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Finding Neverland? Artificial Intelligence and the Jurisprudence of Legal Certainty

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ARTIFICIAL INTELLIGENCE AND THE JURISPRUDENCE OF
LEGAL CERTAINTY**

A Thesis Submitted to the

Department of Law

**in partial fulfillment of the requirements for the degree of Master of
Arts in International Human Rights Law**

By

Omar H. Zaky

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DEDICATION

This thesis is dedicated to my late grandparents Ibrahim Bakier, Nawal Ghanoub, Nadia Kamel and Hussein Zaky.

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Supervised by Professor Hani Sayed

ABSTRACT

The development of artificial intelligence (AI) models that are capable of predicting the decisions of prominent courts – most notably the European Court of Human Rights and United States Supreme Court – provides us with an opportunity to revisit important jurisprudential debates regarding the quest for legal certainty. Through providing clear distinctions within formalistic jurisprudence, and its, subsequent, realist critique; this thesis seeks to analyze legal decision-making and its relationship with artificial intelligence. I argue that, AI's deterministic nature and its support for the law being an "entirely self-contained process" does lend some credence to certain jurisprudential arguments. However, this should not be misconstrued as support for a formalistic approach towards legal certainty. Rather, AI's empirical attempt at understanding the contributing factors that create a legal decision, reaffirms a functional understanding of the law. Moreover, through highlighting the definitional issues of AI, its problematic facets and existing case law, this thesis seeks to provide a more nuanced comprehension of AI within the legal industry. I further argue that, inversed-AI models possess inherent inadequacies and, consequently, are at fundamental odds with the decision-making process; thus, preventing them from being reliable indicators of AI's potential in the legal process. This is supported by the emergence of legal frameworks, the "General Data Protection Regulation" and "Loi de Programmation" in particular, that stipulate "explainability" and "understandability" as necessary benchmarks for the use of AI.

I.   Introduction

The emergence of artificial intelligence (AI) provides a new opportunity to look afresh at our jurisprudential understanding of legal certainty. With its global investment expecting to top 150 billion euros by 2025, AI is actively permeating our society by performing feats that were deemed to be impossible, or require a high-level of specialized knowledge.[1] Driverless cars have been developed and approved, with many countries having amended the *Vienna Convention on Road Traffic* to incorporate automated vehicles;[2] in the financial sector, firms are deploying AI to analyze stock market patterns[3] and build investment portfolios[4]; in the medical industry, AI is continuously utilized for its ability to provide predictive diagnoses and image analysis;[5] in the creative industry, AI is also generating intellectual property (IP).[6]

In the legal sector, AI is used to assist judges in identifying legal precedent, drafting contracts, creating due diligence reports, predicting case outcomes, determining litigation risk and evaluating litigation funding opportunities.[7] Several countries have begun

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[1] Alessandro Mascellino, *Global AI investment to top £150 billion by 2025*, OUTSIDE INSIGHT (2019), https://outsideinsight.com/insights/global-ai-investment-150-billion-2025/ (last visited Mar 15, 2021); ARTIFICIAL INTELLIGENCE MARKET SIZE, GROWTH, SHARE | ANALYSIS [2020-2027], , https://www.fortunebusinessinsights.com/industry-reports/artificial-intelligence-market-100114 (last visited Mar 25, 2021).

[2] UNECE paves the way for automated driving by updating UN international convention | UNECE, , https://unece.org/press/unece-paves-way-automated-driving-updating-un-international-convention (last visited Mar 23, 2021).

[3] Arash Bahrammirzaee, *A comparative survey of artificial intelligence applications in finance: artificial neural networks, expert system and hybrid intelligent systems*, 19 NEURAL COMPUT & APPLIC 1165–1195 (2010).

[4] *Id.*

[5] Office of the Commissioner, *FDA permits marketing of artificial intelligence-based device to detect certain diabetes-related eye problems*, FDA (2020), https://www.fda.gov/news-events/press-announcements/fda-permits-marketing-artificial-intelligence-based-device-detect-certain-diabetes-related-eye (last visited Mar 15, 2021); Lucy Colback, *The impact of AI on business and society*, FINANCIAL TIMES (2020), https://www.ft.com/content/e082b01d-fbd6-4ea5-a0d2-05bc5ad7176c (last visited Mar 15, 2021).

[6] Ana Ramalho, *Will Robots Rule the (Artistic) World? A Proposed Model for the Legal Status of Creations by Artificial Intelligence Systems*, LEIDEN UNIVERSITY (2017), https://papers.ssrn.com/abstract=2987757 (last visited Mar 23, 2021); Ryan Abbott, *Artificial Intelligence, Big Data and Intellectual Property: Protecting Computer-Generated Works in the United Kingdom*, RESEARCH HANDBOOK ON INTELLECTUAL PROPERTY AND DIGITAL TECHNOLOGIES (TANYA APLIN, ED), EDWARD ELGAR PUBLISHING LTD, FORTHCOMING (2017), https://papers.ssrn.com/abstract=3064213 (last visited Mar 23, 2021); Benjamin Sobel, *Artificial Intelligence's Fair Use Crisis*, COLUMBIA JOURNAL OF LAW & THE ARTS (2017), https://papers.ssrn.com/abstract=3032076 (last visited Mar 23, 2021).

[7] Marcos Eduardo Kauffman & Marcelo Negri Soares, *AI in legal services: new trends in AI-enabled legal services*, 14 SOCA 223–226 (2020); ArbiLex, *Launch of ArbiLex Brings AI and Predictive Analytics to International Arbitration*, https://www.prnewswire.com/news-releases/launch-of-arbilex-brings-ai-and-

modernizing their judiciary services to accommodate for AI. The French government issued the *Loi de Programmation de Justice* 2018-2022 (LPJ) with the purpose of increasing access to judicial decisions – that were previously confidential – and creating guidelines to ease in AI.[8] In *Pyrrho Investments Ltd. v. MWB Property Ltd.* (MWB) AI – specifically predictive coding – was employed to optimize online discovery for the first time in the United Kingdom.[9] In the United States (US), courts have even begun using AI tools (predictive analytics) in the decision-making process to determine bail and parole cases.[10] Pre-dating and in parallel to the aforementioned developments, researchers have compared AI's ability to predict judicial decisions to that of humans. For instance, a study showed that a human expert group – comprised of eminent lawyers and law professors – guessed the votes of individual US Supreme Court justices in upcoming decisions for the 2002 term at an accuracy of 59.1 percent; while the model achieved a predication rate of 75%.[11]

The emergence of AI, in the legal field, and its reliance on 'big data' raises important questions about the deterministic nature of the law, and how we understand the judicial decision-making process. Accordingly, this thesis seeks to revisit these jurisprudential debates in order to assess AI's disruptive capabilities and answer questions relating to legal determinism. In this thesis, an important distinction is made. Firstly, AI can manifest itself in "versed-AI". This constitutes trained AI, where the algorithm is developed in collaboration with a human that is also providing data analysis. This bottom-up approach for data analysis possesses the least 'problematic' traits that are associated

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predictive-analytics-to-international-arbitration-300896058.html (last visited Oct 15, 2020); Frederick Daso, *ArbiLex, A Harvard Law School Legal Tech Startup, Uses AI To Settle Arbitrations*, FORBES , https://www.forbes.com/sites/frederickdaso/2020/02/04/arbilex-a-harvard-law-school-legal-tech-startup-uses-ai-to-settle-arbitrations/ (last visited Oct 15, 2020); eBrevia | AI for Intelligent Contract Analytics, , EBREVIA , https://ebrevia.com (last visited Oct 15, 2020); ROSS Intelligence Features, , ROSS INTELLIGENCE , https://rossintelligence.com/features.html (last visited Oct 15, 2020).
[8] LOI DE PROGRAMMATION DE JUSTICE 2018-2022, (2019), https://www.legifrance.gouv.fr/loda/id/JORFTEXT000038261631/.
[9] Pyrrho Investments Ltd v MWB Property Ltd & Ors, (2016), https://www.bailii.org/ew/cases/EWHC/Ch/2016/256.html.
[10] Aleš Završnik, *Criminal justice, artificial intelligence systems, and human rights*, 20 ERA FORUM 567–583 (2020).
[11] Theodore Ruger et al., *Supreme Court Forecasting Project: Legal and Political Science Approaches to Supreme Court Decision-Making* 58, 1152; Maxi Scherer, *Artificial Intelligence and Legal Decision-Making: The Wide Open? Study on the Example of International Arbitration*, QUEEN MARY SCHOOL OF LAW, 9 (2019), https://papers.ssrn.com/abstract=3392669 (last visited Mar 21, 2021).

with AI. A secondary form, which I will call "inversed-AI" employs a top-down approach, where the AI is not trained, it interprets the data first, and then develops the algorithm. This form of AI involves the least human input and has been used to predict the judicial decision of the United States (US) Supreme Court and the European Court of Human Rights (ECtHR).

Literature discussing the symbiosis of AI and law, is not novel. Several scholars have attempted to explore their relationship by focusing on ethical debates,[12] human rights,[13] technical inadequacies of AI[14] and some have even ventured as far as to argue that the international framework governing commercial arbitration – mainly the New York Convention and UNCITRAL Model Law – allows for fully autonomous AI-arbitrators.[15] However, very few papers have discussed AI's impact on legal theory.

What separates this paper, within jurisprudential analysis, is (1) it expands the AI analysis to incorporate versed-AI (2) highlights the conceptual and legal barriers to utilizing inversed-AI in judicial decision-making and (3) engages with studies regarding the impact of AI on comparative jurisprudence. Chapter I seeks to: outline the definitional debate surrounding AI, showcase its different forms, and demonstrate its emerging trends in the legal market. Furthermore, this chapter provides an in-depth analysis of AI practice in decision-making, and conducts a critical study of versed and inversed-AI models to determine their efficacy for outcome prediction. This is because a nuanced and technical understanding of AI is crucial in order to, holistically, assess its impact on legal determinism.

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[12] Ugo Pagallo, *When Morals Ain't Enough: Robots, Ethics, and the Rules of the Law*, 27 MINDS AND MACHINES, https://link-springer-com.libproxy.aucegypt.edu/article/10.1007/s11023-017-9418-5 (last visited Mar 25, 2021); Margarita Carrilo, *Artificial intelligence: From ethics to law*, 44 SCIENCEDIRECT, https://www-sciencedirect-com.libproxy.aucegypt.edu/science/article/pii/S030859612030029X?via%3Dihub (last visited Mar 25, 2021).

[13] FILIPPO A. RASO ET AL., *Artificial Intelligence & Human Rights: Opportunities & Risks* (2018), https://papers.ssrn.com/abstract=3259344 (last visited Oct 14, 2020); PROMOTION, PROTECTION AND ENJOYMENT OF HUMAN RIGHTS ON THE INTERNET: WAYS TO BRIDGE THE GENDER DIGITAL DIVIDE FROM A HUMAN RIGHTS PERSPECTIVE, (2017), https://documents-dds-ny.un.org/doc/UNDOC/GEN/G17/111/81/PDF/G1711181.pdf?OpenElement.

[14] Matthew Scherer, *Regulating Artificial Intelligence Systems: Risks, Challenges, Competencies, and Strategies*, 29 HARVARD JOURNAL OF LAW & TECHNOLOGY Page (2016).

[15] HORST EIDENMUELLER & FAIDON VARESIS, *What is an Arbitration? Artificial Intelligence and the Vanishing Human Arbitrator* (2020), https://papers.ssrn.com/abstract=3629145 (last visited Oct 14, 2020).

Put forth by the likes of Jerome Frank, Max Weber, Ronald Dworkin and Herbert Hart, Chapter II seeks to engage with the jurisprudential debate regarding decision-making, legal determinism and the predictive nature of the law. This is done by outlining the evolution of the formalistic position, from Weber's position on the deterministic nature of the law, till Dworkin and Hart's distinctions of clear and hard cases. This assessment cannot be complete without engaging with Jerome Frank's radical realist position regarding the absurdity of a deterministic system, and Felix Cohen's functional approach. It is through the aforementioned lens that I evaluate the modern implications of AI and how they impact legal theory. As a result of the aforementioned points, legal issues will arise. Are modern iterations of versed and inversed-AI reliable examples for legal decision-making? Does AI's capability for outcome prediction further affirm Frank's position on the indeterminacy of the law? Does it affirm the classical formalist position? Or does AI seemingly confirm Dworkin's position?

The paper uses modern iterations of AI, as well as the ECtHR and US Supreme Court models as detailed examples. However, it does not engage with the political/moral argument surrounding the object and purpose of the law – as this angle is outside the intended scope of this paper. It concludes that (a) inversed-AI is not an effective method for determining AI's potential for *ex ante* outcome prediction (b) there is both a conceptual, and a legal barrier towards using inversed-AI in judicial decision-making (c) despite AI's reaffirmation of legal certainty, it, on a fundamental level, supports a *functional approach* to law; as it is the latest step in *empirically* understanding the contributive factors of the decision-making process.

II.   Artificial Intelligence

A. Defining Artificial Intelligence

According to the United Nations (UN) International Telecommunication Union (ITU) – the UN's specialized agency for information communication technologies (ICTs) – Artificial Intelligence (AI) is defined as machines that achieve "the ability to learn, improve and make calculated decisions in ways that will enable them to perform tasks previously thought to rely on human experience, creativity and ingenuity".[16] This is a broad definition that provides a general overview of what AI is and what it can be. Nevertheless, from a legal perspective, there is no globally adopted definition of AI.[17]

One of the main difficulties in defining AI lies in the "conceptual ambiguity of intelligence."[18] According to Matthew Scherer, human beings are incapable of reconciling with an abstract idea of intelligence that is separate from their own.[19] This is because, among their own, human beings are the only ones that possess intelligence. This causes the first issue in defining AI: separating definitions of intelligence from human characteristics.[20] This is exemplified in the statements of John McCarthy – the person who first coined the term 'artificial intelligence' – as he emphasized that we are unable to define intelligence without relating it back to human intelligence.[21] Accordingly, attempting to define AI without defining intelligence, in of itself, is a monumental task; due to the interconnected variables that are considered as exhibiting intelligence, such as: the ability to learn, adapt and reason.[22]

The aforementioned issues in defining intelligence, translate seamlessly into the issues of defining AI. As made clear in the works of Stuart Russel and Peter Norvig, authors of the leading introductory textbook on AI, *Artificial Intelligence: A Modern Approach*. In

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[16] AI for Good Global Summit - International Telecommunications Union, , AI FOR GOOD GLOBAL SUMMIT 2020 , https://aiforgood.itu.int/about-us/ (last visited Oct 14, 2020).
[17] John McCarthy, *What is Artificial Intelligence?*, 2–3 (2017), http://www-formal.stanford.edu/jmc/whatisai.pdf.
[18] Scherer, *supra* note 14 at 359.
[19] *Id.* at 359–360.
[20] *Id.* at 360.
[21] McCarthy, *supra* note 17; Scherer, *supra* note 14.
[22] Scherer, *supra* note 14 at 360.

their book, they posit that there are eight different definitions of AI, which they organized into four categories: thinking humanly, acting humanly, thinking rationally, and acting rationally.[23] Today, AI is utilized as an umbrella term that zeroes-in on the concept of achieving technological 'goals'.[24] AI is viewed as a "rational agent" that "acts so as to achieve the best outcome or, when there is uncertainty, the best expected outcome".[25]

This creates a regulatory dilemma, due to the fact that it simply replaces the issue of defining "intelligence", with the issue of defining "goal".[26] On the other hand, if we choose to adopt a working definition for AI under the framework of 'acting rationally', we would be both omitting and including several facets that make AI unique.[27] This is because the notion of 'acting rationally' already exists in several computer programs that pose no serious risk, nor do they create a need for regulation; examples of this includes computer chess programs or AI opponents in other computer games.[28] As they too attempt to optimize results within a predefined set of guidelines, which could be considered as acting "rationally".[29]

It is important to note, AI includes a variety of computational techniques that aim to optimize the ability of a machine's performance; through things such as natural language processing (NLP) and pattern recognition. This loose conceptualization is not accidental, as what is considered AI changes from time to time; this is what is known as the "AI effect" or the "odd paradox".[30] The "AI effect" is the notion that highly successful technological advancements eventually become mundane and start being taken for granted. This entails losing its privilege as being categorized as AI, while newer and more impressive systems are labelled as AI instead.[31] This thesis does not attempt to solve the definitional issue of

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[23] STUART RUSSEL & PETER NORVIG, ARTIFICIAL INTELLIGENCE: A MODERN APPROACH 1034 (2003), https://www.pearsonhighered.com/assets/preface/0/1/3/6/0136042597.pdf.
[24] Scherer, *supra* note 14 at 361.
[25] RUSSEL AND NORVIG, *supra* note 23 at 4.
[26] Scherer, *supra* note 14 at 361.
[27] *Id.* at 362.
[28] *Id.* at 362.
[29] *Id.* at 362.
[30] RASO ET AL., *supra* note 13 at 10.
[31] PAMELA MCCORDUCK, MACHINES WHO THINK: A PERSONAL INQUIRY INTO THE HISTORY AND PROSPECTS OF ARTIFICIAL INTELLIGENCE (2004), https://pdfs.semanticscholar.org/965b/39ad83c545849d473ce30cfc3d569f6e3828.pdf?_ga=2.11940724.131 6760708.1602666827-833432709.1602666827.

AI, but will define AI – for the purposes of this paper – as "a family of computational algorithms that are capable of automated statistical learning, based on data sets".[32]

1. Machine Learning

AI is comprised of two key subsets: Machine Learning (ML) and Deep Learning Modules (DLM). ML is an algorithm that is used to make predictions.[33] This is a stark difference from normalized methods of statistics that rely on models.[34] It is true that traditional statistical methods can also generate predictions; however, this only occurs when said model fits seamlessly within the process that is being modeled.[35] Moreover, the traditional statistical methodology requires that the analyst first specifies an equation that clearly indicates the outcome (result) variable, this is what is known as a regression.[36] A regression is, in essence, an estimate of the relationship between two types of variables that are both "selected and specified by the analyst".[37] The results of the regression usually represents real world relationships that the analyst is attempting to use in order to support casual inferences.[38]

Machine Learning is quite the opposite of that; in the sense that it does not require the analyst to zero-in on a particular form of model in advance. ML algorithms require data to determine which information is placed in the input (data) variables in order to present the output (result) variable.[39] The main distinction to be made from ML and traditional statistical models is that ML results cannot claim to represent real world relationships while traditional statistical models allow us to make inferences from its data.[40]

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[32] Allyson Renolds & Paula Mendez, *AI arbitrator selection tools and diversity on arbitral panels*, INTERNATIONAL BAR ASSOCIATION , https://www.ibanet.org/article/97CB79FA-39E9-48C1-8CB0-45569E2E62AF (last visited Jul 21, 2021).
[33] Cary Coglianese & David Lehr, *Regulating by Robot: Administrative Decision Making in the Machine-Learning Era*, UNIVERSITY OF PENNSYLVANIA CAREY LAW SCHOOL Page, 156 (2017).
[34] *Id.* at 1156.
[35] *Id.* at 1156–1157.
[36] *Id.* at 1156–1157.
[37] Coglianese and Lehr, *supra* note 33.
[38] *Id.* at 1156–1157.
[39] *Id.* at 1156–1157.
[40] Coglianese and Lehr, *supra* note 33.

It is important to note that traditional statistical models are not more reliable/important than ML. On the contrary, what makes ML unique is that its mathematical algorithms *learn* to evolve, adapt and optimize their forecasts based on new data or past experiences.[41] However, one of the main drawbacks of ML is that it comes at an interpretative cost, referred to as the "black box".[42] This interpretive cost occurs when the algorithm attempts to optimize its performance criterion, and the analyst can no longer determine which relationship between the variables is factoring in its classifications or how, specifically, the algorithm is putting together said classifications.[43] Despite this interpretative cost, ML algorithms are being implemented at an increasing rate, in a multitude of different fields.

There are generally two types of ML: supervised and unsupervised. Generally speaking, supervised learning involves training the algorithm through *labeling*.[44] This is done by feeding the algorithm with both the correct decision and an input. An example for this would be requiring the algorithm to differentiate between faces and objects in a scene: trees, streets and what not.[45] This would be done by providing the algorithm with an image and an index of faces and objects. After providing the algorithm with several other pairs of images and indices, the algorithm would adjust its methodology to incorporate for situations where the image might not even contain a face.[46] If we utilize the same aforementioned example, the distinction between both technologies would be that in unsupervised learning, the AI would be required to determine if there exists a face within the image, without being given the index in its formative stages.[47]

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[41] *Id.*

[42] Yavar Bathaee, *The Artificial Intelligence Black Box and the Failure of Intent and Causation*, 31 HARVARD JOURNAL OF LAW & TECHNOLOGY 50.

[43] *Id.* at 899–900.

[44] Argyro Karanaslou & Dimitris Pinotsis, *A Study Into the Layers of Automated Decision-making: Emergent Normative and Legal Aspects of Deep Learning*, 31 INTERNATIONAL REVIEW OF LAW, COMPUTERS & TECHNOLOGY, 170–187 (2017), https://doi-org.libproxy.aucegypt.edu/10.1080/13600869.2017.1298499.

[45] Nakajima Chikahito, *People Recognition in Image Sequences by Supervised Learning*, MASSACHUSETTS INSTITUTE OF TECHNOLOGY ARTIFICIAL INTELLIGENCE LABORATORY (2000), https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.892.9790&rep=rep1&type=pdf.

[46] *Id.*

[47] Dinesh Kumar, Chandra Rai & Shakti Kumar, *Analysis of Unsupervised Learning Techniques for Face Recognition*, 20 INTERNATIONAL JOURNAL OF IMAGING SYSTEMS AND TECHNOLOGY 261–267 (2010).

2. Deep Learning Modules

Deep Learning is a subset of ML that gains its edge from being a more specific method of learning. What makes DLM unique is that its models are composed of several layers that are constantly processing information, and are capable of learning data with several levels of abstraction.[48] The benefits of DLM are evident in areas such as natural language processing, Q&A answering systems, e-discovery, technology assisted reviews, improving search engines and visual object recognition.[49] Furthermore, "Deep learning discovers intricate structure in large data sets … to indicate how a machine should change its internal parameters that are used to compute the representation in each layer from the representation in the previous layer."[50] The accumulation of the aforementioned techniques undoubtedly cuts costs and increases efficiency. However, the drawbacks include the "lack of intuitive interpretability" which "is of little concern in endeavors where accuracy, not causality, is the valued metric."[51] This is supported by the current practice of AI in notable sectors.

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[48] Yann LeCunn, Yoshua Bengio & Geoffrey Hinton, *Deep Learning*, NATURE 436–444 (2015).
[49] *Id.* at 436–444.
[50] LeCunn, Bengio, and Hinton, *supra* note 48.
[51] Coglianese and Lehr, *supra* note 33 at 1160.

B. Artificial Intelligence in Law

The purpose of this section is to demonstrate the current role of artificial intelligence in the field of law. This will be done by presenting several examples of companies, applications and products that use AI to perform specific legal tasks that were previously done, exclusively, by individuals. Through these examples, we will be capable of seeing the extent to which AI is impacting the legal sector. Secondly, this section provides a critical engagement with the most highly regarded AI-models that have demonstrated an ability to predict the judicial decisions of the US Supreme Court and the European Court of Human Rights. Thirdly, this section analyzes the role that AI-algorithms currently play in US courts when it comes to assessing recidivism rates in parole hearings. This is done by providing a critical assessment of the *Wisconsin v. Loomis* case, where the utilization of an AI-algorithm was alleged to violate an individual's human and due process rights. I will also be presenting unique examples of Online Dispute Resolution (ODR) – a form of automated dispute resolution that exists in the field of e-commerce – in order to demonstrate parallels between the adjudication of small disputes in ODR and potential AI-led decision-making.

Despite AI's drawbacks, global experts are unanimous in their belief that AI will continuously develop and produce new methods for improving legal services and access to justice.[52] The White & Case Queen Mary 2018 International Arbitration Survey stated that AI was used by 8% of its participants.[53] To put this number into perspective, artificial intelligence was not even mentioned in their 2015 International Arbitration Survey.[54] Accordingly, if we assume any rate of progress, AI's role in the legal field cannot be understated or ignored.

Deep learning examples include tools for e-discovery, evidence review, search engines, analysis of pleadings and contract writing. These models help improve the work of a lawyer as they automate several important tasks that were previously exclusive to individuals.

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[52] Kauffman and Soares, *supra* note 7.

[53] 2018 INTERNATIONAL ARBITRATION SURVEY: THE EVOLUTION OF INTERNATIONAL ARBITRATION, (2018), https://www.whitecase.com/sites/whitecase/files/files/download/publications/qmul-international-arbitration-survey-2018-19.pdf.

[54] 2015 INTERNATIONAL ARBITRATION SURVEY: IMPROVEMENTS AND INNOVATIONS IN INTERNATIONAL ARBITRATION, (2015), https://www.whitecase.com/sites/whitecase/files/files/download/publications/qmul-international-arbitration-survey-2015_0.pdf.

Machine learning examples are more so in the realm of probability and prediction. This includes companies that are hired by firms for arbitrator selection.[55] This is done by reviewing a specific judge's case law to determine how that judge would adjudicate in the firm's arbitration case.

A prominent example of machine learning in commercial arbitration is ArbiLex. Founded by Isabel Yang, ArbiLex is a startup that uses ML to: (1) assist law firms and litigation funds in ranking arbitrators for a specific case[56] (2) determine and pinpoint the relevant risk factors in a particular dispute and (3) predict how long a case would last.[57] The main beneficiaries of this statistical analysis are law firms and third-party litigation funds, that are searching for an advantage in a legal sector that is slowly transforming into a multitrillion-dollar asset class.[58]

JPMorgan has developed Contract Intelligence, a proprietary program that has decreased their annual contract review time by 360,000 hours.[59] In China, the Supreme People's Court developed a software called FaXin that is designed to aid judges in identifying case precedent.[60] eBrevia uses e-discovery in order to "reduce manual review time by 30-90% while also increasing accuracy. [It also] analyzes 50+ documents in less than a minute and minimizes the risk of missing key information."[61] TrademarkNow and Anaqua are examples of AI-programs that conduct risk assessments and IP research for intellectual property lawyers.[62] Intraspexion is another company used by law firms to determine the risks involved in litigation.[63] ROSS Intelligence is a natural language processing AI that provides a question & answer style structure. It also performs document analysis, finds similar language in other case law and provides a tailor-made case summary for lawyers and law firms.[64]

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[55] ArbiLex, *supra* note 7.
[56] *Id.*
[57] Daso, *supra* note 7.
[58] ArbiLex, *supra* note 7.
[59] Kauffman and Soares, *supra* note 7.
[60] *Id.*
[61] eBrevia | AI for Intelligent Contract Analytics, *supra* note 7.
[62] Kauffman and Soares, *supra* note 7.
[63] *Id.*
[64] ROSS Intelligence Features, , ROSS INTELLIGENCE , https://rossintelligence.com/features.html (last visited Oct 15, 2020).

The role of AI in improving document automation cannot be overstated. Keoghs – a law firm in the UK – is using AI to automate litigation in claims relating to personal injury.[65] Specifio is another example of an AI-based program that is capable of drafting a patent application; provided certain claims are proposed.[66] WeVorce and Hello Divorce, are examples of AI that operate in family law; as both programs are capable of automating divorce-related proceedings. PerfectNDA, created by Neota Logic, streamlines the non-disclosure agreement process, which can save approximately 1000 hours annually.[67] Additionally, LegalMation utilizes AI to generate any and all litigation documents i.e. pleadings or discovery requests.[68]

The majority, if not the entirety, of information available to parties to a litigation is what is known as electronically stored information (ESI). The modern, digital nature of the legal profession has "[lead] to large volumes of ESI being created, duplicated and stored in a variety of formats, locations and jurisdictions".[69] Currently, several aspects of litigation discovery – namely the ESI – are conducted by ML algorithms.[70] These algorithms are primarily used to categorize and filter documents, by determining their level of relevance or duplication.[71] This is what is known as predictive coding. Predictive coding is used to categorize, process and evaluate data that lawyers would need to sift through before assessing whether or not they have a case. "The parties agree a predictive coding protocol, including the definition of the data set, sample size, batches, control set, reviewers, confidence level and margin of error. Criteria will include who held the documents (custodians) and the date range, but perhaps also whether the documents contained any of the keywords chosen. Certain types of documents, not having any or any sufficient text, will be excluded (they will have to be considered manually). The resulting documents are "cleaned up", by removing repeated content (e.g. email headers or disclaimers) and words

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[65] Kauffman and Soares, *supra* note 7.
[66] *Id.*
[67] *Id.*
[68] *Id.*
[69] Oliver Browne & Hayley Pizzey, *Pyrrho Investments Ltd v MWB Property Ltd: A Landmark Decision on Predictive Coding in e-Discovery*, LATHAM & WATKINS (2016), https://www.latham.london/2016/07/pyrrho-investments-ltd-v-mwb-property-ltd-a-landmark-decision-on-predictive-coding-in-e-discovery/ (last visited Mar 25, 2021).
[70] Harry Surden, *Machine Learning and Law*, 89 WASHINGTON LAW REVIEW, 113 (2014), https://papers.ssrn.com/abstract=2417415 (last visited Mar 25, 2021).
[71] Surden, *supra* note 70.

that will not be indexed (e.g. because they are not useful in assessing relevance)."[72] This significantly expedites the document review process, especially since the AI is constantly improving with every document it analyzes.

At face-value this may seem benign, but in cases with large scale disclosure, predictive coding can make a substantial difference. A prominent example of its use is the MWB case, where "the total number of electronic files restored from the back-up tapes of the second claimant was originally more than 17.6 million. After de-duplication, 3.1 million documents remained. The bulk of the relevant documents were controlled by the second claimant, which held back-up tapes storing email accounts used by the second to fifth defendants".[73] The importance of predictive coding has already been endorsed in US courts, including Magistrate Judge Andrew Peck in *Da Silva Moore v. Publicis Groupe*[74] where the court highlighted the value of predictive coding in lowering costs and ensuring a speedy legal process.[75]

In order to perform to the best of its ability, AI requires data. The more data an AI possesses, the more accurate it is; thus, the higher the value of its predictive model. In order for AI to flourish: countries and/or corporations need to actively increase access to judicial decisions and develop online platforms that are capable of contributing to an AI's data set. This is currently being done in both forms. Firstly, the LPJ is currently increasing access to judicial decisions while maintaining the integrity of the legal process.[76] This is done by redacting the names of the relevant parties, including judges and clerks.[77]

Arbitrator Intelligence is another example of information collection that focuses specifically on how arbitrators manage cases and reach decisions. This is done in the form of a questionnaire that asks arbitrators about "date of filing, the industry in which the dispute arose, the date of the award, and names of arbitrators."[78] When it comes to the

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[72] COURT APPROVES USE OF PREDICTIVE CODING IN LARGE DISCLOSURE EXERCISE - ALLEN & OVERY, (2016), https://www.allenovery.com/en-gb/global/news-and-insights/publications/court-approves-use-of-predictive-coding-in-large-disclosure-exercise (last visited Mar 25, 2021).
[73] *Id.*
[74] Da Silva Moore v. Publicis Groupe, (2012).
[75] *Id.*
[76] LOI DE PROGRAMMATION DE JUSTICE 2018-2022, *supra* note 8.
[77] Antonio Musella, *Arbitration, Open Data, Justice and Artificial Intelligence: a New Step Forward*, KLUWER ARBITRATION BLOG (2020), http://arbitrationblog.kluwerarbitration.com/2020/04/16/arbitration-open-data-justice-and-artificial-intelligence-a-new-step-forward/ (last visited Oct 19, 2020).
[78] EIDENMUELLER AND VARESIS, *supra* note 15 at 15.

creation of online platforms for the benefit of AI-programs of legal analytics, Jus Mundi emerged as a comprehensive database for international law and commercial arbitration.[79] It also serves to make decisions, awards, analysis of arbitrators and experts readily available and accessible. As a database, Jus Mundi has "collaborated with 250 arbitration lawyers from over 40 jurisdictions for its Wiki Notes project, a directory of bite-sized notes on key legal issues overseen by an editorial board."[80] Accordingly, the database serves to contribute to the development of arbitral case law, through allowing access to the statistics that study an arbitrator's reasoning.[81]

While the role of AI is growing within the legal field, there are no examples of fully automated adjudicatory systems. Determining when such a system might be applied depends heavily on the nature of the dispute itself. "Developing an AI-powered arbitrator is not only contingent on the simplicity or complexity of a given dispute. It also depends on the degree of human interaction a dispute might normally involve. Thus, it would be easier to see such systems operating for simple money claims or tax disputes where the outcome is based on the analysis of facts and the calculation of variables that are easily quantifiable".[82] Along with Online Dispute Resolution, Split Up is an example of a highly automated application that provides both the parties and judges with advice on the allocation of property after the divorce.[83] While not fully-automated, Split Up still offers advice based on legal reasoning. This is significant because legal reasoning is difficult in find in most AI models.

1. European Court of Human Rights

Conducted in 2016, this AI model focused on decisions rendered in the English language under three provisions of the ECtHR. Article 3 on the prohibition of torture, Article 6 on the right to fair trial, and Article 8 on the right and respect for private and

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[79] Jeffery Commission & Giulia Previti, *The Increasing Use of Data Analytics in International Arbitration*, NEW YORK LAW JOURNAL , https://www.law.com/newyorklawjournal/2020/11/20/the-increasing-use-of-data-analytics-in-international-arbitration/ (last visited Mar 26, 2021).
[80] *Id.*
[81] Musella, *supra* note 77.
[82] EIDENMUELLER AND VARESIS, *supra* note 15 at 17.
[83] *Id.* at 17.

family life.[84] As to not impact the quality of the study, it is important to note that these three provisions were not selected for an ulterior motive. Rather, they were selected because they represented the provisions with the highest number of decisions under the Convention.[85] As previously mentioned, the more decisions or 'input data' the higher the accuracy of the AI model. The researchers then proceeded to select identical numbers of decisions where there was a violation under ECtHR, and where there was not. The data set concluded to be 584 decisions: 250 for Article 3, 80 for Article 6, and 254 for Article 8.[86]

Relying on machine learning techniques and natural language processing, this study on ECtHR, zeroed-in on the textual information present in the rulings.[87] The following sections were included in the study: procedure, factual backgrounds and legal arguments. For obvious reasons, the sections of the decision where the Court announces the outcome of the case, were not included.[88] At face-value, the most interesting part of the study is undoubtedly the accuracy of these predictions. The model successfully predicted the court's rulings in 79 percent of all cases.[89] However, a closer look at the results shows which sections were the most informative; factual circumstances and procedural background (76 percent and 73 percent), whereas the legal reasoning section had a lesser outcome prediction value (62 percent).[90]

The researchers used the aforementioned claim – regarding a larger reliance on facts and procedure (76 percent) over legal reasoning – to lend credence to the legal realist position.[91] The authors stated "Our work lends some initial plausibility to a text-based approach with regard to *ex ante* prediction of ECtHR outcomes on the assumption that the text extracted from the published judgment of the Court bears a sufficient number of similarities with, and can therefore stand as a proxy for, applications lodged with the Court as well as for briefs submitted by parties in pending cases."[92] How the researchers conclude their assessment is particularly informative, as they determine that the factual background

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[84] Nikolaos Aletras et al., *Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective*, 2 PEERJ COMPUT. SCI. e93 (2016).
[85] *Id.*
[86] *Id.*
[87] *Id.*
[88] *Id.*
[89] *Id.*
[90] *Id.*
[91] *Id.*
[92] *Id.*

of the case presented by Court to be the "most important part obtaining on average the strongest predictive performance of the Court's decision outcome".[93] Furthermore, the position that there exists a strong correlation between the natural language processing of the fact patterns and the outcome of the case, is not a novel discovery. But rather, supports previous "empirical work on judicial decision-making in hard cases and backs basic legal realist intuitions".[94]

It is important to note, there are notable criticisms for the methodology employed by the researchers. Firstly, it is unknown which specific parts of the Court's decisions were not included. The law section is not stated to be included or excluded.[95] Which is not an issue at first glance, but considering that the law section can include the Court's reasoning, indicates a strong material reason to impact the AI's study.[96] It would be very easy for the AI to ascertain the ruling if it can read the Court's reasoning of the law. This is not unique to AI: given any situation, if you provide a lawyer with the Court's reasoning, more probably than not, he or she would be able to determine the outcome of the case.[97] Secondly, the researchers conclude with stating that "our work lends some initial plausibility to a text-based approach with regard to *ex ante* prediction of ECtHR outcomes".[98] This entire premise can be considered void if the AI considers the Court's reasoning which is only available post-judgment. Thirdly, if indeed the research did not consider the Court's reasoning, we know for a fact that it considered the factual background section.[99] For all intents and purposes, it could just be factual background, but it could also be influenced by the Court itself.[100] The Court could easily have included the most important, or most relevant facts that led to their decision. Accordingly, that would mean the AI could use this post-judgment information to assist in its assessment. This argument is supported by the researchers themselves who claim that there is a "possibility that the formulation by the Court may be tailor-made to fit a specific preferred outcome."[101]

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[93] *Id.*
[94] *Id.*
[95] Scherer, *supra* note 11 at 11.
[96] *Id.* at 11.
[97] *Id.* at 11.
[98] Aletras et al., *supra* note 84.
[99] Scherer, *supra* note 11 at 11.
[100] *Id.* at 11–12.
[101] Aletras et al., *supra* note 84.

When utilizing AI in a field other than legal, i.e. health or business the process by which AI is used is not entirely important to the user, but rather the user is more interested in the results: maximizing revenue or diagnosing illnesses at a higher rate. In the legal field – specifically when it comes to decision-making – the manner through which AI reaches a conclusion is as important if not more important than the outcome itself. There are numerous aspects of judicial decisions that are influenced and protected by procedural law, and it is within that realm that seasoned legal scholars craft nuanced legal arguments. In this particular research, it is clear that the AI frequently used words such 'result' or 'department' as some sort of NLP indicators.[102] The main issue with using these words for future cases is that there is no clear link between the use of these words for this case, in others.[103] Moreover, if the AI uses words such as 'Switzerland' or 'February' for future prediction, it could possibly put an inaccurate weight on those words when determining the outcome.[104] If this is indeed the case, the AI could create an inaccurate probabilistic assessment against a particular country, or on a particular issue just because that specific word is mentioned several times.[105]

2. United States Supreme Court

Building on previous developments in the fields of machine learning and the science of judicial prediction, several prominent researchers developed an AI-driven model to predict the behavior of the United States Supreme Court. The study relied on some facets of previous US Supreme Court predictions, but was revolutionary in many other aspects.[106] Published in 2017, this study aimed to separate itself from previous legal prediction attempts, by developing a model that met three key points: "generality", "consistency" and "out-of-sample applicability".[107] The model used the Supreme Court Database (SCDB) and

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[102] Scherer, *supra* note 11 at 12.
[103] *Id.* at 12.
[104] *Id.* at 12.
[105] *Id.* at 12.
[106] Daniel Martin Katz, Michael J. Bommarito Ii & Josh Blackman, *A general approach for predicting the behavior of the Supreme Court of the United States*, 12 PLOS ONE e0174698 (2017).
[107] *Id.*

"some derived features generated through feature engineering" and inputs, to predict Supreme Court decisions from 1816-2015.[108]

After the results were compared to previous models, it was found to outperform all other baseline models.[109] However, what separates this model from the ECtHR model, is that they only used data available prior to the decision. Also, the model can be generally and consistently applied to any and all US Supreme Court decisions, and more specifically, for any given justice composition of the Court. This was done by attempting to answer two questions: "1) will the Court as a whole affirm or reverse the status quo judgment and 2) will each individual Justice vote to affirm or reverse the status quo judgment?".[110]

In order to achieve their "generality" and "consistency" requirements, the researchers considered how the Court's composition had changed "case-by-case or term-by-term, either through recusal, retirement, or death".[111] They concluded that their prediction model should continue to produce results, despite of the aforementioned barrier.[112] This is because the success of a prediction model is predicated on its ability to predict throughout time, and to account for what they call "abnormal circumstances" (cases where the Court had original jurisdiction or fewer than nine Justices).[113] The goal, as they put it, is to develop a model that demonstrates the ability to adapt and learn "online".[114] The out-of-sample requirement, which entails that any and all inputs needed for the model's prediction must be knowable before the result was issued. According, to the authors, this principle is considered to be the most crucial.[115] This is because meeting this point is the most impactful way a study like this can resonate with the legal community – in terms of *ex ante* outcome predictions.[116]

As previously mentioned, the study used US Supreme Court decisions from 1816-2015.[117] This input data was more than 28,000 court rulings and more than 240,000 justice

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[108] *Id.*
[109] *Id.*
[110] *Id.*
[111] *Id.*
[112] *Id.*
[113] *Id.*
[114] *Id.*
[115] *Id.*
[116] *Id.*
[117] *Id.*

votes.[118] Contrary to ECtHR's dependence on natural language processing and textual data, this model opted for data labeling.[119] The data labeling was comprised of several features.[120] Firstly, some features extracted information from the lower court's decision – which is the reason why the Supreme Court is addressing it. This can include potential conflicts between lower courts and the identity of the courts & their decisions.[121] Secondly, certain features focused on the Supreme Court itself, such as the justices' previous rulings (votes or dissenting opinions), and their political preferences.[122] Thirdly, the nature of the parties appearing before the Court was considered. This included their identity, conflicting issues and the time of the decision itself. Fourthly, the data labelling created a set of features regarding the procedural aspects of the Supreme Court, such as the how and why the Court gained jurisdiction, the scheduling of an oral argument, and the time it took to reach a decision.[123] Finally, the researchers trained the AI-model – using machine learning techniques – on a sample from the previously collected data set, and then applied the new model on the remaining data set.[124] This was done to determine the position that individual justices and the Court, as a whole, would take for decisions from 1816-2015.[125]

The model ended up predicting 71.9% of the justice vote, and 70.2% of the case outcome level.[126] According to the researchers "this model offers the first generalized, consistent and out-of-sample applicable machine learning model for predicting decisions of the Supreme Court of the United States."[127] The researchers also stated that this model outperformed an in-sample model by almost 5%.[128] However, when determining this machine learning model's ability to provide a framework for predictive legal decision-making, it is clear that there are some limitations.

As previously mentioned, the model used labelled features that consider decisions of the Supreme Court that are reviews of lower court decisions. This includes the circuit court,

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[118] *Id.*
[119] Scherer, *supra* note 11 at 13.
[120] *Id.* at 13.
[121] *Id.* at 13.
[122] *Id.* at 13.
[123] *Id.* at 13.
[124] Katz, Ii, and Blackman, *supra* note 106.
[125] *Id.*
[126] *Id.*
[127] *Id.*
[128] *Id.*

its ruling and the Supreme Court justice's history with regards to decisions from lower courts. Accordingly, it is not difficult to ascertain that this input data is not necessarily original to the dispute itself, especially when juxtaposed with case procedure or party identity. This raises concerns as to whether or not this model can be used in situations where the court has to reach a decision without having the luxury of looking at a lower court's decision.[129]

Furthermore, this model makes a similar mistake to that of ECtHR with regards to its input data. Despite the claim that all the information needed for the model should be known before the decision; there are examples of input data that exist before the date of the decision that can drastically impact the model's results. This information would not be available for an AI that is responsible for predicting a legal decision. Examples of this input data includes the time between an oral argument and the decision, if there is an oral argument to begin with.[130] Since this information is only available at a very late stage in the procedure, it has a significant impact on the model's credibility to contribute to legal decision-making.[131]

Additionally, this model intentionally excluded the Supreme Court's 'hard cases'.[132] These are cases where the Supreme Court decided a dispute as the original court of jurisdiction. The researchers justify this by emphasizing the Supreme Court's role in taking nuanced legal/political decisions that could lead to a "complex outcome that does not map onto a binary outcome".[133] This exposes a glaring hole in the model's ability to assist in situations where a court does in fact need to decide a dispute where it does not have the luxury of a lower court.[134] An AI-model would, in theory, have to adjudicate in these nuanced legal/political situations that might not map onto a binary outcome.[135]

As previously alluded to, the political aspect of the US Supreme Court and its decisions cannot be overstated. Just by looking at how justices are nominated and confirmed, and the nature the cases they are asked to adjudicate on, one can clearly see the

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[129] Scherer, *supra* note 11 at 14.
[130] *Id.* at 14.
[131] *Id.* at 14.
[132] Katz, Ii, and Blackman, *supra* note 106.
[133] *Id.*; Scherer, *supra* note 11 at 14.
[134] Scherer, *supra* note 11 at 14.
[135] *Id.* at 16–17.

importance of a judge's political orientation.[136] Scherer believes that it can be said – at least in theory – that it would be easier to predict the decisions of the Supreme Court, as opposed to lower circuit courts.[137] I do not entirely agree with this assessment as the author is assuming that lower circuit courts are less predictable because the positions they hold are less political. Firstly, the data set which looked at the judicial history and orientation of the justices can also be applied to those holding lower circuit positions. Secondly, since the "hard cases" were not considered in this model, I fail to see the relevancy of the argument.

3. Wisconsin v. Loomis

The development of AI has led to the creation of 'evidence-based' risk assessment algorithms to support courts in their decision-making process. These tools were initially designed to assist in post-conviction decisions; examples of these decisions include determining whether or not an inmate gains parole.[138] The relative success of these tools has led to their adoption in numerous areas "from policing, pretrial bail to post-trial sentencing".[139] Currently, the American criminal justice system is utilizing approximately 60 automated systems throughout several levels of its institutions.[140]

The adoption of these AI-driven risk assessment tools, has led to notable criticism regarding their reliance on biased data and their alleged violation of an individual's human rights. The most prominent legal criticism was *Wisconsin v. Loomis*, where the court was challenged for its use of an AI-algorithm in determining the defendant's recidivism rate and, subsequently, influencing the decision-making process. Accordingly, this case provides a unique opportunity to view how AI seemingly withstands legal scrutiny in a modern and practical example of judicial decision-making. Additionally, in this upcoming analysis, we will clearly see how an AI algorithm was utilized by the Court to render a

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[136] *Id.* at 15.
[137] *Id.* at 15.
[138] Han-Wei Liu, Ching-Fu Lin & Yu-Jie Chen, *Beyond State v Loomis: artificial intelligence, government algorithmization and accountability*, 27 INTERNATIONAL JOURNAL OF LAW AND INFORMATION TECHNOLOGY 122–141, 125–126 (2019).
[139] *Id.* at 125–126.
[140] *Id.* at 125–126.

judgment; seemingly expanding the factors that realists consider to compromise the judicial hunch.

In 2013, Eric Loomis was charged by Wisconsin in relation to a drive-by shooting in La Crosse. The State charged Loomis, as a repeat offender, in five counts: "(1) First-degree recklessly endangering safety – [party to a crime] (PTAC); (2) Attempting to flee or elude a traffic officer (PTAC); (3) Operating a motor vehicle without the owner's consent; (4) Possession of a firearm by a felon (PTAC); (5) Possession of a short-barreled shotgun or rifle (PTAC)".[141] Loomis vehemently denied any participation in the drive-by shooting.[142] However, Loomis waived his right to trial and entered a guilty plea in two charges: (1) the attempted fleeing of a traffic officer (2) operating a vehicle without the approval of its owner.[143] Despite the State's acceptance of Loomis' denial that he was involved in the shooting, the State still believed that he was the driver of the car when the shooting took place.[144] The State argued aggravating and mitigating factors but, as within its rights, left the determination of sentencing to the discretion of the Court. The Court accepted Loomis' plea and ordered a Presentence Investigation Report (PSI).

In Loomis' case, the PSI included a Correctional Offender Management Profiling for Alternative Sanctions (COMPAS) risk assessment. Designed by Northpointe, COMPAS is a proprietary risk-need assessment tool that uses a machine learning algorithm to provide decisional support for the Court.[145] The algorithm uses information from a 137-question survey to predict recidivism.[146] Furthermore, the risk-assessment extracts its inputs from information built upon by an initial interview or questionnaire with the defendant and his criminal file. The assessment then generates scores that are displayed in the form of a bar chart that represents different types of risks: pretrial recidivism, general recidivism, and violent recidivism.

> "A COMPAS report consists of a risk assessment designed to
> predict recidivism and a separate needs assessment for

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[141] Supreme Court of Wisconsin v. Eric Loomis., , 11 (2016), https://caselaw.findlaw.com/wi-supreme-court/1742124.html (last visited Mar 29, 2021).
[142] *Id.* at 12.
[143] *Id.* at 12.
[144] *Id.* at 12.
[145] *Id.* at 13.
[146] Liu, Lin, and Chen, *supra* note 138 at 133.

identifying program needs in areas such as employment, housing and substance abuse. The risk assessment portion of COMPAS generates risk scores displayed in the form of a bar chart, with three bars that represent pretrial recidivism risk, general recidivism risk, and violent recidivism risk. Each bar indicates a defendant's level of risk on a scale of one to ten.

As the PSI explains, risk scores are intended to predict the general likelihood that those with a similar history of offending are either less likely or more likely to commit another crime following release from custody. However, the COMPAS risk assessment does not predict the specific likelihood that an individual offender will reoffend. Instead, it provides a prediction based on a comparison of information about the individual to a similar data group.

Loomis's COMPAS risk scores indicated that he presented a high risk of recidivism on all three bar charts. His PSI included a description of how the COMPAS risk assessment should be used and cautioned against its misuse, instructing that it is to be used to identify offenders who could benefit from interventions and to target risk factors that should be addressed during supervision."[147]

Nevertheless, the Court specifically mentioned COMPAS during the sentencing process, "You're identified, through the COMPAS assessment, as an individual who is at high risk to the community".[148] This clearly indicates that the Court highly valued the COMPAS algorithm in the adjudication process.

Through using the risk-assessment algorithm as a supporting factor, the Court sentenced Loomis with seventeen years and six months imprisonment – the maximum charges for the two sentences that he entered into a guilty plea for. Consequently, Loomis filed a motion in the post-conviction process that argued the COMPAS algorithm is proprietary in nature –thus preventing him from understanding or analyzing his conviction process – and that it provides data that is only relevant to specific groups.[149] On the basis

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[147] STATE v. LOOMIS, *supra* note 141 at 15–17.
[148] *Id.* at 19.
[149] Liu, Lin, and Chen, *supra* note 138.

of this, Loomis claimed that it violated his right to be sentenced on accurate information and his right to an individualized sentence.[150] Furthermore, Loomis argued that the Court's usage of a risk-assessment tool that took gender into account, violated his constitutional right.[151]

It is important to note, the application of algorithmic assessment in the form of COMPAS is not without its criticism. An investigation launched by ProPublica found that African American offenders were classified, at twice the rate of Caucasians, as individuals with a high risk; despite a similar accuracy rate (63% vs. 59%) when predicting when individuals would reoffend.[152] While these allegations have been denied by Northpointe, they actively highlight AI's potential for bias.

The extent of which the Court's usage of the COMPAS risk-assessment violated Loomis' due process rights or his right to an explanation[153] is important, but it is not relevant to the main point behind this thesis. Instead the main focus is on how the COMPAS risk-assessment algorithm seemingly reaffirms the realists position surrounding the judicial hunch and its role in confirmation bias.

4. Online Dispute Resolution

Online Dispute Resolution (ODR) presents the closest modern *fac simile* to a fully autonomous AI-led decision-making process. This is due to the fact that the entirety of the process is online; this includes hearings and submissions, and the fact that AI plays a prominent role in analyzing data and scheduling hearings. Considered as a new method of alternative dispute resolution (ADR), ODR provides e-commerce buyers with an opportunity to resolve the *entirety* of disputes quickly, efficiently and completely online.

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[150] *Id.*

[151] *Id.*

[152] Jeff Larson et al., *How We Analyzed the COMPAS Recidivism Algorithm*, PROPUBLICA , https://www.propublica.org/article/how-we-analyzed-the-compas-recidivism-algorithm?token=H5XUYhBoyN_v2qMTsiJRtLcjOEweQC5e (last visited Oct 14, 2020).

[153] Iñigo De Miguel Beriain, *Does the use of risk assessments in sentences respect the right to due process? A critical analysis of the Wisconsin v. Loomis ruling*, 17 LAW, PROBABILITY AND RISK 45–53, 46 (2018).

Currently, several ODR systems utilize machine learning in order to handle large volumes of disputes, sort through files and personalize procedures and outcomes.[154] PayPal & eBay currently utilize ODR to allow parties to settle their claims by using negotiation software.[155] CyberSettle asks parties to make confidential offers in order to settle insurance and commercial disputes. Offers will only be disclosed by the AI when they match certain standards or a given amount of money.[156] Uniform Domain-Name Dispute-Resolution Policy, is another example of AI-involved adjudication that allows the resolution of disputes regarding the registration of domain names.[157] Furthermore, "many ODR systems now incorporate automation technologies such as expert systems, algorithmic resolutions and machine learning in order to handle large volumes of disputes, reduce costs and personalize procedures and outcomes".[158] In situations where a settlement cannot be reached between the two parties collectively, the money involved in the transaction is frozen until a judgment or settlement is reached. ODR is not just limited to e-commerce, as its application can extend to other court disputes. This form of dispute resolution was so successful that the European Union established regulation No 524/2013 with the purpose of providing access to quality dispute resolution tools.[159]

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[154] Stela Ayelet, *Can Computers Be Fair? How Automated and Human-Powered Online Dispute Resolution Affect Procedural Justice in Mediation and Arbitration*, BAR ILAN UNIVERSITY FACULTY OF LAW, 94, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3074311 (last visited Oct 15, 2020).
[155] Pablo Cortés, *What should the ideal ODR system for e-commerce consumers look like? The Hidden World of Consumer ADR: Redress and Behaviour*, CSLS OXFORD (2011).
[156] *Id.*
[157] *Id.*
[158] Ayelet, *supra* note 154 at 94.
[159] REGULATION (EU) NO 524/2013 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON ONLINE DISPUTE RESOLUTION FOR CONSUMER DISPUTES AND AMENDING REGULATION (EC) NO 2006/2004 AND DIRECTIVE 2009/22/EC (REGULATION ON CONSUMER ODR), .

C. Problematic Aspects of AI

The facets of AI that make it unique are the same factors that current legal frameworks will struggle to resolve. Firstly, its autonomy, whether through ML, supervised, unsupervised, or DLM: there exists a high level of autonomy within AI.[160] This is a double-edged sword, as a high level of autonomy opens the door for potential gaps within the process itself.[161] Secondly, there is a stark distinction between human decision-making and that of AI. Not only is AI capable of utilizing brute force – exploring as many scenarios as possible – it is also not limited by our potential biases or mode of thinking.[162] Furthermore, we possess clear "cognitive limitations" when it comes to assessing a multitude of variables within a time constraint.[163] This can result in humans settling for a suboptimal solution.[164] The constant development of AI, entails that it can analyze more possibilities than humans, and in a shorter amount of time.[165] This would undoubtedly lead to AI analyzing potential solutions that we, as humans, have not yet considered.[166]

Being unforeseeable not only makes AI unique but it also creates several legal problems, specifically, in the realm of liability.[167] This could even reach the point where ML actions pre-deployment could be considered as "an intervening force or act that is deemed sufficient to prevent liability for an actor whose tortious conduct was a factual cause of harm".[168] As the capacity for being unforeseeable could be intended by those that wrote the algorithm and/or those that maintain it .[169] Additionally, even the most experienced of developers might not be able to predict an AI's complete behavior after it has left their domain – however, it is important to emphasize that this unforeseeable behavior is part of the design, even if the specific behavior was not.[170] According to Matthew Scherer, in situations where there are victims of AI-caused harm, how can the

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[160] Scherer, *supra* note 14 at 363.
[161] *Id.* at 364–366.
[162] *Id.* at 364–366.
[163] *Id.* at 364.
[164] *Id.* at 364.
[165] *Id.* at 364.
[166] *Id.* at 364–366.
[167] *Id.* at 363–366.
[168] *Id.* at 365.
[169] Scherer, *supra* note 14.
[170] *Id.* at 366.

legal system hold developers accountable for something that was so unforeseeable? This could potentially leave the victim unable to obtain any legal award; as accountability and responsibility would not have been established.[171]

AI is not just limited to issues of "agency, foreseeability or [establishing] causation": there is also the issue of loss of control.[172] There is a risk factor that exists whenever an AI program is created, due to its level of autonomy. This risk can manifest itself in numerous situations, ranging from malfunctions to poor programming.[173] This inherent variable of autonomy and potential loss of control, is what makes AI completely separate from other examples of public risk that emerged as a consequence of our own human behavior.[174]

By simply observing several developments of the modern era, such as consumer goods, pollution and nuclear technology – we can safely infer that they went through their own phase of infrastructure planning and, consequently, regulation.[175] Building the necessary buildings, purchasing equipment and hiring labor, simplified the regulatory process.[176] Major corporations were the only non-government entities capable of funding and installing the aforementioned.[177] As a result, the individuals that had the responsibility of installing and operating the infrastructure were, at least, mostly on site.[178]

The development of unregulated public risks was unlikely due to the physical nature and visibility of the aforementioned developments. With AI that is not the case. According to Professor John McGinnis, AI research is "done by institutions no richer than colleges and perhaps would require even less substantial resources."[179] In hindsight, this is actually a gross understatement. As global interconnectedness is constantly increasing, anyone with a personal computer can build or participate in AI programs.[180] This will undoubtedly cause several regulatory challenges most notably "unawareness".[181] How can a government

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[171] *Id.* at 366.
[172] Scherer, *supra* note 14.
[173] *Id.* at 366–377.
[174] *Id.* at 366–367.
[175] *Id.* at 368–370.
[176] *Id.* at 368–370.
[177] *Id.* at 368–370.
[178] *Id.* at 368–370.
[179] John McGinnis, *Accelerating AI*, 104 NORTHWESTERN UNIVERSITY LAW REVIEW (2010), https://scholarlycommons.law.northwestern.edu/nulr_online/194; Scherer, *supra* note 14.
[180] Scherer, *supra* note 14 at 368–370.
[181] *Id.* at 368–370.

attempt to regulate something that is operating on such a minute, but equally diverse scale? Additionally, there is a "randomness" element, where you can have participants that are not in the same organization or entity, working on the same AI program – as this is not currently a legal requirement.[182] Moreover, it is standard practice for computer systems to utilize commercial off-the-shelf (COTS) components.[183] These systems are developed entirely outside the purchaser's control. AI systems are no different. The vast majority of AI systems that are utilized have been built, almost entirely, using code from external sources. The same can apply for the physical components of AI as well.[184]

Ultimately, if we consider all the aforementioned characteristics of AI, it is clear that those factors do not exist – at least not collectively or to this level – in other areas of public risk, and that is what makes AI so unique.[185] Even the individuals working on a particular project might operate in different countries without any specific contractual relationship that defines their roles and responsibilities.[186] Moreover, AI's small footprint and the relatively low price of AI programming, makes it extremely mobile in the sense that firms can simply move their projects to different countries – in order to maintain a more competitive advantage.[187] Especially if regulations proved too difficult or costly for them.[188]

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[182] *Id.* at 368–370.
[183] *Id.* at 370–372.
[184] *Id.* at 370–372.
[185] Scherer, *supra* note 14.
[186] *Id.* at 370–372.
[187] *Id.* at 370–372.
[188] *Id.* at 370–372.

III.   Artificial Intelligence in Jurisprudence

"There are only two significant questions in the field of law. One is, "How do courts actually decide cases of a given kind ?" The other is, "How ought they to decide cases of a given kind ?" Unless a legal "problem" can be subsumed under one of these forms, it is not a meaningful question and any answer to it must be nonsense."[189]

As previously mentioned, AI is currently being used in a multitude of ways; most notably, drafting contracts,[190] judicial prediction,[191] arbitrator selection,[192] determining recidivism rates and identifying legal precedent.[193] While there are no examples of fully autonomous AI judges and/or arbitrators, several researchers have successfully created AI models with the purpose of *ex ante* outcome prediction: the most prominent of which are the ECtHR and the US Supreme Court.[194] In the ECtHR case in particular, the researchers noted that the AI relied on factual circumstances and procedural background, as opposed to legal reasoning.[195] At surface value, this seems to confirm the realist position that judges rely on non-legal factors in their decision-making process. Additionally, AI's complex search engines, hardware capacity, ability to self-improve and its need to adjudicate on pre-existing data reaffirms a formalistic understanding of (1) the law being an entirely self-contained system (2) judges continuously search for legal principles as opposed to creating them. Subsequently, the findings of the ECtHR & US Supreme Court when coupled with the growing use of AI in algorithmic sentencing[196] and AI-legislation,[197] challenges important jurisprudential conceptions about the deterministic nature of the law and how we view the decision-making process. Nevertheless, very few scholars have attempted to look

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[189] Felix Cohen, *Transcendental Nonsense and the Functional Approach*, 35 COLUMBIA LAW REVIEW, 824 (1935), http://moglen.law.columbia.edu/LCS/cohen-transcendental.pdf.
[190] Kauffman and Soares, *supra* note 7.
[191] ArbiLex, *supra* note 7; Daso, *supra* note 7.
[192] ArbiLex, *supra* note 7.
[193] See *supra* II B
[194] See *supra* II B (1, 2)
[195] Aletras et al., *supra* note 84.
[196] STATE V. LOOMIS, *supra* note 141.
[197] LOI DE PROGRAMMATION DE JUSTICE 2018-2022, *supra* note 8; REGULATION (EU) 2016/679 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL ON THE PROTECTION OF NATURAL PERSONS WITH REGARD TO THE PROCESSING OF PERSONAL DATA AND ON THE FREE MOVEMENT OF SUCH DATA, AND REPEALING DIRECTIVE 95/46/EC, , 2016/679 , https://eur-lex.europa.eu/eli/reg/2016/679/oj.

at AI from a comparative jurisprudential perspective. This is especially evident in academic literature where the vast majority of articles are devoted to ethical debates,[198] human rights[199] and the role of AI in arbitration.[200]

Accordingly, this chapter seeks to, firstly, outline the jurisprudential debates surrounding decision-making and legal determinism. Secondly, argue that AI constitutes an *empirical* attempt at understanding the adjudicatory process - that is grounded in comparative jurisprudence. Thirdly, reject the use of inversed-AI in the legal process and, challenge the position held by Maxi Scherer regarding the impact of AI on legal theory. In outlining the debate surrounding legal certainty, this chapter embarks on a comparative jurisprudential study between the formalistic legal philosophy of Weber, Hart & Dworkin and the realistic legal philosophy of Jerome Frank, Felix Cohen, Karl Llewelyn and Theodore Schroeder. I then proceed to analyze these jurisprudential positions in relation to inversed and versed examples of AI. Moreover, this chapter seeks to answer the following questions: does AI's capability for outcome prediction further affirm Jerome Frank's position on the indeterminacy of the law? Does it affirm the classical formalist position? Or does AI seemingly confirm Cohen's position? Does AI solve the myth of legal certainty?

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[198] Pagallo, *supra* note 12.
[199] RASO ET AL., *supra* note 13.
[200] EIDENMUELLER AND VARESIS, *supra* note 15.

A. A Formalistic Understanding of the Law

In this section, I aim to give an overview on the evolution of the classical formalist position, beginning with Max Weber's seminal work *Wirtschaft und Gesellschaft* and Neil MacCormick's text on *Legal Reasoning and Legal Theory*. Additionally, this assessment incorporates modern iterations of a formalistic understanding of the law. Which includes, Hart's partial departure from the determinacy of the law and his analysis of law & language: for which he uses as a basis for his argument. While a significant portion of the academic literature is concerned with the morality and political dimension of legal certainty, I focus specifically on the debates surrounding legal certainty and 'hard cases' that are directly relevant to AI. This section concludes with assessing the implications of versed and inversed-AI in light of formalistic legal theories. Most notably, juxtaposing Hart's acceptance of hard cases and, consequently, the partial indeterminacy of the law with Dworkin's acceptance of legal certainty. Furthermore, this section highlights emerging legal developments – most notably the LPJ and the General Data Protection Regulation (GDPR) – that challenge the role of inversed-AI in legal decision-making.

1. Classical Formalism

Despite no longer being 'fashionable', legal formalism is one of the most prominent legal theories surrounding judicial decision-making. Unlike realism, formalism is not only concerned with how the law is, but how it *should* be. Accordingly, it contains both a descriptive and a normative element.[201] The formalist position on the nature of the law is that it is "comprehensive and logically ordered".[202] Even in scenarios where judges are forced to give a ruling on an area that is not as well developed, law is not created.[203] Instead, judges merely apply preexisting laws.[204] Formalism's advocacy for the deterministic nature of the law is evident in James C. Carter's statement: "That the judge cannot make law is

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[201] BRIAN Z. TAMANAHA, BEYOND THE FORMALIST-REALIST DIVIDE: THE ROLE OF POLITICS IN JUDGING 13 (2009), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=483591 (last visited Mar 15, 2021).
[202] *Id.* at 13.
[203] *Id.* at 13.
[204] *Id.* at 13.

accepted from the start. That there is already a rule by which the case must be determined is not doubted. . . . It is agreed that the true rule must somehow be *found*."[205]

Formalism claims that the legal decision-making process should be a closed logical system that operates free from political thinking, as it is merely a mechanical process. Inside this mechanical process, judges use pre-determined legal rules and apply them to the facts of the case to issue a decision. This is summarized in Neil MacCormick's text on *Legal Reasoning and Legal Theory* where he states "rule plus fact equals conclusion".[206] On the bases of the aforementioned point, formalism expands to make the following claims: (1) the law is rationally determinate, in the sense that the legal reasons available to the judge at the time of the decision-making process points to only one outcome (2) the decision-making process is considered to be autonomous as the judge can adjudicate without resorting to morality or politics.[207] This notion of an entirely self-contained system of norms is what defines the formalist aspiration of what the law *should* be.[208] The bases behind it is that formalists seek to create a system that is capable of containing the answers to any and all legal questions. Roberto Unger, a notable critique of formalism describes it as:

> "Formalism is a commitment to, and therefore also a belief in the possibility of, a method of legal justification that contrasts with open-ended disputes about the basic terms of social life, disputes that people call ideological, philosophical or visionary. Such conflicts fall far short of the closely guarded canon of inference that the formalist claims for legal analysis. . . . A second distinctive formalist thesis is that only through such a restrained, relatively apolitical method of analysis is legal doctrine possible. . . . Doctrine can exist, according to the formalist view, because of a contrast between the more determinate rationality of legal analysis and the less determinate rationality of ideological contests."[209]

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[205] JAMES C. CARTER, THE IDEAL AND THE ACTUAL IN THE LAW 10 (1890), http://hdl.handle.net/2027/hvd.32044080054950.

[206] NEIL MACCORMICK, LEGAL REASONING AND LEGAL THEORY x (1994).

[207] Brian Leiter, *Legal Formalism and Legal Realism: What is the issue?*, 16 LEGAL THEORY 111–133, 1 (2010).

[208] SCOTT VEITCH ET AL., JURISPRUDENCE: THEMES AND CONCEPTS : THEMES AND CONCEPTS 118 (2012), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=1244681 (last visited Mar 15, 2021).

[209] Roberto Mangabeira Unger, *The Critical Legal Studies Movement*, 96 HARVARD LAW REVIEW, 1–3 (1983), https://www.jstor.org/stable/1341032 (last visited Apr 26, 2021).

As previously mentioned, formalism assumes that there exists a connection between legal reasoning and deductive logic. It is in Max Weber's seminal work *Wirtschaft und Gesellschaft* where we can clearly see how he draws from what he views as the pinnacle of jurisprudence of his time, to build the classical formalist claim:[210]

> "First, that every concrete legal decision be the "application" of an abstract legal proposition to a concrete "fact situation"; second, that it must be possible in every concrete case to derive the decision from abstract legal propositions by means of legal logic; third, that the law must actually or virtually constitute a "gap- less" system of legal propositions, or must, at least, be treated as it if were such a gapless system; fourth, that whatever cannot be "construed" rationally in legal terms is also legally irrelevant; and fifth, that every social action of human beings must always be visualized as either an application or "execution" of legal propositions, or as an "infringement" thereof, since the "gapless- ness" of the legal system must result in a gapless "legal ordering" of all social conduct."[211]

Weber's formalistic and mechanical approach to law is based on the following thesis: the only way capitalism can flourish, is if it exists in a legal environment that is predictable "the capitalistic enterprise… cannot do without legal security".[212] This level of 'legal science' can only reach what Weber deems proper predictability in the form of rational legal thought i.e. a closed logical system.[213] Accordingly, legal predictability and capitalism are intrinsically linked because predictable law is needed in order to develop commercial certainty, which is needed for successful economic planning.[214] What Weber considers to be the 'modern capitalist enterprise' is based "primarily on calculation and presupposes a legal and administrative system whose functioning can be rationally predicted, at least in principle, by virtue of its fixed general norms, just like the expected

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[210] KAARLO TUORI & PROFESSOR TOM D. CAMPBELL, CRITICAL LEGAL POSITIVISM 42 (2002), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=4817364 (last visited Mar 15, 2021).
[211] MAX WEBER, ECONOMY AND SOCIETY 657–658 (1978), https://www.ucpress.edu/book/9780520280021/economy-and-society (last visited Apr 26, 2021).
[212] *Id.* at 883.; OFER RABAN, MODERN LEGAL THEORY AND JUDICIAL IMPARTIALITY (2003), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=220282 (last visited Mar 15, 2021).
[213] RABAN, *supra* note 212 at 31.
[214] *Id.* at 32–37.

performance of a machine".[215] Similar to Weber's theory, more contemporary forms of formalists – such as Hart – claim that modern law employs rational legal thought.

2. Modern Formalism

In contemporary times, it is considered that "legal theorists… unanimously reject any kind of formalism" and in some legal circles it is even considered an insult to call someone a formalist.[216] Nevertheless, the notion that – at least in clear cases – the law can be considered to be devoid of a moral & political dimension, and that it is rationally determinate, still exists today. In *The Concept of Law*, Hart refutes the realist claim that the meaning behind words is "completely arbitrary and unpredictable" and judges adjudicate how they see fit.[217] He does this by making an important distinction between clear cases and hard cases. Hart is of the opinion that clear cases are examples of when the law can be rationally determinate and applied logically, without the consideration of non-legal factors.[218] But in hard or what he calls 'penumbral cases', he concedes that it can be difficult to determine whether the law applies or not.[219] Accordingly, it is impossible for the law to be entirely rationally determinate because (1) there does not exist a set of rules that can provide a predetermined answer to every case that might come up (2) complete guidance of judicial conduct is impossible.[220] Hart's work constitutes a partial departure from classical formalists in that he recognizes that the law cannot be rationally determinate all the time. It is in Hart's *The Nightmare and the Noble Dream* where he challenges the notion that judges are being forced to act as lawmakers in when they are "faced with the indeterminacy of a particular legal rule".[221] He views this act of being "forced" as merely

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[215] WEBER, *supra* note 211 at 1394–1395.

[216] THOMAS C. GREY, *The New Formalism* 1 (1999), https://papers.ssrn.com/abstract=200732 (last visited Mar 15, 2021).

[217] H. L. A. HART, THE CONCEPT OF LAW (2nd ed ed. 1961).

[218] RAYMOND WACKS, UNDERSTANDING JURISPRUDENCE: AN INTRODUCTION TO LEGAL THEORY 80 (2014), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=1591410 (last visited Mar 15, 2021).

[219] HART, *supra* note 217; WACKS, *supra* note 218 at 80.

[220] WACKS, *supra* note 218 at 80; SCOTT J. SHAPIRO, LEGALITY 260 (2011), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=3300900 (last visited Mar 15, 2021).

[221] H.L.A. Hart, *American Jurisprudence Through English Eyes: The Nightmare and the Noble Dream*, UNIVERSITY OF GEORGIA LAW, 979 (1977), https://digitalcommons.law.uga.edu/lectures_pre_arch_lectures_sibley/33.

an illusion, as judges do not adjudicate in a legal vacuum; they adjudicate within a framework of "well established rules, principles, standards, and values".[222]

The most interesting part of Hart's argument is his reasoning. According to Hart, the system of decision-making can be understood through analyzing the relationship between law and language.[223] He argues that the language through which the rules are written, possesses an 'open texture'.[224] This open texture is the reason why rules can be interpreted differently. The importance that Hart allocates to language being the source of both legal certainty and uncertainty is especially evident in AI decision-making models' reliance on natural language processing and textual analysis.[225] Nevertheless, Hart is criticized for his position on language and law, because when realists attack a "model law as a system of rules… it is not the law's linguistic uncertainty that is the target, but the process of precedential legal reasoning."[226] Nevertheless, the nature of legal determinacy is something that Hart viewed quite negatively. The act of negating the existence of 'hard cases' by classical formalists, strips judges from the ability to shape or change the law in order to adapt to newly emerging social aims and consequences or as Shapiro phrases it "they squander the moral opportunities afforded by the penumbra."[227]

3. Ronald Dworkin's Resuscitation of Legal Formalism

Despite Hart's best efforts to denounce classical formalism – through discrediting its conceptual nature, claims about the role of the judge and its position on legal determinacy – several facets of formalism have limped on to develop a more refined jurisprudential account.[228] This is partly due to the work of Ronald Dworkin on the issue of legal determinacy. Dworkin established a distinction between what he views as a 'rule' and a 'principle'.[229] Rules are what he considers to be "all or nothing" applications, they either

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[222] *Id.* at 979.
[223] HART, *supra* note 217; WACKS, *supra* note 218 at 80.
[224] HART, *supra* note 217; WACKS, *supra* note 218 at 80.
[225] See *supra* Section II B(1)
[226] WACKS, *supra* note 218 at 80.
[227] SHAPIRO, *supra* note 220 at 257.
[228] *Id.* at 261.
[229] Ronald M. Dworkin, *The Model of Rules*, 35 THE UNIVERSITY OF CHICAGO LAW REVIEW 14–46, 20–24 (1967).

apply or they do not.[230] An example of this would be the signature of at least two parties for a contract to be valid. If there is no signature the contract is not valid.[231] Principles, according to Dworkin, are not definitive. Their "weight" supports different outcomes.[232] Accordingly, when two principles are conflicting, the principle with the most weight is the correct decision.[233] This conflict between legal principles is evident in hard cases.[234] In hard cases, judges use legal principles to reach a particular result. In *Riggs v. Palmer,* Elmer Palmer poisoned his grandfather to avoid the possibility of being removed from his grandfather's will and, thus, being denied his inheritance.[235] Despite Palmer being found guilty of murder, he petitioned the court for his inheritance.[236] The law at the time supported Palmer's claim as they did not contain exceptions for murderous beneficiaries.[237] Instead of simply applying the New York statue of wills, the court considered the principle that an individual should not directly profit as a result of his or her own wrongdoing.[238] The court, ultimately, ruled against Palmer and he was subsequently denied his inheritance. From Dworkin's perspective, this would be an example of the principle of not profiting from your own wrongdoing having a more aggregated weight.[239]

As a result of having demonstrated the Court's ability to utilize legal principles to adjudicate, Dworkin viewed this as confirmation for the formalist position that the law is indeed determinate.[240] In the case of *Riggs v. Palmer,* the judges did not suddenly consider this an example where the law was ungoverned, instead they continued to look at legal material until they found an applicable rule.[241] This rule, according to Dworkin, is not an example of judges expanding their legal mandate to address legal gaps by passing on moral judgments as if they were legislators.[242] To the contrary, they fulfilled the role of judges who performed their obligation of legal reasoning. "They assume that there are norms that

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[230] SHAPIRO, *supra* note 220 at 262.
[231] *Id.* at 262.
[232] Dworkin, *supra* note 229 at 27.
[233] SHAPIRO, *supra* note 220 at 262.
[234] Dworkin, *supra* note 229 at 45.
[235] SHAPIRO, *supra* note 220 at 262.
[236] *Id.* at 262.
[237] *Id.* at 262.
[238] *Id.* at 262.
[239] *Id.* at 262.
[240] Dworkin, *supra* note 229 at 41.
[241] SHAPIRO, *supra* note 220 at 263.
[242] Dworkin, *supra* note 229 at 39–46.

resolve this dispute in question and they are under a legal obligation to find these norms and apply them to the case at hand."[243]

It is important to note, that despite Dworkin agreeing with classical formalists regarding legal determinacy, he rejected their conceptual approach towards legal analysis and deductive logic.[244] Dworkinian principles are not mechanical, nor do they adopt a "rule like" logic.[245] Instead, the principles are compared and contrasted based on who has the most aggregate weight to resolve this specific legal issue.[246] Accordingly, Dworkin's philosophy is grounded in morality as opposed to the geometrical strategy applied by formalists.[247] This is because the law, in Dworkin's eyes, is governed by the "adjudicative principle of inclusive integrity."[248]

Additionally, Dworkin rejected the formalist methodology for discovering the "pedigree" of legal principles in previous legal decisions.[249] Instead, he believed moral reasoning should be the sole method for discovering legal principles, and that they are binding because they are "morally appropriate".[250] it is important to note, Dworkin did not completely disregard the role of judicial 'pedigree', as he noted the judges still cared about previous judicial decisions.[251]

4. Artificial Intelligence: A Formalistic Resurgence?

Now while Weber was discussing legal predictability in capitalism as a way of developing a moral virtue, his argument on the need of a 'legal science' still very much relevant in the jurisprudential discussion surrounding AI. The emergence of AI in the legal field creates a contemporary validation for Weber's work on the capitalist enterprise, and its need for a deterministic system.

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[243] SHAPIRO, *supra* note 220 at 263.
[244] *Id.* at 264–265.
[245] *Id.* at 264–267.
[246] *Id.* at 264–267.
[247] *Id.* at 264–267.
[248] RONALD M. DWORKIN, LAW'S EMPIRE 410 (1986).
[249] Dworkin, *supra* note 229 at 17.
[250] SHAPIRO, *supra* note 220 at 265.
[251] *Id.* at 264–266.

The overarching nature of formalism uniquely places it within the crosshairs of AI, because AI presents practical, as well as, theoretical implications for legal decision-making. AI's predictive nature, and comprehensive data sets present a unique step towards the legal determinism that Weber is stating exists within the law. Firstly, Weber's position on the law being an entirely self-contained system is supported by AI. As accurately portrayed by Scherer, the estimation that consumer-level computers would be capable of reaching a hardware capacity of several petabytes does lend substantial credence to the law's ability of being an entirely self-contained system.[252] Especially since fifty petabytes are capable of storing the "entire written works of [human]kind from the beginning of recorded history in all languages".[253] In addition to the decrease of hardware limitations, the creation of complex data sets – that include judicial precedent and case analysis – by entities such as Arbitrator Intelligence, ArbiLex and Jus Mundi[254] creates a solid basis for a more deterministic legal application. Secondly, versed-AI's reliance on NLP and textual analysis, supports Hart's emphasis on the relationship between law and language. As well as his critique that the meaning of words is not completely arbitrary, unpredictable and that judges do not, in fact, adjudicate how they see fit. However, it is important to note, the reliance of inversed-AI on textual analysis i.e. the US Supreme Court and ECtHR, actually contradicts Hart. This is because in that particular situation, the meaning of words are in fact arbitrary and unpredictable. Thirdly, AI's need to adjudicate on the basis of applying pre-existing data, reaffirms Dworkin's position that judges do not create law, instead they continue to search for the applicable rule. Fourthly, the quantifiable nature of versed-AI meets – to some extent – the rationality and logical requirement posited by formalists in the application of the law. However, it does shift from what formalists consider a 'mechanical' or 'geometric approach'.

The formalist need for the decision-making process to be an entirely self-contained system through which judges never rely on moral/political considerations is only partially validated by AI. Where versed-AI and classical formalism part ways is in their lack of differentiation between clear and hard cases. In clear cases, there is no inherent reason for

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[252] Scherer, *supra* note 11 at 9.
[253] *Id.* at 9.
[254] See *supra* Section II B

versed-AI to not be able to apply the 'rules' of that specific case. In hard cases - where Dworkin's 'principles' apply – it would be difficult to create an algorithm that can *purposefully* search for said principles in different cases. This is because judges have the discretion to look at cases that exist in other legal fields, in order to determine the applicability and appropriate weight of said principle. Also, a judge's reliance on 'moral considerations' when weighing the principles would be near impossible to *deliberately* incorporate into AI – it would depend on the level of training, sophistication of the algorithm, size of the data set and the ability to establish a clear link of how the AI weighed this principle in relation to the rest. On the other hand, the application of inversed-AI seemingly renders the formalist position outdated. Firstly, inversed-AI would change both the normative (how they should decide) and descriptive (how they actually decide).[255] The inversed-AI base for decision-making would be the balance of probabilities; as opposed to predetermined rules. Accordingly, this mode would not follow the geometrical, logical form that formalism puts forth.[256] On the contrary, it would constitute a significant departure from the very essence of formalist jurisprudence.[257] As decision-making would transition from rule-based reasoning to probabilistic inferences.[258]

Furthermore, using examples of inversed-AI as markers, or values that indicate potential is one thing; considering inversed-AI models as legitimate examples for AI in decision-making – and consequently using them to develop an opinion on legal determinism is absurd. While they are the most refined iterations for AI's potential for legal predication, they are, on a fundamental level, in direct opposition to the legal process. This is because the legal process is ultimately driven by different factors. As previously discussed, the application of inversed-AI in the medical field is extremely beneficial in diagnosing. In the financial sector, inversed-AI's capacity for building investment portfolios is also beneficial due to its profitability. If the AI is consistently reliable or at least more reliable than its human counterparts that are performing the same task, then it is deemed to be successful. This is also because the aforementioned industries are result-driven. The law's reliance on legal procedure, due process, legal principles, and the

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[255] Scherer, *supra* note 11 at 29.
[256] *Id.* at 29.
[257] *Id.* at 29.
[258] *Id.* at 29.

methodology employed – whether legitimate or not – is as important as the solution itself. Accordingly, the importance of interpretability and understanding how an algorithm reached a particular decision is not something that can just be moved aside. This is supported by the restrictive 'explainability' requirements put forth by AI-specific legislation that specifically tackles examples of inversed-AI.

Adopted in 2016 by the European Union, the General Data Protection Regulation instituted the right of an individual to not to be subject to a decision based entirely on "automated processing".[259] Underneath the aforementioned right, the GDPR expanded to include several safeguards that are antithetical towards inversed-AI models – most notably Article 14:

> "In addition to the information referred to in paragraph 1, the controller shall provide the data subject with the following information necessary to ensure fair and transparent processing in respect of the data subject:
>
> a.   the period for which the personal data will be stored, or if that is not possible, the criteria used to determine that period;
> b.   where the processing is based on point (f) of Article 6(1), the legitimate interests pursued by the controller or by a third party;
> c.   the existence of the right to request from the controller access to and rectification or erasure of personal data or restriction of processing concerning the data subject and to object to processing as well as the right to data portability;
> d.   where processing is based on point (a) of Article 6(1) or point (a) of Article 9(2), the existence of the right to withdraw consent at any time, without affecting the lawfulness of processing based on consent before its withdrawal;
> e.   the right to lodge a complaint with a supervisory authority;
> f.   from which source the personal data originate, and if applicable, whether it came from publicly accessible sources;
> g.   the existence of automated decision-making, including profiling, referred to in Article 22(1) and (4) and, at least in those cases, meaningful information about the logic involved, as well as

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[259] GENERAL DATA PROTECTION REGULATION, *supra* note 197.

the significance and the envisaged consequences of such processing
for the data subject."[260]

The 'right to explanation' posited in Article 14, specifically subclause (g) creates a significant barrier towards the role that inversed-AI models can assume in the legal decision-making process. In addition to the GDPR, the French government's LPJ instituted similar restrictive requirements. Article 4 stipulates that the provider must guarantee that the technology allows "control of the process and of all its evolutions in order to explain, details and in a comprehensible manner".[261] While the GDPR and the LPJ are not globally representative, they do represent validation towards the inherent need for any technology used in the decision-making process to be explainable. Accordingly, using or studying the implications for inversed-AI – as posited by Scherer – as examples for AI's potential in the legal field is erroneous because they would not be able to meet the explainability requirements put forth by emerging legislation.

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[260] *Id.* at 14.
[261] LOI DE PROGRAMMATION DE JUSTICE 2018-2022, *supra* note 8.

B. A Realistic Approach to the Law?

In this section, the main focus of analysis is the American Legal Realist position on the indeterminacy of the law. This is done by assessing realism as a byproduct of Felix Cohen's *functional approach* and the myth of legal certainty – as posited by Jerome Frank. It is important to note, the realist position on legal certainty is grounded in their understanding of the decision-making process. This includes their *empirical* evaluation of the judicial hunch and the written opinion. Accordingly, this section not only acts as a critique for the formalist understanding, but also serves to explore the validity of AI's reliance on factors that were deemed moot by formalists. By highlighting the different realist positions, this section also seeks to demonstrate that lack of congruence that exists within realist jurisprudence – a trap that some scholars seem to find inescapable. While some overlap is necessary and does in fact exist, treating realism as one body of work diminishes the nuanced arguments that exist within it. Consequently, preventing meaningful engagement with its jurisprudence.

1. American Legal Realism

> "Realists can be read as advocating an empirical theory of adjudication precisely because they think the traditional jurisprudential project of trying to show decisions to be justified on the basis of legal rules and reasons is a failure"[262]

Emerging as one of the most important jurisprudential movements in the United States, legal realism acted as an antithetical attack on the formalistic fantasy that judicial decisions were made apolitically, and on the basis of a mechanical application of law. When analyzing legal realist theory, it is important to distinguish between American Legal Realism and Scandinavian Realism (SR). Operating on the more extreme-side of realism, SR flatly rejected anything that even remotely related to metaphysics. Axel Hägerström even ventured as far as to say that no legal rule can be said to 'exist'. Ideas such as 'justice',

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[262] Brian Leiter, *Legal Realism and Legal Positivism Reconsidered*, 111 THE UNIVERSITY OF CHICAGO PRESS 278–301, 284 (2001).

'legal certainty', 'rights' and 'duties' are pointless as they are false creations that are not based in reality or "imbued with magical significance".[263]Additionally, since the law is a byproduct social welfare, jurisprudence must then be transformed into a natural science that is empirically based.[264]

American Legal Realism – unlike its Scandinavian counterpart – was comprised of lawyers and social scientists. After having committed *empirical* assessments, realists argued that courts did not decide cases *primarily* due to the law. But rather, on a judge's personal opinion on what is to be considered as fair – somewhat *ex aequo et bono*. Furthermore, they believed that legal reasoning and, consequently, its legal application, were merely post-hoc rationalization for a decision that the judge had already taken on the basis of his or her own biases.[265] However, realists have not taken a strong explicit stance on their philosophical lenience towards the origin of legal theory – this is especially notable from Hart's strong refutation of realism that has largely gone unchallenged.[266] Despite the fact that both movements – American and Scandinavian – are realists in their own right, American Legal Realists devoted their attention to the study of adjudication. While there is some overlap with regard to the Scandinavian's focus on the concept of law, the fact that American Legal Realists are also legal practitioners makes their work particularly relevant when analyzing the implications of AI on legal jurisprudence. Realism's positivistic acceptance and reliance on empirical testing, is one of the main reasons why it presents such a unique relationship with AI in legal decision-making.

The school of American Legal Realism considers Oliver Wendell Holmes, Jr. as their founding father, as he was the first to distinguish clearly between law and morality.[267] In his seminal work *The Path of Law*, he asked his students to distinguish between what the law is and what it should be.[268] Realists had several main arguments, most notably that legal certainty is a myth. By this, realists meant two things: (1) the law was rationally

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[263] WACKS, *supra* note 218 at 154.
[264] *Id.* at 154.
[265] *Id.* at 154–155.
[266] Brian Leiter, *American Legal Realism*, UNIVERSITY OF TEXAS LAW, 1–2 (2002), https://papers.ssrn.com/abstract=339562 (last visited Mar 21, 2021).
[267] *Id.* at 3.
[268] Oliver Wendall Holmes, *The Path of Law*, 78 BOSTON UNIVERSITY LAW REVIEW (1998), https://heinonline-org.libproxy.aucegypt.edu/HOL/Page?lname=&handle=hein.journals/bulr78&collection=&page=699&collection=journals.

indeterminate, because – in their view – legal reasons did not justify the judicial ruling (2) the law was causally indeterminate because the legal reasons did not sufficiently explain why judges decided as they did.[269]

The realist argument for rational indeterminacy was based on the two conflicting methods of interpreting precedents and statutes. This was especially addressed by Llewellyn who showed these contradictions "A statute cannot go beyond its text," and "To effect its purpose a statute must be implemented beyond its text".[270] Accordingly, the fact that the court can appeal to either point – when placed in a situation that requires statutory interpretation – demonstrates that lack of legal certainty. As either method of legal reasoning would support two antithetical interpretations of the statute. Llewellyn expanded on the lack of legal determinacy through his consideration of the interpretation of legal precedent, where he states that precedent can be interpreted "strictly" or "loosely", and either interpretation is "recognized, legitimate, honorable".[271] It is important to note, the American Legal Realist school – when discussing legal indeterminacy – did so in the appellate review stage, which is where one can expect a "higher degree of uncertainty". This is evident in Llewellyn's claim "In any case doubtful enough to make litigation respectable the available authoritative premises… are at least two, and…the two are mutually contradictory as applied to the case at hand".[272]

The realists proceed to expand their claim regarding rational indeterminacy to make a larger point regarding how judges reach a particular decision. Realists believe that judges, at least primarily, rely on facts, personal leniencies and sociopolitical factors – as opposed to legal rules – when adjudicating. According to Oliphant, courts "respond to the stimulus of the facts in the concrete cases before them rather than to the stimulus of over-general

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[269] WACKS, *supra* note 218 at 145–157; JEROME FRANK, LAW AND THE MODERN MIND (1930); Leiter, *supra* note 266; Karl Llewellyn, *Remarks on the Theory of Appellate Decision and the Rules Or Canons about how Statutes are to be Construed*, 3 VANDERBILT LAW REVIEW (1949), https://heinonline-org.libproxy.aucegypt.edu/HOL/Page?lname=&handle=hein.journals/vanlr3&collection=&page=395&collection=journals.
[270] Llewellyn, *supra* note 269 at 401.
[271] KARL N. LLEWELLYN, THE BRAMBLE BUSH: THE CLASSIC LECTURES ON THE LAW AND LAW SCHOOL 68 (2008), http://ebookcentral.proquest.com/lib/aucegypt/detail.action?docID=4700982 (last visited Apr 27, 2021); Leiter, *supra* note 266 at 4.
[272] Karl N. Llewellyn, *Some Realism about Realism: Responding to Dean Pound*, 44 HARVARD LAW REVIEW 1222–1264, 1239 (1931); Leiter, *supra* note 266 at 6.

and outworn abstractions in opinions and treatises".[273] In the same vain, Jerome Frank cited Chancellor Kent who stated that "He first made himself 'master of the facts' then he "saw where justice lay, and the moral sense dictated the court half them time; I then sat down to search the authorities… but I almost *always found principles suited to my view of the case*".[274]

When analyzing the realist claim, it is important not to view their position as simply emphasizing the role of case facts to the decision, but as an *empirical* attempt at making the decision-making process more transparent. Accordingly, their point, is not the denial of the role of law in influencing decisions, rather that it has little to no effect in the 'difficult' cases that reached an appellate review.[275] Ultimately, the realist notion that "the law of any case is what the judge decides"[276] is a consequence of its empirical process that aims to expose judicial decision-making as not simply the mechanical application legal rules. Accordingly, before assessing the relevancy of the realists' findings, it is important to understand its empirical foundation.

The bases of the realist critique emerged from its inherent believe that all disciplines should aspire to "emulate" the methods of natural science.[277] The most prominent of which is empirical testing.[278] Realists believed that legal hypothesis or the attempt at predicting and understanding judicial behavior had to be tested.[279] Accordingly, it can be said that the legal realist empirical project is primarily concerned with exposing the decision-making process. This is why many realists placed an emphasis on the creation of a "genuine science of the law [that aimed to] discover which "stimuli" (e.g., which factual scenarios) produce which "responses" (i.e., what judicial decisions)."[280] According to Leiter, the realist understanding of the "science of the law" is not solely concerned with the study of judicial

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[273] Herman Oliphant, *A Return to Stare Decisis*, 14 AMERICAN BAR ASSOCIATION JOURNAL 71–107, 75 (1928); Leiter, *supra* note 266 at 7.

[274] FRANK, *supra* note 269 at 104; Leiter, *supra* note 266 at 7.

[275] Leiter, *supra* note 266 at 8.

[276] Julius Paul, *Jerome Frank's Attack on the Myth of Legal Certainty*, 36 NEB. L. REV. 547–563, 551 (1957).

[277] Leiter, *supra* note 266 at 2.

[278] *Id.* at 2.

[279] *Id.* at 2.

[280] *Id.* at 2.

opinions, as viewed by Christopher Langdell.[281] It expanded to include "economic, social and political dimensions" that realists viewed as crucial to truly understand the law.[282]

It is important to note, the majority of realists do in fact believe that lawyers are capable of predicting judicial decisions. According to Leiter:

> "Judicial decisions, these Realists argued, fall into discernible patterns (making prediction possible), though the patterns are not those one would expect from the existing legal rules. Rather, the decisions fall into patterns correlated with the underlying factual scenarios of the disputes at issue: it is the judicial response to the ''situation type''—that is, the distinctive factual pattern—that determines the outcome of the case."[283]

The impact of the legal realist empirical project has been especially important in judicial reformation, as it allowed legal practitioners to take notice of how judges are not only being influenced by "legal rules".[284] Moreover, it allowed them tangibly discuss the political and socioeconomic factors that realists believed affected the decision-making process.[285]

2. Felix Cohen's Functional Approach

As previously mentioned, there were several members that were part of the initial realist movement, one of which was Felix Cohen. Cohen held a prominent position within, what was described as a "youth" movement – with Martin Golding even referring to Cohen as the movement's "baby".[286] It was Cohen's background in philosophy and law that allowed him to become the benchmark for understanding the realist movement's "philosophical underpinnings [and its] relationship to contemporary currents of

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[281] *Id.* at 22.
[282] *Id.* at 22.
[283] Leiter, *supra* note 262 at 281.
[284] A COMPANION TO PHILOSOPHY OF LAW AND LEGAL THEORY, 249 (Dennis Peterson ed., 2nd ed. 2010), https://onlinelibrary.wiley.com/doi/10.1002/9781444320114 (last visited Jul 16, 2021).
[285] Leiter, *supra* note 266 at 22.
[286] Martin P Golding, *Realism and Functionalism in the Legal Thought of Felix S. Cohen*, 66 CORNELL LAW REVIEW 27, 1032 (1989).

philosophical thought".[287] While it cannot be claimed that any one individual could represent the realist movement, Cohen did "represent the realist movement's best theoretical work".[288]

Cohen's theoretical critique developed as a result of his rejection of the traditionalist position i.e. judges do not create the law, they continuously search till they apply the applicable law. Using this as his base, Cohen launched his critique of the formalist doctrine.[289] There were three particular issues that Cohen took issue with "(1) the abuse of the notion of logic; (2) the circularity of legal arguments; and (3) the false characterization of legal questions as purely legal questions."[290] Underneath the aforementioned points was his belief that uncertainty could not be removed entirely, even if the "judicial volition" could be predicted with a high degree of probability.[291] Additionally, Cohen challenged the traditionalist notion surrounding the selection of precedent on the basis of logic. In his eyes, the application of a judge's selection criteria only indicates whether that particular precedent is "good", not that the rule is logical or reasoned.[292] Secondly, when it comes to the judicial application of legal rules from previous cases, Cohen, as well as realists, maintained that this does not indicate a logical application either.[293] As judges tailor-pick their own precedent for that particular case.[294] Accordingly, the selection of precedent within cases that require "extra-logical grounds" is always an ethical or moral decision.[295] Cohen based this on his belief that logic "can never establish that one case is a precedent for another case. That is because no two cases can possibly be alike in all respects… Whether the respects in which two cases are alike are important is a question not of logic but of values".[296]

Furthermore, Cohen disagreed with Jerome Frank's position on the futility and childishness of legal certainty. He based this on the fact that realists applied some sort of

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[287] *Id.* at 1033.
[288] *Id.* at 1034.
[289] *Id.* at 1043.
[290] *Id.* at 1043.
[291] *Id.* at 1043.
[292] *Id.* at 1044.
[293] *Id.* at 1044.
[294] *Id.* at 1044.
[295] *Id.* at 1045.
[296] FELIX COHEN, THE LEGAL CONSCIENCE 129 (1960); Golding, *supra* note 286 at 1045.

standard – whether implicit or otherwise – in assessing judicial decisions.[297] This standard entails an inherent position on how they believe the law should behave. Accordingly, this prominent realist distinction between what the law *is* and how it *should* behave is not as clear cut as they would have us believe.[298] However, it is important to note, Cohen applied a clear distinction between the process of data collection and its, subsequent, ethical "criticism".[299]

Despite Cohen's totality of work, *Transcendental Nonsense and the Functional Approach* remains his most notable contribution to legal jurisprudence. Published in 1935, Cohen sought to develop his definitional understanding of the law by including his theories on "the nature of law, judicial decisions, and legal concepts" in a larger philosophical framework that he called "functionalism".[300] Functionalism, in Cohen's words meant:

> "[I]nstead of assuming hidden causes or transcendental principles behind everything we see or do, we are to redefine the concepts of abstract thought as constructs, or functions, or complexes, or patterns, or arrangements, of the things that we do actually see or do. All concepts that cannot be defined in terms of the elements of actual experience are meaningless."[301]

Where Cohen manages to both embrace and separate himself from realism, is through his claim that realist jurisprudence is merely a consequence of the *functional approach*. According to Golding, this was based on his belief that realism is merely an early process in a "vast research program" that attempts to discover how the law works, and which specific socioeconomic factors affect the judicial decision-making process.[302]

3. The Myth of Legal Certainty

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[297] Golding, *supra* note 286 at 1033.
[298] COHEN, *supra* note 296 at 179; Golding, *supra* note 286 at 1049.
[299] Cohen, *supra* note 189 at 847.
[300] Golding, *supra* note 286 at 1051; Cohen, *supra* note 189.
[301] Cohen, *supra* note 189 at 826.
[302] Golding, *supra* note 286 at 1055.

As previously discussed, one of the biggest contributions to legal theory has been the criticism of the "worship of legal rules" by legal realists – most notably Jerome Frank.[303] Frank's critique of legal certainty can be surmised in two key points (1) the immaturity of the quest itself (2) the fact that the law's very nature demands it to be fluid.[304] This is due to the fact that "constant development of unprecedented problems requires a legal system capable of fluidity and pliancy"[305]

Frank's notion that rule certainty is nothing but a childish dream to portray the law as a father-substitute, is borrowed from psychological studies done by Jean Piaget.[306] Accordingly, the search for certainty within law, is merely a quest conducted by us "children" to find a father-like substitute that would act as a controlling force.[307] Frank takes this claim a step further by stating that even the notion to desire certainty in law is equivalent to indulging in a childhood fantasy. This notion was not only addressed to the American people, but rather, Frank was telling judges and lawyers of America to grow up.[308] "It is accordingly that most judges and lawyers, for Frank, unconsciously accept the basic legal myth and therefore fail to appreciate the true complexity of legal systems."[309]

Additionally, he states that the worship of legal rules has dulled our senses, and has prevented us from seeing what the law really is: "rule fetishism".[310] "A rule tells us something about the law, but it is not law."[311] From Frank's perspective, the law is merely what has happened and what will happen in what he considers "concrete cases".[312] To judges, past decisions are merely "experimental guides" for future decisions.[313] Despite his tendency for exaggeration, Frank's argument towards legal certainty is actually quite disruptive. Thus, the quest for legal certainty is an unreachable goal as the law, by its very nature, is constantly changing and adapting to account for 'gaps' in the legal system. A

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[303] Paul, *supra* note 276 at 547.
[304] FRANK, *supra* note 269; Neil Duxbury, *Jerome Frank and the Legacy of Legal Realism*, 18 JOURNAL OF LAW AND SOCIETY 175–205 (1991).
[305] FRANK, *supra* note 269 at 6.
[306] Duxbury, *supra* note 304 at 182.
[307] FRANK, *supra* note 269 at 13–18.
[308] Duxbury, *supra* note 304 at 182.
[309] *Id.* at 182.
[310] Paul, *supra* note 276 at 550.
[311] FRANK, *supra* note 269 at 276; Paul, *supra* note 276 at 550.
[312] FRANK, *supra* note 269 at 276; Paul, *supra* note 276 at 550.
[313] Paul, *supra* note 276 at 550.

consequence of the myth of legal certainty is the belief that judges do not make the law. Rather, one of the realist positions is that "the law is whatever the judge decides it is" and that judicial decisions are primarily influenced by the judicial hunch. Accordingly, a thorough grasp of how realists perceive the judicial hunch and, consequently, the written opinion is crucial.

i.   Judicial Hunch

"[A]nd brooding over the cause, [the judge] waits for the feeling, the hunch - that intuitive flash of understanding that makes the jump-spark connection between question and decision and at the point where the path is darkest for the judicial feet, sets its light along the way."[314] Realists have repeatedly stressed the role of the judicial hunch in aiding the judge in his or her legal decision-making. With the majority of realists recognizing its central role, some differ as to what particular elements define or determine said hunch.[315]

If we are to accept its role in legal decision-making, the next logical step is to determine what elements comprise the judicial hunch – this is because whatever creates or triggers the hunch, makes the law.[316] According to Charles G. Haines, the judicial hunch is based on a particular judge's personality and his or her views on public policy.[317] Haines continues to expand on this point by outlining what he refers to as his "direct and indirect influences" for the judicial hunch: (1) direct influences include: "(a) intellectual and temperament traits (b) political beliefs (c) legal and political experiences" (2) indirect influences include: "(a) personal associations, relationships and/or socioeconomic background (b) legal and/or general education."[318] This 'input data' when compared to the input data that goes into the AI, is less quantifiable and by all accounts difficult, if not impossible, to measure. This demonstrates a unique advantage towards AI models as their output is inherently quantifiable and measurable. Furthermore, even under the black box

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[314] J.C. Hutcheson, The Judgment Intuitive: The Function of the "Hunch" in Judicial Decision, 14 CORNELL L.Q. 274, 278 (1929).
[315] Timothy J Capurso, *How Judges Judge: Theories on Judicial Decision Making* 13, 5–6.
[316] *Id.* at 6.
[317] Charles Grove Haines, *General Observations on the Effects of Personal Political and Economic Influences in the Decisions of Judges*, 17 ILL. L. R. 96–116, 102 (1922); Capurso, *supra* note 315 at 6.
[318] Haines, *supra* note 317 at 115–116; Capurso, *supra* note 315 at 7.

examples of AI-run models – which is the inability of researchers do determine how or why an AI developed this unique algorithm for decision-making – realist interpretation of the decision-making process is eerily similar to that of AI in the sense that both constitute attempts at determining how a judge reaches a particular decision – with the difference being that not all AI is black boxed, and even black boxed examples are at least, in theory, explainable.

In *The Psychological Study of Judicial Opinions,* Theodore Schroeder claims that all judicial rulings are a "justification of every personal impulse of the judge in relation to the situation before him" and it is through those personal impulses that judicial rulings are impacted, as they "unconsciously attach themselves to the conscious consideration of every problem."[319] It is in his view that if the judicial hunch is intentional i.e. the judge accepts that these preconceptions do in fact occur and that he or she is aware of them, then they are omitted from the record.[320] This level of omission far exceeds the lack of understandability aspect of AI, because that means that the data simply is not there to be assessed or reviewed. Schroeder's conclusion is what demonstrates a damning connection to the critique surrounding data bias in AI decision-making, as he states "there can never be a judge without predispositions (or prejudices)."[321]

Jerome Frank expands on the idea of the judicial hunch by claiming that the moral prejudices of a judge – whether political, economic or otherwise – are superficial.[322] These moral prejudices can manifest themselves in something as minor as a cough or a gesture by either a lawyer or witness.[323] These manifestations can then illicit the unconscious biases that make up the judicial hunch and, consequently, influence the decision being issued.[324] It is important to note, these unconscious biases are examples that are non-quantifiable when compared to the input data of an AI decision-making model or the algorithm that it employs to reach a decision.

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[319] Theodore Schroeder, *The Psychologic Study of Judicial Opinions*, 6 CALIFORNIA LAW REVIEW 89–113, 89–93 (1918); Capurso, *supra* note 315 at 7.
[320] Capurso, *supra* note 315 at 7.
[321] Schroeder, *supra* note 319 at 89–93; Capurso, *supra* note 315 at 7.
[322] Capurso, *supra* note 315 at 7.
[323] *Id.* at 7.
[324] *Id.* at 7.

Frank also states that judicial bias can influence decision-making in different ways. One of these ways includes an intentional desire by the judge to be viewed as an individual that is not prejudiced against a specific social group.[325] This, almost, reverse-prejudice can influence a judge to decide differently, so as to appear in a new light.[326] In support of Jerome Frank, Joseph Hutcheson argued that "[t]he judge really decides by feeling and not by judgment, by hunching and not by ratiocination, such ratiocination only appears in the opinion."[327] Cohen, however, disagreed with Jerome Frank and Judge Hutcheson's approach that judicial decisions are "unanalyzable products of irrational hunches".[328] This is because Cohen believed that their theories regarding the judicial hunch "[denied] significant, predictable, social determinants that govern the course of judicial decisions."[329]

ii.   The Written Opinion

If we assume that the judicial hunch exists, then traces of it can either exist or be omitted in the judicial opinion. This is dependent on how cognizant the judge is of his or her "hunch" and to what extent they would like it to influence their written opinion.[330] According to realists, this act of excluding the judicial hunch from the written opinion, further perpetuates the illusion that decisions are primarily based on the facts and how they relate to the law.[331] Additionally, some realists consider the written opinion as nothing more than "a special plea made in defense of impulses which are largely unconscious … so far as concerns their origin or the immediate power of the past experiences."[332]

Schroeder continues this point by claiming that the written opinion merely serves as a justification for the judge's desires, which supports the notion that legal opinions are created with the end result already determined and deliberately developed to disregard any conflicting legal precedent.[333] More importantly, while some realists believe that judicial

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[325] *Id.* at 7.
[326] *Id.* at 7.
[327] Joseph C. Hutcheson Jr., *The Judgment Intuitive: The Function of the Hunch in Judicial Decision*, 39 S. TEX. L. REV. 889–904, 900–901 (1997); Capurso, *supra* note 315 at 6.
[328] Golding, *supra* note 286 at 1050.
[329] Cohen, *supra* note 189 at 843.
[330] Capurso, *supra* note 315 at 8.
[331] Capurso, *supra* note 315.
[332] *Id.* at 8.
[333] Schroeder, *supra* note 319 at 90; Capurso, *supra* note 315 at 8.

rulings are nothing more than a manifestation of a judge's moral spectrum in determining what is right or wrong i.e. the administration of the law is ultimately dependent on the personality of the judge that receives the case.[334]

4. Artificial Intelligence and the Legal Realist Lens

The existence of the realist empirical project and Holmes' emphasis on the role of predication in law makes it easy to draw connections with artificial intelligence "a legal duty so called is nothing but a prediction that if a man does or omits certain things, he will be made to suffer in this or that way by judgment of the court; and so of a legal right."[335] Realism is inherently a reactionary theory[336] that is concerned with the *functional* aspect of the law i.e. how the law is and not what it *should* be. Accordingly, realists would have a hard time assessing the theoretical implications of AI and would most probably divert their attention to the tangible AI-run examples: US Supreme Court, ECtHR and COMPAS.

Firstly, it is easy to marry both realism and AI, as AI demonstrates a transformation towards the empirical study of law. Secondly, inversed-AI models seem to – through their NLP and textual analysis – to rely more on the facts of the case as opposed to the sections discussing the law. This, at least on an overall level, seems to vindicate Schroeder's position, which also posits that judges rely on their 'hunches' to make judgments as opposed to the law. This is supported by the COMPAS algorithm in *Wisconsin v. Loomis* where a judge used an AI algorithm to confirm or validate a pre-existing hunch of the perpetrator's recidivism.[337] Thirdly, there are notable similarities between the inability of realists to empirically mark down the factors that comprise the 'judicial hunch' and the inability of AI-researchers to fully determine which elements the AI drew its correlation or causation from.

As previously mentioned, realism's empirical nature discusses what the law *is* and not what it *should* be. This approach does and can reconcile with AI, especially when looking at similarities between their reliance on non-legal factors, its empirical nature and

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[334] Capurso, *supra* note 315 at 8.
[335] Wendall Holmes, *supra* note 268 at 700; Scherer, *supra* note 11 at 27.
[336] To formalism.
[337] See *supra* Section II B(3)

some coincidental parallels between legal reasoning sections. However, the glaring aspect of inversed-AI, that is missed by Scherer, is the nature of the decision-making itself. Inversed-AI's understanding of intelligence and behavior is fundamentally different from that of judges. Rational thinking as we know it and – as the realists and formalists – perceive it is inherently different in most AI models: at least the ones that realists would be capable of arguing against.[338] This issue stems from Matthew Scherer's work on human beings not being able to reconcile with an abstract idea of intelligence that is separate from their own.[339] This is because, among their own, human beings are the only ones that possess intelligence – which is one of the main definitional problems that AI possesses.[340]

In light of the fact that some realists posit that their jurisprudence is solely an attempt at explaining how the law behaves, and not how it *should* behave. It can be easily inferred that there exists a theoretical barrier towards applying the realist lens in analyzing AI's application on the jurisprudence of decision-making. However, to do this, would be to ignore the ethical standards that realists implicitly apply in their assessment of the judicial decision-making process. Cohen actively attempted to emphasize this point by referring to his fellow realists as "crypto-idealists" due to their provisional separation between what the law *is* and what it *should* be. Thus, viewing realism as a consequence of the *functional approach* does, in fact, allow us to understand AI through realist jurisprudence. Accordingly, by disregarding Cohen's *functional approach*, Scherer falls into to the jurisprudential trap of analyzing realism's outcome, not its genesis. Additionally, when assessing the *ex ante* outcome prediction of AI models, Maxi Scherer's work deliberately limits itself to examples of inversed-AI, such as the US Supreme Court and ECtHR models.

Versed-AI, on the other hand, challenges the realist understanding of the 'myth of legal certainty' as it does move towards a more empirical form of certainty. In practice – which is what realism is ultimately concerned with – parties can simply apply these models before or during the judicial process to predict how these proceedings will go. This provides a higher degree of certainty in the legal field, in comparison to the status quo.

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[338] See *supra* Section II B
[339] Scherer, *supra* note 14 at 359–360.
[340] *Id.* at 359–360.

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Taking this position to its maximum conclusion, one can infer that a decision between two parties can be reached before the judicial process even begins.

Ultimately, exploring AI within realism, to somehow substantiate or dismiss realism's stature in legal theory is nonsensical, as AI's potential far exceeds realism's perception of the law. This is not a critique within any stretch of the imagination. To the contrary, AI's potential is not a concept realism can grapple with because, as a theory, realism is mainly concerned with how the law exists today. Accordingly, realism can only be explored by resorting to the examples of the US Supreme Court, ECtHR, COMPAS and companies such as ArbiLex because these are the practicing examples of AI.

As previously mentioned, there are parallels between the emphasis of AI on the facts of the case and basic realist claims – as demonstrated by the findings of the ECtHR study.[341] However, AI does not vindicate realism in that sense. This is due to the methodological holes than exist in both the US Supreme Court and ECtHR cases.[342] Projects such as ArbiLex and Jus Mundi present the most conflict with legal realism with regards to the myth of legal certainty, as their reliance on complex legal search engines, does employ a threshold that is far closer to a "closed system" than realists portray.

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[341] Aletras et al., *supra* note 84.
[342] See *supra* II B (1, 2)

IV.   Conclusion

The quest for legal certainty – whether naive or not – is not an unmeritorious one. Due to its potential for *ex ante* prediction and societal permeation, AI presents a genuine claim towards revaluating the jurisprudential positions on legal determinism. Firstly, while inversed-AI studies are highly successful at predicting judicial outcomes, they do possess inherent inadequacies that put into doubt their use for decision-making. (1) it is unknown which specific parts of the court's decisions were not included in the data set (2) the model's reliance on NLP indicators creates an inadequate relationship between the process and the result (3) the inability to demonstrate causality between the model's results and reasoning process, raises fundamental questions about their potential, and consequently, their role in judicial decision-making. Especially in light of the emerging legislative trends that stipulate explainable causality as a requirement (4) the critique of the COMPAS algorithm's reliance on discriminatory data challenges the notion of applying inversed-AI to legal models.

Secondly, while Maxi Scherer's critique of AI's potential for *ex ante* outcome prediction is accurate, it is also misleading. (1) Probabilistic inferences (or inversed-AI) would constitute a "significant paradigm shift" if they were applied to judicial decision-making.[343] Which is not the case, as the emergence of the interpretability standard in the GDPR & LPJ – an aspect ignored by Scherer – renders the application of inversed-AI to the decision-making process near impossible. Accordingly, the ECtHR and US Supreme Court models should not be used as a litmus test for AI's potential. As their lack of interpretability constitutes a significant roadblock for their potential application to the decision-making process (2) While Scherer's paper is mainly focused on probabilistic inferences, she does use her position to raise important issues about the progression of AI as a whole. Thus, her negation of the role of versed-AI is problematic, especially when juxtaposed with her overarching position and conclusion on inversed-AI.

Thirdly, inversed-AI's reliance on non-legal factors in their NLP, its confirmation on the futility of the written opinion and its behavior as an empirical study of the law, does not necessarily constitute a vindication for realist. This is due to the fact that (1) it ignores

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[343] Scherer, *supra* note 11 at 5.

the implicit ethical standards that Cohen has stated exists within the realist assessment of the judicial making process (2) Inversed-AI's understanding and application of intelligence is fundamentally different from that of judges; accordingly, the coincidental similarities between inversed-AI models and realism do not constitute a vindication of the realist position as stated by the authors of the ECtHR model (3) the current practice of both versed and inversed-AI fundamentally challenges the realist position on legal determinacy.

Fourthly, AI's capacity for autonomy and self-improvement lends some credence to a formalistic position on the deterministic nature of the law: (1) Weber's position on the law being a self-contained system through which judges never rely on extra-legal consideration, is supported by AI. This is particularly evident in AI's growing hardware capacity, the sophistication of its techniques and the ongoing creation of data sets by entities such as Arbitrator Intelligence, ArbiLex and Jus Mundi (2) AI's need to adjudicate on the basis of applying pre-existing data, reaffirms Dworkin's position that judges do not create law, instead they continue to search for the applicable rule (3) the quantifiable nature of versed-AI meets – to some extent – the rationality and logical requirement posited by formalists in the application of the law.

Accordingly, despite AI's attempt at quantifying/predicting the different values that comprise a judicial decision – which is in-line with the realist empirical project – it still represents a movement towards a more deterministic legal order. However, at its core, AI reaffirms Cohen's *functional approach* as it constitutes a demonstrative step towards understanding the forces that exist behind the veil of judicial decision-making.