for their citizens. It could also be argued that without protection for the products of individuals' intellectual efforts, there would be no incentive to create new products and works, leading to the decline of creative efforts and ultimately hindering the country's development in this area. This hindrance would be felt not only in the cultural sphere but also in the economy. Indeed, as noted by the World Trade Organization, in today's international trade, innovation, creativity, and branding represent a significant portion of the changing value.

Given the significant role that intellectual property plays in global trade, it is not surprising that governments address intellectual property rights at the international level, lawmakers revise their

[42] William Fisher, Theories of Intellectual Property, 2000, https://cyber.harvard.edu/people/tfisher/IP/Fisher%20IP%20Theory.pdf

intellectual property legislation, legal experts specialize in the relevant field, and businesses direct their wealth towards this area.

There are various theories regarding the source of intellectual property law, the emergence of these rights, and the reasons for providing protection. The most prominent theories include natural rights theory, personality theory, utilitarianism, and economic approaches.

According to the property theory of English philosopher John Locke, a person owns the product of their labor and their hands. When a person mixes their labor with something provided by nature, thereby transforming it and adding something of their own to it, they make it their own property, excluding others' common rights[43]. Locke's theory has been used by legal scholars to support intellectual property rights. According to this theory, every individual has ownership of their intellectual labor, and therefore, when an individual combines their intellectual labor with a common thing, they make it their own property.

However, using Locke's theory to justify intellectual property law has been criticized for several reasons. For example, it is argued that since creative products may be influenced by previous creators and their works, they can be considered social products. Thus, attributing the entire value of the product solely to one individual's labor may not be justified. Additionally, determining the measure of labor is essential. For instance, although a painting created by a famous artist in seconds or an object made by assembling a few items may possess distinctive qualities, it may not involve sufficient labor to be considered a work. On the other hand, in the case of creating an exact copy of an existing work through labor, the question arises whether it should be considered a work.

Setting aside these debates, when examining the relationship between the labor element expressed in the mentioned theory and the products generated by artificial intelligence, it may be useful to make a binary distinction considering whether this labor is sought for the artificial intelligence itself or for the individuals developing the artificial intelligence. Locke's theory focuses on an individual, and when applied to artificial intelligence, it would yield a negative result. [44]However, when the labor element is sought for the individuals developing the artificial intelligence, and considering that the production of artificial intelligence products requires significant investment, time, and effort, it seems possible to rely on this theory to provide

[43] 7 John Locke, Two Treatises of Government and a Letter Concerning Toleration, Der. Ian Shapiro, Yale University Press, 2003, s. 112 vd. ProQuest Ebook Central, http://ebookcentral.proquest.com/lib/londonschoolecons/detail.action?docID=3420119.
[44] Thomas G. Field Jr., “What Is Intellectual Property, Focus On Intellectual Property Rights”, Focus on Intellectual Property Rights, Der. Clack, George, U.S. Department of State- Bureau of International Information Programs

intellectual property protection for these products. For example, in projects like "The Next Rembrandt," where individuals involved in the production process exert effort, it could be argued that their labor contributes to the creation of the output. However, as human intervention decreases and artificial intelligence becomes increasingly independent, this labor connection will diminish or disappear.

As an alternative to the theory based on Locke's property theory, the "personality theory," derived from the writings of Kant and Hegel, is proposed. According to this theory, property provides a unique mechanism for individuals to develop themselves, express themselves, be recognized as individuals, and be respected; when applied to intellectual property, the personality theory concludes that the idea belongs to the creator because the idea is a manifestation of the creator's personality or self.

The effects of the personality theory have long been evident in Europe, shaping the foundations of European intellectual property law. For example, French and German intellectual property regimes have been shaped in line with the writings of Kant and Hegel. This influence can be seen particularly in the protections offered in the field of "moral rights," which include controlling the disclosure of authors' and artists' works to the public, withdrawing works from public circulation, receiving appropriate compensation for creations, and especially protecting them from destruction. The influence of this theory is also significant in court precedents regarding authors' moral rights, positive law, and adoption in the Berne Convention. One criticism that could be directed at this theory is the ambiguity regarding what is meant by "personality." However, this theory is criticized for not sufficiently emphasizing material interests and for failing to provide adequate protection for the creator, especially in the face of the completion of the industrial revolution and the beginning of the information age.

When the personality theory is applied to products created by artificial intelligence, and considering that artificial intelligence does not have a personality and general artificial intelligence is not yet available, it may be concluded that the products reflect the personality of artificial intelligence and are part of its identity, saying that they are not yet accepted, these products may not benefit from intellectual property protection. On the other hand, even if a product is created by artificial intelligence, as mentioned above, it must be considered that the creativity of humans can be reflected in the work.

Jeremy Bentham, one of the advocates of utilitarianism, denies the idea that laws come from natural rights; according to him, laws can be justified if they bring maximum happiness or benefit to the majority of people. According to this theory, intellectual property protection will encourage individuals to create new works, and as a result of this encouragement, new works will be created, ultimately benefiting society. The utilitarian approach to intellectual property protection is particularly popular in the United States, and its impact on intellectual property law

is evident in Section 8 of Article 1 of the U.S. Constitution. According to this provision, the purpose of intellectual property protection is to "promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

When evaluating from the perspective of utilitarianism, it can be said that intellectual property protection may come into play for products created by artificial intelligence if they offer a socially beneficial expression. However, the question of whether products created by artificial intelligence provide social benefits is debatable. According to one view, artificial intelligence models may not need economic incentives; similarly, extending the incentive to programmers as holders of intellectual property rights is not convincing, and granting intellectual property rights to these products ultimately does not provide social benefit, as it would result in individuals having intellectual property rights over an indefinite number of products. Another view suggests that granting intellectual property protection to products created by artificial intelligence could lead to a significant reduction in human employment, resulting in significant social harm. Against these views, another view suggests that intellectual property protection can provide incentives to individuals involved in developing, improving, distributing, using, and popularizing computer technology, and the important point here is whether products created by artificial intelligence provide the benefit that human-created works do when evaluated according to intellectual property standards.

From a utilitarian point of view, the fact that intellectual property protects products developed through artificial intelligence might encourage further development of the creative AI system and might make a big contribution to cultural heritage advancement. There has been a domination of counter-arguments for a long time about the replacement of human beings with machines. But, instead of letting these concerns dog technological progress, lawmakers should facilitate more job opportunities within this field. Instead of viewing artificial intelligence as a possible threat to displacement of workers in different industries, it can be seen as an instrument that is useful in the birth of new forms of artistic expression and further advancement of the evolution and cultural preservation of art with works that were birthed via this technology otherwise impossible beforehand. The following examples should expose the potential breakthrough by Refik Anadol, one of the best showcases combined with Turkish plans using cutting-edge AI techniques[45], or Beethoven's 10th Symphony orchestrated complation thanks solely to work done by AIs, exposing how much deep-set such possibilities are offered when seeking fresh ways forward concerning novel arts paradigms.

Further, adoption of intellectual property rights to protect AI-generated products from an economic point of view may invigorate interest in investment in developing creative-capable AI

[45] https://refikanadol.com

technology that contributes substantially to material and financial resources. Failures due to market saturation and low production could arise, and that such public-rated goods should be put in place for protection. In addition, it is prudent that the history of such protection protecting creators more than the publishers be realized. In this light and with the possibility of works made with artificial intelligence technologies, one question comes to mind: can such works be considered works? Such questions require the examination of a few theories presented on this issue.

When evaluating the artistic nature of products generated by artificial intelligence, adopting an objective approach to considering the work may overlook the importance of the creative process in its creation. The history of intellectual property rights emphasizes the creative process, excluding products created by natural forces from intellectual property protection, even if they possess aesthetic value. Throughout history, lawmakers have preferred to protect human creativity through intellectual property rights, despite the existence of such products. Thus, the presence of artistic value in a product or work does not always entail intellectual property protection. Indeed, the history of intellectual property law, theories, scholarly views, and judicial decisions suggest that the concept of creativity emphasized in determining the scope of protection in intellectual property law is specific to this field and underscores human intellectual efforts.

Determination of the Copyright holder in AI-generated products

If there is a connection between products generated by artificial intelligence and real individuals, considering them as works does not necessarily resolve the debates they raise within the scope of intellectual property. Instead, it brings up a new discussion about who the copyright holder will be.

If there is a specific connection between the created product and real individuals, the person providing specificity to the work may be considered the copyright holder; if the work is created by multiple individuals, they may jointly own the copyright depending on the circumstances. Therefore, determining the copyright holder(s) should be evaluated on a case-by-case basis, and it could involve the programmer or the user, or joint ownership might be considered.

Regarding the determination of the copyright holder, there are three main viewpoints: assigning copyright to the artificial intelligence itself, assigning it to a human individual, or leaving the

copyright status vacant. Some authors argue for recognizing artificial intelligence as the copyright holder, while others advocate for assigning it to other individuals. Some even suggest leaving the copyright status vacant. However, assigning copyright or the authority to use economic rights to one person implies the need to determine which participant from among multiple contributors will be selected. Indeed, the process of producing a product by artificial intelligence involves various participants such as investors, programmers, and users.

In English law, there is a specific provision regarding the determination of the copyright holder for works produced by computers, which differs from other legal systems and could serve as a reference for other legislators. According to Section 9(3) of the Copyright, Designs and Patents Act (CDPA), the author of literary, dramatic, musical, or artistic works produced by a computer is the person who made the necessary arrangements for the creation of that work. The identification of the person making these arrangements must be made on a case-by-case basis. For instance, if artificial intelligence is directly used by a programmer to create a product, the programmer may be considered the author, whereas if artificial intelligence is used by a user to create a new work, the user may be the author. Additionally, the author could also be a legal entity.

There is a distinction in terms of protection periods between works produced by computers and those produced by humans in English law. Under Section 12 of the CDPA, the protection period for works produced by humans extends throughout the author's life and an additional 70 years after death, while for works produced by computers, the protection period is 50 years from the date of creation.

There is limited case law concerning this provision in the CDPA. It was addressed in the case of Nova Productions v. Mazooma Games and others. In this case, the court discussed the authorship of computer game elements created using "bitmap" files prepared by a programmer who determined the components of the game.[46] The court concluded that the programmer was the author as they designed the appearance of various elements of the game and the rules and logic behind each frame's creation, making the necessary arrangements for the creation of the work.

However, it's worth noting that the products in this case were not generated by artificial intelligence but by a programmer. When it comes to products generated by artificial intelligence, there is unpredictability in the output, as artificial intelligence may evolve over time. Hence, the presence of a person making the necessary arrangements for the creation of the work could be subject to debate.

[46] Nova Productions Ltd v Mazooma Games Ltd (2006)

Due to this qualitative difference, it can be said that there is currently no case law specifically addressing products generated by artificial intelligence in accordance with Section 9 of the CDPA.

During a public consultation held in the UK between October 2021 and January 2022, there was a proposal to amend regulations related to products generated by computers and to introduce a regulation that would encourage investment in artificial intelligence while also promoting human creativity. However, the report prepared as a result of [47]the consultation stated that no changes were planned regarding regulations concerning products generated by computers. It was argued that the existing intellectual property protection had no drawbacks, and considering that artificial intelligence is still in its early stages, any changes made could lead to undesirable consequences. Nevertheless, it was noted that the possibility of modifying or removing the protection in the future remained open if necessary.

It would be difficult to assert that the provision envisaged in English law is followed by all the members of the Commonwealth. Indeed, in a dispute brought before the courts in Australia concerning products generated by artificial intelligence, it was ruled that since there was no human creator for these products and they did not meet the criteria for originality, they could not benefit from intellectual property protection.

Ownership of AI

One of the arguments put forward regarding the determination of the authorship is that artificial intelligence itself could be the author. For artificial intelligence to be considered the author and to exercise the rights arising from authorship, its legal personality needs to be established. In law, rights are defined as powers granted to individuals by the legal order, necessitating personhood to possess rights, as indicated in the definition. Individuals are divided into natural persons and legal persons. Natural persons refer to humans, while legal persons are defined as entities organized as an independent entity to achieve a certain purpose, capable of rights and obligations, and as a community of assets. Since artificial intelligence is not a human, it is not a natural person. [48]Therefore, granting legal personality to artificial intelligence might be considered. For legal personality to be applicable, the entity must be organized with organs to

[47] UK Intellectual Property Office, 2022.
[48] Cohen, AI are people too

achieve its purpose, be directed towards a continuous purpose, and be legally independent of those benefiting from it.

Additionally, due to the principle of numerus clausus in the formation of legal personality, a legal personality outside the types determined by the legislator cannot be created. When considering whether artificial intelligence can be granted legal personality, these conditions must be taken into account. The difficulty in recognizing artificial intelligence as a legal entity lies in its lack of organs to achieve its purpose and make decisions. Indeed, artificial intelligence, with its learning and autonomous movement capabilities, differs from legal entities that are already associated with natural persons, do not have learning and autonomous movement capabilities, cannot produce on their own, and act through organs. Developments in the field of artificial intelligence have brought up the concept of electronic personality, apart from natural and legal personality. In the "Report with recommendations to the Commission on Civil Law Rules on Robotics" prepared by the European Parliament in 2015, a new type of personality called the "electronic personality model" is mentioned in the context of proposals for artificial [49]intelligence. According to this report: "At least the most advanced autonomous robots should be able to have the status of electronic persons responsible for compensating for any harm they may cause or potentially, to create a legal status specifically for robots in the long term for applying electronic personality when robots make autonomous decisions or interact with third parties independently.

The mentioned report has been criticized for exaggerating speculations about artificial intelligence and causing concerns about potential problems in the field of tort law and rights due to the recognition of artificial intelligence as a legal entity.

Another report published in 2019 stated that there is no need for a separate liability regime because the damage caused by these technologies can mostly be attributed to natural/legal persons who can already be held responsible[50]. Although these reports anticipate liability provisions for damages caused by granting electronic personality to artificial intelligence, the discussed electronic personality model also brings up a new ownership model called "electronic authorship." However, potential regulations granting personality [51]to artificial intelligence alone surpass the scope of intellectual property law. Additionally, it should be noted that in legal systems, granting personality to certain entities often entails various obligations. Therefore, potential personality debates require interdisciplinary evaluation considering civil, criminal, administrative, commercial, ethical, and philosophical aspects that may arise.

[49] European Parliament, “Report with recommendations to the Commission on Civil Law Rules on Robotics”, 2015, https://www.europarl.europa.eu/doceo/document/A-8-2017-0005_EN.html
[50] Open Letter to the European Comission: Artificial Intelligence and Robotics, 2017, http://www.robotics-openletter.eu
[51] Antonia Waltermann ve Caroline Cauffman, “Should robots be given legal personhood”, Law Blogs Maastricht (2019), https://www.maastrichtuniversity.nl/blog/2019/02/should-robots-be-givenlegal-personhood

Current legal systems are far from being ready to treat any of these different kinds of artificial intelligence with the legal personality they will have come to acquire, from translation programs to driverless cars. Matter of factly, according to the European Parliament in the "Report on Intellectual Property Rights for the Development of Artificial Intelligence Technologies," granting personality to artificial intelligence to autonomize the creative process of producing artistic content may give rise to problems with respect to the ownership of intellectual property rights covering this content. Therefore, trying to grant personality to artificial intelligence is deemed inappropriate and draws attention to the incentive that it might have for human creators.

Industry Practices and Standards in AI-Generated Works

In the ever-changing practice and standards of the artificial intelligence domain, the practices and standards in industry draw the limits for development, use, protection, and other issues relevant to AI-generated works. The rapid development of these AI technologies in all areas will most certainly need innovative, creative, and, above all, responsible practices and standards from the industry, assuring ethical progress in these technologies.

They are at the heart of industry practice for AI-generated works: developing and deploying AI models and algorithms. Companies involved in researching artificial intelligence strictly adhere to best-known norms regarding training, testing, and validation of models to achieve precision, dependability, and ethical compliance. The measures meant for these respect protocols of data quality control, including algorithmic transparency techniques to ensure that there are no potential biases in the data or fairness issues.

What's more, AI-authored works will be subject to industry standard licenses that take into account some of the concerns around attribution, ownership, and licensing. Most companies, however, have comprehensive policies and procedures in place on the attribution of authorship to

any content generated through AI systems and who the rightful owner of the intellectual property is.

This objective may be met if and when contributions of human creators are to be documented where necessary and the role of the algorithm made clear. Licensing agreements will also be developed to ensure that whatever is produced by the materials does so in an appropriate manner. This only goes to show that even in the industry and collaboration in knowledge sharing, these forums have a great role to promote best practices and standards. To this end, companies, research institutions, and industry associations collaborate on a range of initiatives to develop guidelines which touch on common challenges in the context of AI development and deployment, while at the same time sharing insights.

Such human-centric collaborative approach is a key to innovation, allows for the exchange of ideas, and yet guarantees responsible use of AI across sectors. Looking to the future, rules and conventions governing AI-generated creations will probably develop along with technology, societal expectation, and regulation. Nurturing an atmosphere that appreciates ethical responsibility, collaboration, and innovation is critical if industries are going to ensure that their AI technologies work for the betterment of society while grappling with the concerns or obstacles that relate to them with effectiveness. A collective effort through persistent conversation; cooperation as well adaptation can pave a path forward, where works powered by Artificial Intelligence strive to benefit humanity holistically - developed thoughtfully then safeguarded properly all along the way.

Chapter 4. Alternative Solutions for Protecting Products Generated by Artificial Intelligence as Works

When it comes to artificial intelligence, two types of protection are considered in the context of intellectual property law: protection of the artificial intelligence itself as a computer program and protection of works if considered as such, as well as protection of databases. However, these protections do not cover products generated by artificial intelligence. Based on the explanations provided so far, in this thesis, the notion of granting intellectual property protection to products generated by artificial intelligence, which do not have any personal or original connection with any real individual, has been theoretically rejected due to the human-centric approach underlying intellectual property protection, which requires that a work must be created by a human to be considered as such. The natural consequence of not protecting these products is considering them as public domain, allowing everyone to use them for free. The advantages of considering these products as public domain can be seen as easier and less costly or free access to new information and cultural heritage. However, in a market where these products are not protected, it can be argued that offering them at lower prices and in larger quantities compared to products produced by humans could lead to a decrease in demand for human-produced products. Therefore, it can be argued that providing legal protection other than intellectual property protection to these products could both protect human creativity and prevent investments from going unrewarded.

As a result of studies conducted in various legal systems, some authors have suggested that alternative forms of protection such as unfair competition protection, related rights protection, or sui generis protection could be utilized for these products. In this context, it is considered beneficial to also address the mentioned forms of protection within the scope of the thesis.

Unfair competition protection

Artificial intelligence-generated products, due to their lack of specificity or originality with any real person, cannot benefit from intellectual property protection. Nevertheless, it's been

suggested that these products should not be left unprotected, and one of the proposed protection methods is through provisions related to unfair competition.

In Turkish legal framework, regulations concerning unfair competition primarily exist in Article 57 of the Turkish Civil Code (TCC) and Articles 54-63 of the Turkish Commercial Code (TCC). Article 57 of the TCC allows individuals facing the risk of losing customers or suffering a decrease in their clientele due to behaviors not conforming to principles of fairness to demand the cessation of such behavior and, if there is fault, the compensation for damages. It's noted in this provision that the provisions of the TCC are reserved. Article 54 of the TCC defines the purpose of regulations regarding unfair competition as "ensuring fair and undistorted competition for the benefit of all participants," with "all participants" referring to the economy, consumers, and the public. However, the definition of fair and undistorted competition is not provided here. According to the second paragraph of this article, "Deceptive or otherwise contrary to the rules of fairness behaviors and commercial practices affecting relationships between competitors or between suppliers and customers are unfair and unlawful." While the definition of fair and undistorted competition is not explicitly stated in the TCC, acts that could lead to unfair competition are listed without restriction (Article 55). Article 56 of the TCC defines the persons entitled to file a lawsuit in cases of unfair competition as "any person whose customers, credit, professional reputation, commercial activities, or other economic activities are harmed or may be endangered."

Considering the aim of unfair competition law to protect fair and undistorted competition, it can be argued that general provisions on unfair competition can play an important role in addressing market failures related to artificial intelligence. In this regard, the relationship between unfair competition law and products generated by artificial intelligence, especially concerning the absence of sufficient human originality or uniqueness, may allow for economic stakeholders to be brought into the discussion and the matter to be evaluated on an economic basis.

Furthermore, in cases where artificial intelligence-produced products are used without any payment, this could lead to unfair competition against real creators. Additionally, if a product generated by artificial intelligence is marketed as being produced by active or passive human actions, there could be potential cases of misleading practices from a consumer perspective, which could also be considered as unfair competition situations. Therefore, besides investors and programmers who could be affected by unfair competition due to artificial intelligence, consumers and economic stakeholders, as well as real human creators, could potentially raise claims of unfair competition. In determining the responsible party/parties in a situation of unfair competition involving artificial intelligence, Article 58 of the TCC, which contains a special provision regarding information technology enterprises, should be taken into consideration. According to this provision, if unfair competition is committed "through all kinds of press, publication, communication, and information technology enterprises or organizations that will be

activated as a result of future technical developments," lawsuits in accordance with the provisions of Article 56/1 are generally only brought against "the owners of the publication, program; the advertisers," and so forth.

Although these unfair competition cases and their perpetrators would require a separate study, it's important to mention that they fall outside the scope of my current discussion.

When evaluated from the perspective of the Law on Intellectual and Artistic Works (LIAC), if a product does not possess the specificity of its creator or does not fall into one of the types of works listed in the Law, provisions for protection under unfair competition can be applied instead of LIAC. Under LIAC, provisions for protection under unfair competition can be applied to "names and signs" in Article 83 and to "signs, images, and sounds" in Article 84. When considering the application of these unfair competition regulations outlined in LIAC, it's understood that they are applied to the cases mentioned in the Law, leading to the conclusion that products generated by artificial intelligence cannot be directly protected under the unfair competition provisions of LIAC. Furthermore, in legal literature, it's argued that in cases of protection for signs, images, and sounds as outlined in the Law, the focus is more on the technical means of detection and reproduction rather than on intellectual creation, with the emphasis being on the capabilities of the tool used rather than on intellectual effort. With the secondary role of intellectual effort and the foregrounding of technology, it could be considered appropriate to establish a provision under the "unfair competition" section of the 6th chapter of the Law to protect products generated by artificial intelligence that lack any connection to real individuals under unfair competition provisions.

Related Rights Protection

The protection of related rights is regulated by the "Rome Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations" signed on October 26, 1961, to which Turkey became a party on July 7, 1995. In turkish law, regulations regarding related rights are arranged under the "Miscellaneous Provisions" of the Turkish Copyright Law (FSEK); the definition of related rights is made in Article 1/B of the Law. Accordingly, related rights refer to "the rights of neighboring right holders and film producers who first fix films, provided that they do not harm the moral and economic rights of the copyright owner." It can be

understood from the relevant provision that related rights are divided into two groups: neighboring rights and the rights of film producers who first fix films. Neighboring rights are also regulated under Article 1/B of the Law's definitions section. According to the relevant provision, neighboring rights refer to "the rights of performers who interpret, present, narrate, sing, or perform in various ways an original interpretation of a work with the permission of the copyright owner, as well as the rights of phonogram producers who first fix a performance or other sounds, and radio-television organizations." Although related rights are generally regulated in copyright laws, they essentially differ from copyright protection. Related right holders contribute to the work not by creating it but by talent, labor, or capital. Accordingly, the scope of protection varies. For example, while the rights of the author are protected for a certain period during the author's life and after their death, the duration of protection in related rights ownership has not been considered within the framework of the author's life; furthermore, the rights of related right holders are limited and have a narrower scope than the rights of the author. The rights of related right holders are not independent but are dependent on the work; thus, they should not infringe upon the rights of the author. It has been suggested that products created by artificial intelligence, which cannot be classified as works but require labor, time, and investment, can be evaluated within the framework of related rights, which provide a lower level of protection compared to copyright protection, with an organization and investment-oriented purpose. In this context, if it is accepted that protection is necessary for products created by artificial intelligence for economic reasons, it can be said that the purpose can be provided within the framework of related rights, which focus on economic reasons. Additionally, when considering that the duration of protection is shorter and only certain rights are protected under related rights, it can be argued that preventing products created by artificial intelligence from being economically more advantageous compared to those created by humans can also be achieved. On the other hand, considering that the provisions regarding related rights in the Turkish Copyright Law are regulated in cases where there is an author and a work, it should be evaluated whether related right protection can be brought up under the current law by making a binary distinction based on whether there is a human creator's specificity in products created by artificial intelligence. If the product meets the criteria of specificity and originality, it can be considered that there is already a work and an author, thus, it could be proposed to grant related rights protection to those who invest in artificial intelligence. However, such a solution would require an amendment to the Law, as products created by artificial intelligence are not explicitly regulated under the related rights provision. In doctrine, one opinion suggests adding a provision to Article 1/B, b.j of the Law, which defines related rights, stating "... the rights of the entrepreneur/producer who undertakes the necessary preparations for the creation of a work by a computer," and proposing that, unless otherwise specified in a contract, the economic rights of the entrepreneur/producer who undertakes the necessary preparations for the creation of a work should be used together with the author's rights. It should be noted that such a regulation could be appropriate. Indeed, significant investments are made in artificial intelligence capable of producing products, and investors may also want to reap the rewards for their investments in these outputs. In this case, related rights protection, which is essentially aimed at protecting investments, can be said to provide a suitable ground for encouraging such investments. However, since there is no related work that can be considered related to products that cannot be

classified as works but are created by artificial intelligence, it can be concluded that such products cannot be protected by related rights.

Unique rights protection

One of the proposals that has been discussed in both academic literature and in the work carried out by WIPO regarding the protection of products created by artificial intelligence is sui generis rights protection. The "Directive 96/9/EC of The European Parliament and of The Council of 11 March 1996 on the Legal Protection of Databases" is significant concerning sui generis rights protection. The regulation in Article 7 of the directive imposes an obligation on member states to grant database producers who make substantial qualitative and/or quantitative investments in obtaining, verifying, or presenting the contents of a database the right to prohibit or prevent the extraction and/or re-utilization of the whole or a substantial part of the contents of that database. Sui generis rights protection aims to protect databases that do not qualify for copyright protection due to their lack of originality and creative effort, which are essential criteria for copyright protection. The foundation of sui generis rights protection is defined in the relevant directive as the protection of significant investments made in databases, which may consist of deploying financial resources, time, effort, and energy. In line with EU legislation, an additional provision, Supplementary Article 8 of the Turkish Copyright Law (FSEK), has been introduced to protect non-original databases under sui generis rights. Accordingly, sui generis protection provides protection to the database producer who makes significant investments in terms of both quality and quantity without requiring originality or individuality criteria. However, there are some differences between sui generis rights protection and copyright protection. It follows that there can be no provision made for the granting of moral rights to the database producer because non-original databases do not qualify as works. Economic rights are expressed as permission or prohibition concerning the transfer of the database to another medium, its distribution, sale, lease, or communication to the public by any means. It is in this time perspective that the differentiation in duration under sui generis rights and copyright protection is apparent in FSEK, with a limited period of 15 years from the time of disclosure. A new provision that sui generis rights be granted for the investment reasoning to the artificial intelligence-generated products that do not qualify as works be introduced. But if the investment warrants enough to protect these goods, more economic study should be done before offering too much 'AI-teration' protection while exercising caution.

Chapter 5. Impact of Intellectual Property Infringement on Innovation and Society

Innovation Implications

The possible repercussions of IP violation in an AI scenario would be to exact negative and critical impacts on technological innovation. The basic challenge is how to draw a balance between the protection of IP rights and promotion of progress, since overly strict measures would bear upon the development of AI. While intellectual property helped provide an incentive to innovation by granting creators exclusive ownership over their creations, this may close off expectations of the imagination possible in this burgeoning industry.

Infringements of intellectual property in the scope of AI may seriously hinder the competition, and, accordingly, the technological development. Excessively tightening these rights might even put off potential entrants from the market, therefore stifling innovation and other potential development opportunities in the future.

Because of this fear, they could be deterred from following down the rabbit hole of new AI-related ideas, fearing litigation or stepping on currently patented or copyrighted products. When powerful advances go unexplored or underutilized, significant parts of our society are deprived of invaluable benefits. Others, on the other hand, state that a loosening of the grip on intellectual property could encourage larger innovation and collaboration in AI. These people think that such regulations can be encouraging to the creators, through the unrestricted exchange of ideas and the use of existing technology, then it will finally lead to a speedier development of AI solutions.

Moreover, flexible IP laws could help share and circulate knowledge through open innovation structures, such as collaborative research partnerships or software development, using freely accessible source codes. This may cause a better community that is committed to the progression of knowledge in the industry. Hence, the relevance of violations in the scope of intellectual property for AI innovation has been characterized as complex and multifaceted, massing under a huge number of variables. These include the nature of IP rights, market dynamics for AI products, and regulatory frameworks. To that effect, there should be a balanced approach on the part of policymakers, protecting the IPs involved without stifling collaborative efforts among 'nemesis' or competitors, much less the compromise of surfacing groundbreaking ideas in the first place. By enacting policies that support both inventiveness and cooperation across industry boundaries, all whilst holding up very tight protection measures, we will therefore have both inventiveness and openness taken care of to ensure usage practices are sustainable across society from the adoption journey of progressive technologies, such as AI.

Ethical and Social Considerations

Intellectual property violation in the artificial intelligence (AI) domain raises complex ethical and social issues. As AI further improves and its role becomes more important in society, it is really important that we look at any ethical consequences and social effects that may occur as a result of infringing on intellectual property rights over AI.

The key concern deals with the moral dilemma between maintaining the rights of intellectual property and allowing for the development of social progress. Though this does protect such intellectual property and encourages innovation and creativity, tight regulations could slow down the free flow of knowledge and access to necessary technologies for issues dealing with health, education, and environmental protection. The struggle highlights many ethical questions that policymakers, along with content producers, strive to make sure they strike a balance between personal gains and communal growths.

In addition, the breaches in intellectual property in the AI space serve to deepen existing gaps and further social injustices. A small group of powerful entities able to exercise control over these rights could thereby consolidate existing power relations, denying access to the benefits of technological progress for the marginalized. The practices of unequal distribution related to AI technology and data also have grave ramification potentials that may aggregate social drawbacks by widening the gaps between the more and less privileged groups.

AI systems lacking transparency and accountability give room to a number of ethical concerns regarding the autonomy of human worth and responsibility. When AI technologies act fully on their own with very little or, in other cases, with no trace of who made this or that decision, who is therefore responsible, for example, for some unfavorable action it executed, then people are left defenseless from arbitrary or, even worse, discriminatory practices, which undermine the very basic values of fairness and justice.

The approach to ethical and social issues must be comprehensive, considering the welfare of all parties concerned – AI developers, users, consumers, and society at large. This will involve the putting in place of responsible development and deployment guidelines while implementing measures that ensure transparency, accountability, and fairness in AI systems. Further to this, policymakers will have to work with business players and civil society organizations in order to be in a position of developing regulatory guidelines that balance innovation and intellectual rights but with an ultimate focus on public interest.

Therefore, dealing with ethical and social concerns relevant to intellectual property infringement with due concern is very essential to make sure that all AI advances bear positively on both innovation and society. This is because such violations not only put at risk fairness, equality, and human dignity but also have very bad consequences.

Policy Recommendations

In doing so, an all-encompassing approach is required in balance IP protection with progress, accessibility, and general welfare to develop effective policies addressing the ethical, economic, and social implications of artificial intelligence (AI) focused intellectual property infringement. In order to realize this goal, policymakers would have to work with industry heads and scholars in coming up with implementable strategies. Here are some policy recommendations that can be adopted in order to reach optimized results.

In this way, decision-makers should consider making it more flexible in areas such as copyright systems to promote creativity and, most importantly, increase the availability of AI technologies and the data used, bearing in mind the peculiar characteristics of these advancements. This may include introducing shorter patent periods of protection, reducing the strength of copyright safeguards, and creating provisions for exceptions, as it has been done for fair use or dealing.

Promoting community progress and knowledge transfer in the development of AI would require actions taken to establish agreements between the research bodies, industry associations, and governments. This might be the launch of initiatives in the form of open-source projects or software development to data-sharing agreements. These initiatives are aimed at not only boosting innovation but also ensuring access to key information on AI technologies for all.

The regulators will have to regulate, requiring that AI systems be transparent and accountable, whereby there is regulation that AI systems disclose the processes of decision-making, how they use data, and the algorithms.

This should be geared towards making sure that this meets ethical and legal standards through the implementation of algorithmic visibility policies or a framework of regulating data, together with mechanisms designed to validate and audit all the operations of AI. Governments and international organizations need to give priority to improving the accessibility of AI technologies and data to underprivileged communities and less-developed nations.

The achievement of this goal may obviously need an input of resources in terms of infrastructure and capacity-building programs, while fostering development with the help of initiatives in the area of technology transfer. Policymakers must encourage moral development and urge stakeholders to ascertain and apply ethical guidelines in the marketplace. This objective could be achieved through programs of certification, procurement requirements, and publicity initiatives encouraging corporations to abide by such regulations.

More importantly, in this regard, governments would ensure that resources are used to perform research studies and education campaigns, which would disseminate knowledge on the ethics in AI to developers, users, and policymakers. It will be highly important for policymakers to prioritize harmonization of laws and regulation of intellectual property among jurisdictions, mutual recognition agreements for intellectual property rights, and best practices on how to deal with AI-related infringement in order to increase international collaboration.

Considering that AI innovation is spread across nations and touches upon the protection of IP worldwide, sound international cooperation would be necessary through these efforts. Promote open dialogue and involvement of the public. This would imply that the nation should include the people in governance, possibly through the necessary involvement of the

governments, industry captains, and organizations of civil societies opening up for honest dialogues with the general public on pertinent issues pertaining to AI.

The public can, therefore, contribute their input in relation to the way forward on these measures or policies that target the social issues through open forums or stakeholders' feedback. Some of these policy prescriptions would enable policymakers to team up with industry experts and academia to help in grappling with the ethical, social, and financial challenges that relate to breaches of intellectual property rights involving AI. By balancing IP protection to facilitate innovation with the need for access to humanity, we can then allow for the realization of the potential of AI toward human progression.

Access to Knowledge

Access to knowledge and information are critical fundamental bases for the promotion of innovation and improvement of overall societal welfare, including the stimulation of economic progress. On the other hand, viewed in light of artificial intelligence (AI), the violation of intellectual property rights proves to be one of the major stumbling blocks en route to AI technologies and data accessibility, primarily among poor or resource-challenged communities and regions. To fully grasp the impact of this on the access space due to the infringement, it is important to understand the challenge and opportunity brought about by revolutionary advancements happening in AI.

This critical barrier arises as an effect of the uneven diffusion of AI technologies and data. Due to it, aggravating already existing inequalities, knowledge for underprivileged communities is blocked. In most cases, the control of access to these resources remains only with a limited number of firms or institutions, and this, in turn, tends to develop monopolistic situations that discourage potential researchers, users, and innovators in equal measure. Such an access bottleneck restrains progress across some of the fields that require state-of-the-art tools to provide effective answers to some of the most pressing problems: healthcare, education, and sustainability of the environment, to name but a few.

The regulations on intellectual property are very tight. They would seriously hinder the free and open sharing and dissemination of information in the field of AI research and development. They also tend to discourage collaboration and may even hamper the free flow of ideas among scientists, resulting in a setback for scientific progress or innovation. Also, the researchers may have fear in communicating the findings and building on others' work due to the legal consequences of access restrictions to information or restraint of creativity.

On the other hand, while the harm from intellectual property infringement can harm the AI development, it, in turn, also has the potential to increase knowledge accessibility and democratizes the innovation tendency. Collaboration-focused approaches include open-source software design, joint research projects, and data-sharing agreements for idea exchange free from the burden of cumbersome restrictions and, at the same time, encourages the use of existing technologies to drive contribution by researchers with diverse backgrounds towards advancing AI technology. Other programs include tech transfer, which seeks digital inclusion through capacity-building initiatives that work hand in hand with public-private partnerships looking for equal access opportunities for benefits that are generated from advancements within the field of artificial intelligence.

The stakeholders from the industry, policymakers, and civil society organizations are called upon to devise an all-inclusive strategy that is founded upon openness, collaboration, transparency, and inclusion. These can be achieved through policies that enhance sharing of information, investment in infrastructure development, and capacity building programs while promoting ethical guidelines that provide guidance in the development of AI innovations. This we do through nurturing an open culture that allows team involvement from all parties concerned, in the promotion of technological advances towards benefiting the welfare of every individual in a just and harmonious community.

Chapter 6. Conclusion

Conceptually, artificial intelligence (AI), which has yet to reach a consensus on its meaning, is causing deep debates in the field of intellectual property law and seems to challenge contemporary intellectual property regimes to undergo fundamental changes. In this thesis, we define artificial intelligence as a computer discipline aiming to develop machines that can perform functions typically associated with human intelligence, with limited or no human intervention, excluding the question of who produced it, capable of producing outputs that can be considered as works. These outputs require data recognized as having the quality of a work to be produced. The features of AI, especially its ability to process large amounts of data, learn, produce outputs in the realm of creativity, exhibit autonomy and independence, generate unpredictable and novel results, are significant in terms of intellectual property protection in this input-output process.

The digitization of all kinds of information has led to the creation of a vast amount of data, necessitating the extraction of truly useful data from the data heap, ultimately giving rise to the concept of text and data mining, a type of machine learning that requires processing large volumes of data. AI's capacity to process continuously changing large amounts of data occasionally raises the issue of intellectual property infringement with its use of data as a work. Indeed, in this process, copies of data are scanned, text and data are formatted, prepared for processing, useful information is extracted from large amounts of data through mining, and after mining is completed, the data is stored, leading to the copying of works used as data. From this perspective, artificial intelligence is capable of causing intellectual property infringements.

However, the necessity of using this data for the development of artificial intelligence tends to pose an obstacle in front of this development, as obtaining permission from each rights holder for the use of a large number of data sets. The necessity of striking a balance between the protection of rights of rights holders and the development of artificial intelligence has sparked debates in

legal scholarship, leading lawmakers in different legal systems to enact various regulations to address the issue. However, this issue is approached differently in the United States, the European Union, the United Kingdom, and Japan, which are prominent in the field of artificial intelligence.

Text and data mining is evaluated under fair use in the United States, providing a flexible framework for this activity. In the EU, the Copyright in the Digital Single Market Directive has come into force, permitting text and data mining for research and cultural heritage institutions within certain limitations. In the UK, an exceptional regulation has been introduced that covers non-commercial uses. In Japan, exceptional regulations have been envisaged that permit text and data mining, encompassing both commercial and non-commercial uses, without limiting the persons benefiting from the provision, and without requiring legal access to the data but with a purpose-based restriction.

Turkish legislation does not foresee exceptions such as fair use or TDM. According to Turkish legal system, the use of rights associated with copyright is generally the prerogative of the rights holder, and unless the protection period has expired, there is no provision for free use, permission, license, or limitation for the use of works in machine learning without the consent of the rights holder. However, in other legal systems prominent for their artificial intelligence, provisions related to intellectual property rights are being made compatible with technological developments and social transformations, and efforts are being made to relax intellectual property provisions with certain exceptions. To avoid falling behind the demands of the age, it is considered important for Turkey to make regulations that do not contradict the normal use of works, do not unreasonably harm the legitimate interests of rights holders, and do not hinder the development of artificial intelligence. Comparative law can be utilized in making these regulations.

However, the exceptions introduced by the EU, along with a series of restrictions, have not solved the debates but rather led to new discussions by making the regulations narrow in scope. However, in a rapidly evolving environment, it is important to adopt a flexible approach to adapt to technological and economic conditions. Indeed, recent efforts in the UK, where the exception envisaged for text and data mining has been kept narrow, have shown a tendency towards expanding the scope of exceptions for the development of artificial intelligence and the economy.

While it can be said that the fair use principle applied in the United States allows for a more flexible evaluation in concrete situations, the regulation in the US largely leaves the evaluation of the matter to precedents, which could lead to debates in terms of legal certainty and predictability. The discussion of this principle being incompatible with turkish legal system may

arise, and the provision limited to text and data mining may also be met with reactions from rights holders.

The exception provision introduced by the amendment to the Japanese Copyright Law in 2018 provides legal certainty on one hand while also incorporating a degree of flexibility in its application. It can be argued that this regulation, which encompasses both commercial and non-commercial purposes without limiting the beneficiaries and does not require legal access to the data but imposes a restriction on the purpose, is more compatible with the development of machine learning.

Nevertheless, considering that the use of works by artificial intelligence relies on past patterns, the input it receives, and the feedback it receives, its ability to learn, generate new products, and produce outputs in the realm of creativity highlights its autonomy and independence. Furthermore, the ability of artificial intelligence to produce outputs different from the information provided by relevant engineers, and unforeseen by these individuals, enables it to produce unpredictable and novel results. All these features give rise to the debate on whether products generated by artificial intelligence can be considered as works. Currently, using artificial intelligence, images that could be considered as works if created by a human are produced, compositions are made, and literary works such as poetry and novels are written. In light of this reality, the concept of creativity and the human-centered approach to intellectual property rights are being questioned in legal scholarship, leading to significant differences of opinion on whether products generated by artificial intelligence can be considered works.

To qualify as a work under the Turkish Copyright Law, a work must bear the author's personality, be sufficiently shaped to reflect this, fall within the types of works envisaged by the law, and result from intellectual effort. Products generated by artificial intelligence fall within the scope of types of works such as fine arts, music, science, and literature, as envisaged in the Turkish Copyright Law and other legal systems, and are shaped by external factors. In this regard, the debate on whether products generated by artificial intelligence are works mainly focuses on the requirement of originality/possessing the author's personality and the requirement of being the result of intellectual effort. The understanding of terms such as personality in the Turkish Copyright Law, as well as terms like originality in other legal systems, has been shaped by doctrine and precedents, and there are varying and overlapping interpretations of these concepts, making it quite challenging to establish a common ground.

In EU law, discussing a work requires it to be the result of the creator's intellectual creation, bearing their personal touch, and reflecting their personality. The work must be brought about through free and creative choices, showcasing the creator's creative skills, and allowing for artistic freedom. Conversely, US law demands a "minimum level of creativity" for something to

be considered a work, stating that products lacking any required creativity cannot be deemed original. In English law, there's a special provision associated with protecting products created by artificial intelligence (AI), and across most legal systems mentioned, there's an emphasis on the connection between the work and the creator's uniqueness or originality in determining its status as a work.

Hence, in this thesis, the distinction between works created with AI assistance and those solely by AI is examined by determining whether the product was created with the aid of AI or entirely by AI itself. When products are produced with AI assistance, they are considered works because the output is determined by instructions given to the machine, which manifest as a result of human creativity. However, the concept of products created solely by AI refers to instances where AI is not merely a tool but actively involved in the creative process, akin to a painter's brush or a photographer's camera, in which case the products are not considered works.

Before reaching a definitive conclusion that products created by artificial intelligence (AI) cannot be classified as works, it's deemed necessary to consider the implications of not classifying these products as works in terms of copyright law and the essence and purpose of intellectual property law. In conducting this evaluation, theories regarding the origin of intellectual property law and the rationale for providing protection have been utilized.

While it may not be possible to definitively determine whether products created by AI should be accepted as works based on the theories provided, it is evaluated that the labor theory and personality theory suggest that products lacking human labor or reflection of human personality are not suitable for classification as works. Additionally, it's considered that utilitarian and economic approaches are not aligned with the purpose of intellectual property regimes that focus on the rights of creators, as observed in Turkish law.

Furthermore, it is noted that regulating the acceptance of products created by AI as works without empirical evidence regarding whether the benefits these products could bring outweigh the burdens/costs on other stakeholders' legitimate interests could be risky. Additionally, the potential deprivation of the economic, cultural, and technological benefits that AI could offer society without intellectual property protection and the potential imbalance of benefits over burdens/costs highlight the importance of empirical evidence before regulatory decisions are made.

While evaluating the notion that works can only be created by natural persons, it can be argued that the conditions of the time when these regulations were drafted should also be considered, and an objective approach based on the work should be adopted in determining the artistic

quality of products created by artificial intelligence. However, we believe that this assertion overlooks the significance of the creative process in producing a work. The history of intellectual property rights emphasizes the creative process, excluding products created by natural forces from intellectual property protection, even if they possess aesthetic value as a result of this process. Therefore, the historical background of intellectual property law, the theories presented, academic opinions, and judicial decisions lead us to the conclusion that intellectual property protection emphasizes human intellectual efforts. Hence, in this thesis, an evaluation has been made based on whether the expression of human creativity is present in the produced products, without unduly expanding the boundaries, in accordance with the fundamental principles of intellectual property law rooted in human creativity. Accordingly, if the produced product reflects human creativity/individuality, it is considered a work; otherwise, the product is not deemed a work.

Considering that products created by artificial intelligence typically undergo intensive work, evaluation, and selection stages, even in products where artificial intelligence plays a significant role, one can still talk about the reflection of human creativity in the work. To make this determination, the connection between activities performed by humans and outputs generated by artificial intelligence must be investigated in each specific case. In conducting this research, the four-stage test proposed in academia, consisting of "production in literary, scientific, or artistic fields; human intellectual effort; originality/creativity; and expression," can serve as a guide.

At the end of the research, if a connection cannot be established between the product and the individuals who created it, such products will not be considered works. Consequently, the scope of intellectual property protection in the context of modern technology will not be unduly expanded.

Neither recognizing products created by artificial intelligence as works when a connection exists between them and real individuals, nor classifying products created by artificial intelligence as works solely based on economic, cultural, and technological reasons, resolves the debates surrounding the intellectual property coverage of these products. Even in such cases, debates persist, and the issue of who the author will be remains relevant. As potential candidates for authorship, artificial intelligence itself, the programmer, and the user can be identified, and joint authorship may also be considered. Particularly in the framework of the doctrine regarding ownership rights applicable to products produced by employees in U.S. law, a solution to the problem is sought. Another possibility is leaving the authorship status vacant.

If a personal connection can be established between the created product and real individuals, the person who provides specificity to the work will be considered the author, which could be the programmer or the user, and joint authorship may also be considered in such cases. However, the

possibility of the programmer or an unspecified number of individuals in joint authorship claiming authorship over all products produced by artificial intelligence even after its transfer could hinder customers from economically benefiting from them and may deter them from purchasing or sharing the products with society. In such cases, regulating the exercise of economic rights through contracts between parties may be considered as a solution to prevent potential issues arising from the expected economic and technological benefits in practice.

Proposing artificial intelligence to be granted personality for the purpose of authorship goes beyond the scope of intellectual property law alone; granting personality to entities in legal systems generally entails certain obligations. It is concluded that existing legal systems are not yet ready to grant personality to various types of artificial intelligence, ranging from translation programs to driverless vehicles.

Moreover, it is evaluated that the doctrine regarding ownership rights applicable to products produced by employees is not compatible with the Copyright Law. Indeed, as regulated in Article 18 of the Copyright Law, the author of works created by employees is the person who created the work, and in Turkish law, other than the creator of the work, no other person is determined as the author; third parties can only exercise rights associated with authorship. Additionally, since artificial intelligence cannot be considered as an employee under Turkish law, applying this doctrine to Turkish law would require a change in the definition of employment status.

Even if no personal connection can be established between products created by artificial intelligence and any real individual, in cases where there is a possibility of accepting them as works for technological, cultural, and economic reasons, it may be considered to grant the sole authority to exercise economic rights associated with authorship to a person without attributing authorship to anyone. In turkish legal system, there are regulations such as Article 12 and Article 18/2,3 of the Copyright Law, which allow persons other than the creators of the work to use the rights associated with authorship, and in such cases, these individuals are not recognized as authors but are only endowed with the authority to exercise the economic rights associated with authorship. Therefore, granting the authority to exercise economic rights to the person who has the power to dispose of artificial intelligence can be considered as a solution.

In legal doctrine, it is also suggested that besides intellectual property protection, alternative protections such as related rights protection, sui generis protection, or unfair competition protection could be provided for products created by artificial intelligence. Regarding unfair competition, although there are provisions in the Copyright Law allowing protection under unfair competition if a work does not carry the specificity of its creator or does not fall into one of the types of works listed in the Law, these provisions are applied to the cases listed in the Law,

indicating that products created by artificial intelligence cannot be directly protected under unfair competition provisions of the Copyright Law.

Provisions related to related rights in the Copyright Law are regulated concerning the existence of a work and its author, and currently, the determination of whether related rights protection can be applicable depends on whether there is the specificity of a human creator in products created by artificial intelligence. Therefore, a binary distinction can be made based on whether products created by artificial intelligence meet the criteria of specificity and originality. If products created by artificial intelligence meet the criteria of specificity and originality, it may be considered to benefit the investments of individuals in this field from related rights protection. However, since products created by artificial intelligence are not explicitly regulated under related rights provisions, any solution in this direction would require amendments to the Law. For products created by artificial intelligence that cannot be classified as works, it is concluded that related rights regime does not protect these products, as there is no work that can be considered related.

In sui generis protection, originality and specificity criteria are not required; rather, protection is provided to the database producer based on a substantial investment in terms of quality and quantity, and the duration of protection is kept shorter compared to intellectual property rights. Taking these factors into account, it may be considered to introduce a new provision in the Copyright Law to provide sui generis rights for products created by artificial intelligence that cannot be classified as works, based on the investment rationale.

However, since the rationale for providing protection to products created by artificial intelligence is considered as an investment, we believe that more economic research should be conducted on the protection of products created by artificial intelligence, and caution should be exercised to avoid excessive protection.

Bibliography.

Books and Articles:

Bayern, Shawn, "The Implications of Modern Business-Entity Law for the Regulation of Autonomous Systems", European Journal of Risk Regulation (2016)

Bahoran, Kavita: "AI- generated artworks: challenging the traditional notions of copyright?, A research into the question if artworks created by an artificial intelligence system are protected under the current EU copyright framework"

https://www.state.gov/intellectual-property-enforcement/

Abbott, Ryan/ Shubov, Elizabeth, "The Revolution Has Arrived: AI Authorship and Copyright Law"

U.S Law: Limitations on exclusive rights: Fair use

Aplin, Tanya/ Davis, Jeniffer, Intellectual Property Law: Text, Cases, and Materials, Oxford University

Boden, Margaret A., Artificial Intelligence: A Very Short Introduction, Oxford University Press, Oxford 2018.

Bridy, Annemarie, "Coding Creativity: Copyright and the Artificially Intelligent Author", Stanford Technology Law Review (2012)

CAHAI, Feasibility Study

CAHAI, Towards Regulation of AI Systems

Cohen, Glenn: "AI are people too – it's time we recognize their human rights", Big Think

Copyright, Designs and Patents Act 1988, https://wipolex.wipo.int/en/text/583537

CONTU, Final Report of the National Commission on New Technological Uses of

Copyrighted Work, Library of Congress, Washington 1979

de Cock Buning, Madeline, “Autonomous Intelligent Systems as Creative Agents under the EU framework for Intellectual Property”

Denicola, Robert C., “Ex Machina: Copyright Protection for Computer-Generated Works”, Rutgers University Law Review

"Intellectual Property and Open Source: A Practical Guide to Protecting Code" by Van Lindberg

European Commision. “Liability for Artificial Intelligence and other Emerging Digital Technologies”, 2019.

Christopher S., “Rethinking Copyright and Personhood”, University of Illinois Law Review (2019), Vol. 2019

European Commission, “Proposal for a Directive of the European Parliament and of the Council on adapting non-contractual civil liability rules to artificial intelligence 2022, https://ec.europa.eu/info/sites/default/files/1_1_197605_prop_dir_ai_en.pdf

European Parliament, “Report on Intellectual Property Rights for The Development of Artificial Intelligence Technologies”, 2020

Hristov, Kalin, “Artificial Intelligence and the Copyright Dilemma”, IDEA: The Journal of the Franklin Pierce Center for Intellectual Property (2017)

Russell, Stuart/ Norvig, Peter, Artificial Intelligence: a Modern Approach, Global Edition, Pearson Education, 2021.

Scherer, Matthew: “Regulating Artificial Inteligence Systems”, Harvard Journal of Law & Technology (2016)

Yu, Robert, "The Machine Author: What Level of Copyright Protection is Appropriate for Fully Independent Computer Generated Works", University of Pennsylvania Law Review (2017)

Case Law:

Achohs Pty Ltd. v Ucorp Pty Ltd. (2010) FCA 577.

Amel Chamandy/ Galerie NuEdge Fine Arts v. Adam Basanta.

Campell v. Acuf Rose Music Inc., (1994)

Authors Guild v. Google, Inc., (2015).

Authors Guild, Inc. v. HathiTrust (2014).

Avrupa Birliği Adalet Divanı, Cofemel- Sociedade de Vestuario SA v G-Star Raw, 2019, C-683/17.

Avrupa Birliği Adalet Divanı, Eva-Maria Painer v. Standard VerlagsGmbH and others, 2011, Case 145/10.

Thaler v. Commissioner of Patents (2022)

NexLearn LLC v. Allen Interactions Inc. (2017)

Dragon Intellectual Property LLC v. DISH Network LLC (2022)