

THE AI-BASED LEGAL PARADISE—A (NECESSARY!) THOUGHT EXPERIMENT

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TABLE OF CONTENTS

I. INTRODUCTION	169
II. BASIC CONCEPTS	170
III. THE AI-BASED LEGAL PARADISE	172
A. GENERAL	172
B. LEGAL ALGORITHMS	174
1. <i>Background</i>	174
2. <i>Legal Algorithms and Legal Methodology</i>	176
3. <i>Digital Execution of Legal Algorithms</i>	177
4. <i>Digital Design of Legal Algorithms</i>	178
5. <i>Comprehensive Digital Legal Decision-making in a Perfect AI World</i>	179
C. SHOULD WE ENTER THE AI-BASED LEGAL PARADISE?	180
1. <i>Advantages of Digital Legal Decision-making</i>	180
a. Speed, Accuracy, Consistency and Efficiency	180
b. Legal Certainty and Access to Justice	181
2. <i>Downsides of Digital Legal Decision-making</i>	183
a. Technical Feasibility	183
b. Cybersecurity and Privacy	184
c. Fairness, Accountability, Transparency and Explicability	185
d. Malicious AI	188
e. Due Process and Judicial Independence	189

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f. Quantified vs. Value-based Legal Decision-making	189
g. Job-killer	191
h. Legal Creativity	192
i. Democratic Legitimization	193
j. Must Legal Decision-making Remain with Humans?	195

IV. FINAL REMARK 200

I. INTRODUCTION

In a perfect world of artificial intelligence (AI), all legal decisions could be delegated to computers, thus creating the proverbial “legal paradise” where human beings can enjoy the outcome of the legal work without needing to make any contributions themselves. While the state of computer technology does not, of course, allow comprehensive legal decision-making at present, AI experts predict that in 20 to 50 years AI systems could acquire human level cognitive abilities. This article takes these predictions as a starting point and embarks on a “what-if” thought experiment. It assumes the possibility of comprehensive legal decision-making in a perfect AI-world and discusses pros and cons of this scenario.

Digital legal decision-making is a hotly disputed topic nowadays.¹ Many lawyers are radically opposed to it. Often this opposition is based on an aversion vis-à-vis digital innovation due to a lack of related knowledge and skills.² As a result, digital legal decision-making is surrounded by myths, skepticism, suspicions, fears, and even political agendas. Often arguments are put forward without explanations or appreciation of the context leading to misunderstandings and misperceptions. It is the first main goal of this article to fill existing knowledge gaps by setting the basics straight and to establish a terminological and conceptual framework which is aimed to demystify the entire area. This will then pave the way for a focused and unbiased discussion of related legal aspects.

Many arguments which have been raised against digital legal

¹Cf. Rachel. E. Stern et al., *Automating Fairness? Artificial Intelligence in the Chinese Courts*, 59 COLUM. J. TRANSNAT’L L. 515, 515 (2021) (“In the last five years, Chinese courts have come to lead the world in their efforts to deploy automated pattern analysis to monitor judges, standardize decision-making, and observe trends in society.”).

² See HARRY SURDEN, *Ethics of AI in Law: Basic Questions*, THE OXFORD HANDBOOK OF ETHICS OF AI 719, 720 (Markus D. Dubber et al. eds., Oxford Univ. Press, 2020) (discussing some scholars’ aversion to the use of AI in the judicial system).

decision-making are based on the assumption of technical challenges which prevent digital legal decision-making from ever becoming a viable option. Interestingly it is often overlooked that - as indicated above - AI experts take a rather different view. Furthermore, the question of the technical feasibility of digital legal decision-making must be clearly distinguished from the question if digital legal decision-making is desirable. It is the second main goal of this article to emphasize the importance of the distinction between the “can-we-question” and the “should-we-question”.

The “should-we-question” is the third focus of this article. It assumes that the predictions of AI-experts are correct and that AI will consequently reach at least human decision-making capabilities in due course. In other words, this article is based on the hypothesis that an AI-based legal paradise where all legal decision-making can be delegated to machines is in fact possible. If this is the case then – contrary to conventional wisdom - technical or systemic concerns can no longer serve as arguments against digital legal decision-making. In contrast, the core question which will preoccupy mankind over the next decades is if legal decision-making has to remain with humans.

The structure of this article mirrors the flow of these sub-themes: In its first section this article briefly recalls three concepts which are fundamental for the delegation of decision-making powers to AI systems. In its second section this article hypothesizes a perfect AI world. It demonstrates that algorithms stand at the core of all legal decision-making and discusses what this means or may mean for legal work. It then goes on to assess the pros and cons of digital legal decision-making. This article ends with remarks of a more general nature regarding the future of digital legal decision-making.

II. BASIC CONCEPTS³

To set the scene for the discussion of digital legal decision-making in subsequent parts of this article this section recalls three fundamental concepts which stand at the center of the digitization initiatives which are currently taking place everywhere. It is the goal of this section to establish a basic terminological and conceptual framework which allows for an easy understanding and thus an objective assessment of the arguments for and against digital legal decision-making. The three basic concepts to be discussed in the following are “algorithms,” “automation,” and “AI”.

The term “algorithm” has become almost magic in recent times although its precise meaning is often not even considered. In short, “an

³ Cf. Lutz-Christian Wolff, *Artificial Intelligence ante portas: The End of Comparative Law?*, 7 CHINESE J. OF COMPAR. L. 484, 488 (2019) (providing an introductory discussion of automation and AI) [hereinafter Wolff 2019].

algorithm is a procedure to accomplish a specific task,”⁴ i.e. “a series of instructions that are followed, step by step, to do something useful or solve a problem.”⁵ For example, the contents of a car repair manual can be regarded as an algorithm.⁶ Of course, algorithms are nowadays normally mentioned in the context of computing. Here, algorithms are step-by-step instructions to computers to complete actions with a view to achieve particular results.⁷

Algorithms are the basis of any kind of automation and are particularly important for computer automation.⁸ As the name suggests, the notion of “automation” implies that a work process is designed to generate an intended work product automatically. Automation means that the work process does not require additional input, i.e. once started it will automatically lead to the output. Accordingly, computer automation implies the use of hardware or software that is capable of doing things automatically. Automation software comprises algorithms which automatize the computation processes towards the intended output.⁹ The input of certain instructions causes the computer to generate the output automatically.¹⁰ Often, search engines are cited as easily understandable examples. The search query is an instruction to the computer system to conduct an automated search of a database (or databases) for relevant items.

Algorithms are also the basis of AI.¹¹ AI is more than just automation,

⁴ STEVEN S. SKIENA, *The Algorithm Design Manual* (3rd ed. 2020).

⁵ *What is an algorithm? An ‘in a nutshell’ explanation*, THINK AUTOMATION, <https://www.thinkautomation.com/eli5/what-is-an-algorithm-an-in-a-nutshell-explanation/> (last visited Feb. 4, 2023); Asress Adimi Gikay, *The American Way – Until Machine Learning Algorithm Beats the Law?*, 12 (No. 2) J. OF L., TECH. & THE INTERNET, 1, 9 (2020–21).

⁶ *Cf.* THINK AUTOMATION, *supra* note 5.

⁷ *Id.*

⁸ *Id.*

⁹ *Cf.* Wolff 2019, *supra* note 3, at 488.

¹⁰ *Id.*

¹¹ See Ryan Calo, *Artificial Intelligence Policy: A Primer and Roadmap*, 51 U.C. DAVIS L. REV. 399, 405 (2017) (explaining that “AI is an umbrella term, comprised by many different techniques” that has developed over time); see generally Bernard Marr, *The Key Definitions of Artificial Intelligence (AI) That Explain Its Importance*, FORBES (Feb. 14, 2018, 1:27 AM), <https://www.forbes.com/sites/bernardmarr/2018/02/14/the-key-definitions-of-artificial-intelligence-ai-that-explain-its-importance/#3045e5854f5d>; Karman Lucero, *Artificial Intelligence Regulation and China’s Future*, 33 COLUM. J. ASIAN L. 94, 96–99 (2019); cf. David Field, *The Role of Lawyers in the Face of Increasingly Capable Technology*, ACC DOCKET (July 12, 2021), <https://www.accdocket.com/role-lawyers-face-increasingly-capable-technology> (“A common definition of artificial intelligence relates to the use of technological systems to perform tasks normally associated with human intelligence. The definition is fuzzy and slightly circular.”); SURDEN, *supra* note 2, at 722–24; also Claudio Novelli et al., *A conceptual framework for legal personality and its*

it implies that machines or software simulate human behavior and intelligence.¹² Most importantly, AI is able to engage in an independent learning process to develop itself further without the need of additional instructions.¹³ Like a human being who – starting from birth – develops her knowledge and skills, also AI can independently grow its own knowledge and skills from zero to unlimited levels.

“Automation is basically making a hardware or software that is capable of doing things automatically – without human intervention. Artificial Intelligence, however, is a science and engineering of making intelligent machines ... AI is about trying to make machines or software mimic, and eventually supersede human behaviour and intelligence. Automation can or cannot be based on Artificial Intelligence.”¹⁴

For the sake of dramatizing the effects of the delegation of decision-making powers to AI-systems, commentators often refer to “machines” when talking about computers, computer systems or AI-systems. In the following article, the terms “AI”, “AI-systems”, “computers”, “computer-systems” and also “machines” are used interchangeably when referring to computer-based AI-systems.

III. THE AI-BASED LEGAL PARADISE

A. General

A lot of skepticism vis-à-vis digital legal decision-making is based on the belief that the current state of computer technology does not allow the comprehensive use of AI-systems for legal decision-making purposes. Such a comprehensive use of AI-systems does in fact require a perfect AI world where AI-systems have unlimited access to data and information which can be processed without any technical or other restrictions.

“What drives both automated systems and AI is the same thing that

application to AI, JURISPRUDENCE, 13:2, 194-219 (Dec. 9, 2021), <https://doi.org/10.1080/20403313.2021.2010936> (discussing whether AI should be granted legal personality).

¹² Marr, *supra* note 11; Gikay, *supra* note 5, at 9.

¹³ Cf. Tannya D. Jajal, *Distinguishing between Narrow AI, General AI and Super AI*, MEDIUM (May 21, 2018), <https://medium.com/mapping-out-2050/distinguishing-between-narrow-ai-general-ai-and-super-ai-a4bc44172e22> (distinguishing between “weak AI”, which acts within a pre-defined and thus limited range, “strong AI”, which can perform tasks like a human being, and “super AI” which will surpass human intelligence in all aspects”).

¹⁴ Kamila Hankiewicz, *What Is the Real Difference between Automation and AI*, MEDIUM (Aug. 10, 2018), <https://becominghuman.ai/what-is-the-real-difference-between-automation-and-ai-366513e0c910>.

drives businesses: data. Automated systems collate data; AI systems ‘understand’ it.”¹⁵ The automated collection of data and other information via search engines is already very common in many sectors.¹⁶ Any independent digital legal decision-making does, however, require more. AI-systems would have to be able to access data and other information independently at least at the level of human abilities. Based on the underlying algorithm, AI would have to be able “to determine which information and data are required to reach the stated goals ... and then to retrieve or collect them.”¹⁷ Such ability would enable AI-systems to teach itself how to improve the data collection and data processing processes and thus to bring themselves to perfection¹⁸ eventually surpassing the data collection and processing ability of human beings. Obviously, this is not possible at present time.¹⁹ In contrast, the current state of hardware and software technology only allows the delegation of legal decision-making to AI-systems to a rather limited extent. The question is if this will change in the future.

This article is not aimed to and – in fact - cannot discuss technical aspects of AI-based legal decision-making. In particular, this article cannot predict the future of AI. However, it must be acknowledged that AI experts take a rather optimistic view: “Combined results from surveys of artificial intelligence experts estimate a 50% chance of human-level machine intelligence by 2040 and a 90% probability by 2075.”²⁰ The following

¹⁵ *Id.*

¹⁶ Tamsin Maxwell & Burkard Schafer, *Natural language processing and query expansion in legal information retrieval: Challenges and a response*, 24 INT’L REV. L., COMPUT. & TECH., 63, 65 (2010) (“Lack of available context in queries and documents can limit NLP-related gains because there is minimal linguistic information to extract. ... This gets to the heart of what is most difficult about language processing. Language is complex, unpredictable and productive, and accounting for phenomena such as ungrammatical sentences, disfluencies, negation, multiword terms and polysemy can be difficult.”); cf. Richard E. Susskind, *Artificial Intelligence, Expert Systems and Law*, 5 DENNING L.J. 105, 107 (1990).

¹⁷ Wolff 2019, *supra* note 3, at 497.

¹⁸ *Id.*

¹⁹ SURDEN, *supra* note 2, at 723 (“[T]he term ‘artificial intelligence’ is a bit of a misnomer because current AI technology does not exhibit the advanced cognitive abilities that we normally associate with human intelligence.”).

²⁰ Robert C. Denicola, *Ex Machina: Copyright Protection for Computer Generated Works*, 69 RUTGERS U. L. REV. 251, 256 (2016); see also Abdul Paliwala, *Rediscovering artificial intelligence and law: an inadequate jurisprudence*, 30 INT’L REV. L., COMPUT. & TECH. 107, 112 (2016) (describing the possibility of human level machine intelligence in AI by 2040 and 2075 as “quite possible”); Jajal, *supra* note 13; Bryce Goodman & Seth Flaxman, *European Union Regulations on Algorithmic Decision-Making and a “Right of Explanation”*, 38 AI MAGAZINE 1 (2017), <https://www.arxiv-vanity.com/papers/1606.08813/>; see Michael James Bommarito & Daniel Martin Katz, *GPT*

discussion will adopt these predictions and assume that a perfect AI world will become an option in the future. It will assume - as a thought experiment - that AI-based legal decision-making will be technically possible at least to the level of today's human legal decision-making. Taking these assumptions as a starting point the subsequent sections of this article show that many of the arguments which have been rather conveniently raised against digital legal decision-making no longer hold water. In contrast, if – as assumed for the purposes of this article – the technical viability of digital legal decision-making is not an issue, the discussion can focus on the real core question, i.e. if it is desirable to replace human legal decision-making with digital legal decision-making.

For the purposes set out in the previous paragraph, the next section first draws attention to the general importance of legal algorithms. Subsequent sections then discuss the two main categories of digital legal decision-making, i.e. the execution of legal rules and the creation of legal rules. The findings then allow conclusions on how comprehensive digital legal decision-making might look like in a perfect AI world.

B. Legal Algorithms

1. Background

It is widely ignored that laws and regulations involve algorithms. Laws and regulations give step-by-step instructions on how to apply them, how to act in accordance with them, and how to reach a particular legal outcome, such as a judgment, an arbitration award, or an administrative decision. Laws and regulations therefore entail algorithms. For example, a legal algorithm embedded in a criminal law tells us which sentence a particular crime will lead to given all circumstances. Algorithms consequently always play a key role in legal practice whether AI-based or not.

One could question if legal algorithms are rule-embedded or if they must be seen as separate methodological instructions on how to apply the law. While the former appears more convincing, either assumption does not make a theoretical or practical difference.

Algorithms are also embedded in contracts. Contract terms offer step-by-step guidance to the contract parties on how the contract is to be implemented. For example, algorithms may determine what damages need to be paid if a contract is breached and they may specify under which

Takes the Bar Exam, SSRN (Jan. 3, 2023), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4314839 (discussing the current ability of AI).

circumstances the contract may be terminated.

In an ideal world, legal algorithms guarantee correct legal outcomes given all the circumstances concerned. This outcome would be 100% predictable and thus in line with the legal certainty requirement of the rule of law doctrine (discussed below).²¹ Of course, like the rule of law itself, the assumption that legal algorithms will always produce the correct legal outcome is an ideal.²² It requires clear and practical rules and a stringent methodological regime to allow the identification of all those steps and the sequence of their application, i.e. a perfect legal algorithm, to generate such correct legal outcomes. It is rather obvious that things can also go wrong.

First, a legal algorithm itself can be flawed - it can be incorrect or incomplete. This can be the case because the original design of the algorithm was defective. In fact, in practice, legal algorithms are often not perfect. In other words, the possibility of legislative imperfection or flawed or incomplete contracts is real. Like a car repair manual which gives wrong or incomplete instructions can lead to an accident or – less dramatically – prevent the car from starting after it breaks down, a law, an administrative rule, or a contract term can be erroneous or incomplete. It could also be that the drafters of a legal rule or a contract term leave the application outcome intentionally open. For example, to allow for random decisions in particular cases thus compromising legal certainty and the rule of law. Things can also go wrong as the result of a subsequent intervention and thus variation of a legal algorithm, e.g. when a law or contract term is changed for the worse.

Second, if humans are tasked to execute legal algorithms, the intended or unintended deviation from the algorithm qualifies as violation of the law or as breach of the underlying contract. Like the car repair manual can be misread and spoil any repair attempts, the misapplication of legal rules or contract terms, whether intended or not, may lead to the wrong legal outcome.

It is important that the sources of imperfect legal algorithms or of the erroneous execution of legal algorithms are neither restricted to human legal decision-making nor are they a special feature of digital legal decision-making. In other words, human legal decision-making is based on legal algorithms in the same way as digital legal decision-making. It has consequently been pointed out correctly that “(t)he Achilles’ heel of all algorithms is the human who built them and the choices they make about outcomes, candidate predictors for the algorithm to consider, and the training sample. A critical element of regulating algorithms is regulating humans.”²³

²¹ See *infra*, Section III.C.i.2).

²² Robert Stein, *Rule of Law: What Does it Mean?*, 18 MINN. J. INT’L L. 293, 303 (2009); cf. Lutz-Christian Wolff, *Law and Flexibility – Rule of Law Limits of a Rhetorical Silver Bullet*, 11 J. JURIS., 549, 560 (2011) [hereinafter Wolff 2011].

²³ Jon Kleinberg ET AL., *Discrimination in the Age of Algorithms*, 10 J. OF LEGAL

However, since digital legal decision-making relies on automated processes it is fair to say that the risk of problems is comparatively smaller when decisions are made by machines. While the original design of an algorithm can still be defective, the automation of the execution process ensures that during this phase nothing can go wrong. This is different from scenarios where humans are tasked to execute legal algorithms.

2. Legal Algorithms and Legal Methodology

As explained above, an algorithm gives step-by-step instructions on how to achieve a particular goal. An algorithm embedded in a legal rule must therefore be constructed in a way so that—given all circumstances—it leads to the correct outcome automatically. This acknowledgement exposes the often-misunderstood relationship between legal algorithms and legal methodology.

In a legal context, the term ‘method’ is usually employed to refer to the ‘path’ or the ‘way’ from an existing source of law to the decision on a particular legal issue in a given situation. Understood in this sense, it concerns the application and the interpretation of the law and is synonym for the expression ‘legal reasoning’ that is more frequently used in common law systems.²⁴

The meaning of “legal algorithm” therefore equals the meaning of “legal methodology”. This also means that a rule which does not provide for or is underpinned by a legal algorithm, i.e. which does not entail step-by-step instructions how a particular outcome is to be achieved, and which is thus open-ended, lacks legal methodology.²⁵ Due to the resulting randomness, such a rule is also not in line with the rule of law requirement of legal certainty.²⁶ This point will be revisited in more detail below when discussing the advantages of digital legal decision-making.²⁷

ANALYSIS 113, 117 (2018); *cf.* SURDEN, *supra* note 2, at 728 (“The designers of such systems ... have a great deal of power.”).

²⁴ STEFAN VOGENAUER, *Sources of Law and Legal Method in Comparative Law*, THE OXFORD HANDBOOK OF COMPARATIVE LAW, 878, 890 (Mathias Reimann & Reinhard Zimmermann eds., 2d ed. 2019).

²⁵ *Cf.* Lutz-Christian Wolff, *Structured Problem Solving – German Methodology from a Comparative Perspective*, 14 LEGAL EDUC. REV., 19–51 (2003–04) (demonstrating that some jurisdictions place more emphasis on legal methodology than others).

²⁶ Wolff 2011, *supra* note 22, at 560.

²⁷ *See infra* Sections III.C.i.2), III.C.ii.8), 10).

3. Digital Execution of Legal Algorithms

Any deviation from set legal rules or contract terms implies a disregard for the embedded legal algorithm. In other words, any breach of law or any violation of a contract term entails the non-compliance with the law's or contract's embedded step-by-step instructions. Such non-compliance can be intended or unintended.

In every jurisdiction, law and legal procedure provide tools to ensure compliance with legal rules or contract terms and to offer remedies in case of non-compliance. A potentially more efficient (and thus superior) way of executing legal algorithms would be to prevent non-compliance from ever happening. This could be achieved by way of automation, i.e. the automated execution of legal algorithms. Such an automated execution can be, and to some extent has been, achieved via the delegation of legal decision-making to computer systems. For example, the automated execution of contract terms through so-called "smart contracts" is rapidly gaining popularity.²⁸ It is only a small step to transplant the notion of smart contracts to the level of laws and regulations, thus projecting self-executing smart law.²⁹ In other words, there is no conceptual reason why self-executing smart law should not be possible,

²⁸ The Law Commission (UK), *Smart legal contracts – Advice to Government*, CP 563 Law Com No. 401 (Nov. 2021), <https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jxou24uy7q/uploads/2021/11/Smart-legal-contracts-accessible.pdf> (defining smart contracts "as a legally binding contract in which some or all of the contractual obligations are defined in and/or performed automatically by a computer program. Smart contracts, including smart legal contracts, tend to follow a conditional logic with specific and objective inputs: if 'X' occurs, then execute step 'Y'.", The Law Commission has identified three main sub-categories, namely (i) natural language contracts, "in which some or all of the contractual obligations are performed automatically by the code of a computer program", (ii) hybrid contracts "in which some of the contractual obligations are defined in natural language, and others are defined in the code of computer program", and (iii) contracts "in which all of the contractual terms are defined in, and performed automatically by, the code of a computer program."); cf. Gernot Fritz & Lukas Treichel, "What is a smart contract?", FRESHFIELDS, [HTTPS://WWW.FRESHFIELDS.COM/EN-GB/OUR-THINKING/CAMPAIGNS/TECHNOLOGY-QUOTIENT/FINTECH/WHATS-IN/WHATS-IN-A-SMART-CONTRACT/](https://www.freshfields.com/en-gb/our-thinking/campaigns/technology-quotient/fintech/whats-in/whats-in-a-smart-contract/) (last visited Jan. 20, 2022); Eliza Mik, *Smart contracts: terminology, technical limitations and real world complexity*, 9 L., INNOVATION AND TECH. 229, 269 (2017) (stating that there is no standard definition of smart contracts); Eyüp Kun, *Is Insisting on Specific Performance Under Smart Contracts Desirable Under English Contract Law? Inflexibilities of Smart Contracts and Potential Solutions*, 3 BİLİŞİM HUKUKU DERGİSİ, DIGIT. L. REV. 139, 142-146; (2012), <https://dergipark.org.tr/en/pub/bilisimhukukudergisi/issue/63317/943862>; Tarek Kadour Aleinieh & Laura Zoboli, *Increasing standardization for smart(er) contracts*, 26 UNIF. L. REV., 583 (2021).

²⁹ See Kun, *supra* note 28, at 158 ("Allowing the breach by the parties in contract law allows business life to be more flexible to accommodate contingencies.").

provided that all technical challenges can be addressed as assumed for the purposes of this article.

4. Digital Design of Legal Algorithms

The computer-automated execution of law or contracts requires error-free underlying legal algorithms. As indicated above, the ability of humans to design error-free legal algorithms is limited. Compared with an automated computer-based process, humans are slow and their work carries the risk of errors. They can be subject to irrational considerations, biases, and may follow political agendas,³⁰ which may or may not be in line with the underlying values of the legal system concerned. If human action cannot guarantee perfect legal algorithms, then it must be asked if not only the execution of legal algorithms, but also their design, can be delegated to AI systems to achieve better outcomes.³¹

When considering the viability of the AI-based design of legal algorithms it must first be acknowledged that more than just automation is required. An automated decision-making process can only ensure that step-by-step instructions are followed. In contrast, the design of legal rules and contractual terms requires the creation of something new. And, as discussed above,³² it is in fact one of its core features of AI that it can go beyond automation. AI can independently trigger and implement new developments. From the viewpoint of conceptual viability, AI should therefore also be able to design laws, rules and regulations and embedded legal algorithms. This of course requires the perfect AI world outlined above with comprehensive access to data and related information as well as the ability to design rules and regulations or even entire legal systems on that basis. Currently this possibility does not exist.³³ However, as also pointed out above, AI experts take an optimistic view of future options.³⁴ In other words, if – as assumed by AI experts – AI will have human cognitive ability, then AI should also be able to design laws and regulations. This view seems to be supported by developments at the level of contract design.

Contractual regimes are much less complex than laws because of the limited number of contract parties as compared to the numerous potential

³⁰ See Gunter Frankenberg, *Down by Law: Irony, Seriousness, And Reason*, 83 NWU L. REV. 360, 362, 391 (1989) (arguing for critical legal studies movement that law is the result of political determinates); Andrew Altmann, *Legal Realism, Critical Studies and Dworkin*, 15 PHIL. & PUB. AFFS. 215, 214–22 (1986).

³¹ Cf. Wolff 2019, *supra* note 3, 502.

³² See *supra*, Section II.

³³ See *id.*

³⁴ *Id.*

addressees of laws and regulations. Nevertheless, contractual regimes also form legal systems, though only *inter partes* and thus at a much smaller scale.³⁵ Technical options which allow for the digitized contract design are already rather advanced in areas of law with standard patterns.³⁶ One may of course argue that for the time being this (only) entails automated contract drafting on the basis of data input by those in charge without much independent work involved. However, even this was unthinkable only a decade ago and it is only a small additional step to imagine an AI system which collects data and other information independently, processes them and turns them into the design of legal algorithms. And, there do not seem to be any constraints to expand this conceptual acknowledgment from contract design to legislative activities in general.

5. Comprehensive Digital Legal Decision-making in a Perfect AI World

The previous sections have considered digital legal decision-making from various angles. The discussion was based on the prediction by AI-experts that AI will obtain human cognitive abilities in due course and the consequential assumption that AI-based legal decision-making abilities will at some point in the future reach at least the level of human legal decision-making ability.³⁷ The development will of course not stop there. AI-based legal decision-making will become more and more advanced while technical restrictions will decrease. In a perfect AI world, technical restrictions will have disappeared altogether. For argument's sake, it shall be considered briefly in the following how digital legal decision-making in such a perfect AI world might look like.

In a perfect AI world, AI-systems would have comprehensive access to data and other information. This would enable AI-systems to enforce rules and regulations as well as contract terms or even prevent non-compliance upfront.³⁸ Furthermore, AI-systems would be able to constantly monitor society, collect and assess data, identify issues that require attention, and

³⁵ See *supra*, Section III.i.

³⁶ Cf. *Diligence disrupted – Law firms climb aboard the AI wagon*, THE ECONOMIST (July 12, 2018), <https://www.economist.com/business/2018/07/12/law-firms-climb-aboard-the-ai-wagon>.

³⁷ Cf. Gikay, *supra* note 5, at 4 (“[T]he challenge presented by the increasing sophistication of ... [AI], especially machine learning, puts both the EU and the US in the same regulatory and legal quandary as neither jurisdiction is equipped to respond to autonomous, unpredictable, and unexplainable algorithms making critical decisions.”).

³⁸ See *supra*, Section III.B.iii; cf. Deirdre Mulligan & Kenneth A. Bamberger, *Saving Governance-by-Design*, 106 CAL. L. REV., 697, 718–19 (2018).

address them instantly through regulation. If all legal decision-making was delegated to AI-systems, human legal action would no longer be required. In this kind of legal paradise, humans could indeed just sit back and benefit from the work done by machines. The question is if such a comprehensive delegation of legal decision-making powers to AI-systems is desirable.³⁹ In other words, should mankind enter the AI-based legal paradise once the door is open?

Before discussing this question in the subsequent sections, it is important that while the idea of a perfect AI world may sound futuristic and that it will take many decades to get there, the possibility and consequences of a perfect AI world are already important in present times. In fact, it does not really matter if a perfect AI world can be achieved at all, if in due course AI can (only) reach human cognitive abilities and thus remain imperfect to a certain extent, or if AI will stay below that level, which, according to the predictions of AI experts, will be the case at least for the next 20 to 50 years. The crucial point is that technology is developing at a very fast pace, and it stands to reason that AI systems are becoming increasingly able to simulate human legal decision-making. The more this will be the case, the more pressing will the need for answers to the questions discussed in this article become. The assumption of a perfect AI world in this article intentionally elevates this pressing need to the highest level in order to foreground all the issues concerned, i.e. to accentuate the legal and other issues which will arise in the context of digital legal decision-making. The discussion in the following sections must be read in this context.

C. Should We Enter the AI-based Legal Paradise?

1. Advantages of Digital Legal Decision-making

a. Speed, Accuracy, Consistency and Efficiency

Compared with human legal decision-making, digital legal decision-making has four major practical advantages. First, due to its automated mode, digital legal decision-making can be conducted instantly and is therefore faster.⁴⁰ Second, AI processes data and other information in an automated manner. Digital legal decision-making therefore guarantees absolute accuracy because any deviation from the preset process does not form part of the notion of automation.⁴¹ Third, as a result, automated legal decision-

³⁹ See Calo, *supra* note 11, at 415.

⁴⁰ *Cf. id.*

⁴¹ SURDEN, *supra* note 2, at 1252–53; *cf.* Calo, *supra* note 11, at 415.

making will ensure that in the same circumstances decisions will always be the same, thus, enhancing consistency in the decision-making process.⁴² Finally, digital legal decision-making does not depend on manpower. Digital legal decision-making can consequently deal with numerous issues at the same time in a standardized and automated manner leading to a much higher degree of efficiency, including cost-efficiency.⁴³

b. Legal Certainty and Access to Justice

The factual advantages of digital legal decision-making translate into obvious advantages from the rule of law point of view. First, almost all aspects of the rule of law are highly disputed.⁴⁴ There is, however, general consensus that legal certainty is a core pillar of the rule of law doctrine.⁴⁵ Legal certainty is a result of predictability which is needed to let the addressees of legal rules know what the legal consequences of a particular action or the failure to act will be. Predictability is also needed to guarantee that legal rules are applied consistently vis-à-vis similar behavior of different people, i.e. to ensure equal treatment.⁴⁶

The predictability requirement was of course heavily criticized by American realists who claimed that rules are necessarily indeterminate and

⁴² Cf. Danielle Keats Citron, *Technological Due Process*, 85 WASH. U. L. REV., 1249, 1252–53 (2008).

⁴³ Presidency, *Conclusions on the Charter of Fundamental Rights in the Context of Artificial Intelligence and Digital Change*, COUNCIL OF THE EUROPEAN UNION (Oct. 21, 2020), <https://www.consilium.europa.eu/media/46496/st11481-en20.pdf>; Independent High-Level Expert Group on Artificial Intelligence, *Ethics Guidelines for Trustworthy AI*, THE EUROPEAN COMMISSION (Apr. 8, 2019), <https://www.aepd.es/sites/default/files/2019-12/ai-ethics-guidelines.pdf> (“AI systems offer substantial potential to improve the scale of efficiency of government in the provision of public goods and services to society.”) [hereinafter Independent High-Level Expert Group]; cf. Citron, *supra* note 42, at 1252.

⁴⁴ Cf. Wolff 2011, *supra* note 22, at 554–59 (most importantly, the promoters of the so-called “thin” and “thick” rule of law concepts fundamentally disagree on the scope of the rule of law. In broad terms, thin rule of law concepts only require “a set of minimal characteristics: law must be set forth in advance (be prospective), be made public, be general, be stable and certain and be applied to everyone according to its terms.”); BRIAN Z. TAMANAHA, *A Concise Guide to the Rule of Law*, in *RELOCATING THE RULE OF LAW* (Gianluigi Palombella & Neil Walker eds. 2008) (noting that thick rule of law concepts “include reference to fundamental rights, democracy, and/or criteria of justice and right”).

⁴⁵ Cf. ALBERT VENN DICEY, *INTRODUCTION TO THE STUDY OF THE LAW OF THE CONSTITUTION*, 183, 202 (10th ed., 1959); Stein, *supra* note 22, at 302; NEIL MACCORMICK, *Rhetoric and the Rule of Law*, in *RERAFTING THE RULE OF LAW: THE LIMITS OF LEGAL ORDER* 163 (David Dyzenhaus ed., 1999) 163 (“Values like legal certainty and legal security are much lauded in the context of praising the rule of law.”); TAMANAHA, *supra* note 44, at 6.

⁴⁶ TAMANAHA, *supra* note 44, at 10–11; Wolff 2011, *supra* note 22, at 553.

that courts have to make choices when applying rules which may lead to contradictory decisions.⁴⁷ The critical legal studies movement argued along the same lines when claiming that legal decision making is always politically motivated.⁴⁸ H.L.A. Hart famously claimed that the “open texture” of legal rules is beneficial because it allows rules to be “interpreted reasonably when they are applied to situations and to types of problems that their authors did not foresee or could not have foreseen.”⁴⁹ Dworkin has pointed out that a judge is not “Hercules”⁵⁰ and that the notion of “impeccable judges”⁵¹ who will always make correct and thus predictable decisions is nothing but wishful thinking. However, Dworkin also concluded that the law comprises rules and standards which “always offer authoritative and predictable guidance in relation to legal questions.”⁵²

Turning back to the theme of this article, digital legal decision-making should as a matter of principle not be affected by any of these concerns. In contrast, provided that the underlying legal algorithms are set correctly, digital legal decision-making involves an automated process of collecting and processing data and other information ideally leading to absolute predictability.⁵³ In a perfect AI world, digital legal decision-making can therefore ensure legal certainty and thus absolute implementation of a core element of the rule of law doctrine.

Second, digital legal decision making can also improve access to justice which is another important feature of the rule of law.⁵⁴ Access to justice entails:

[T]he right of equal access to justice for all, including members of vulnerable groups, and the importance of

⁴⁷ Cf. Altman, *supra* note 30, at 205; Frankenberg, *supra* note 30, at 384.

⁴⁸ Cf. Roberto Mangabeira Unger, *The Critical Legal Studies Movement*, 96 HARV. L. REV. 561, 567–76 (1983) (contrasting formalism and objectivism against the critical legal studies movement); John Hasnas, *Back to the Future: From Critical Legal Studies Forward to Legal Realism, or How Not to Miss the Point of the Indeterminacy Argument*, 45 DUKE L.J. 84, 85–98 (1995) (revisiting the critical legal studies legal indeterminacy argument); Frankenberg, *supra* note 30, at 383.

⁴⁹ BRIAN BIX, LAW, LANGUAGE AND LEGAL DETERMINACY 8 (1993).

⁵⁰ See RONALD DWORKIN, TAKING RIGHTS SERIOUSLY 105 (1977).

⁵¹ Altman, *supra* note 30, at 213.

⁵² Ronald Dworkin, *Judicial Discretion*, 60 THE J. OF PHIL., 624 (1963); Ronald Dworkin, *Social Rules and Legal Theory*, 81 YALE L.J. 855 (1972); cf. Wolff 2011, *supra* note 22, at 559.

⁵³ See Kun, *supra* note 28, at 159.

⁵⁴ Council Conclusions ‘Access to justice – seizing the opportunities of digitalisation’ 2020/C 342 I/01’ (2020) Official Journal C 342, 1–7, [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XG1014\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020XG1014(01)).

awareness-raising concerning legal rights, and in this regard we commit to taking all necessary steps to provide fair, transparent, effective, non-discriminatory and accountable services that promote access to justice for all, including legal aid.⁵⁵

It is generally acknowledged that digital legal decision-making can potentially expand access to legal information and reduce the duration of judicial proceedings.⁵⁶ For example, digital decision-making would allow mass litigation cases to be processed quicker when compared to situations where the lack of judicial manpower leads to massive delays. Digital legal decision-making can therefore significantly improve access to justice.⁵⁷

2. Downsides of Digital Legal Decision-making

a. Technical Feasibility

The perceived downsides of digital legal decision-making can be divided into two categories. First, there are doubts about its technical feasibility. Second, there are doubts about whether legal decision-making should be delegated to machines.⁵⁸ Regarding the first category, as discussed in previous sections,⁵⁹ many commentators have disputed whether digital legal decision-making will ever become technically possible. Commenters argue, “when information technology has been applied to deeper legal processes. . . , the result has not been very successful. This is especially so in relation to the application of AI systems to law.”⁶⁰ Interestingly, concerns regarding the technical feasibility of digital legal decision-making, are often not voiced by AI experts. It has consequently been suspected that the issues raised have little to do with the limits of AI technology or the ability of AI to access data and other information. The problems may rather be a result of the fact that, “[m]any involved with AI and law still refuse to acknowledge that there are underlying problems with the way they conceptualize the nature of legal reasoning.”⁶¹

⁵⁵ G.A. Res. 67/1, item 14 (Nov. 30, 2012), https://www.un.org/ruleoflaw/files/37839_A-RES-67-1.pdf.

⁵⁶ See Presidency, *supra* note 43, at 27; Council Conclusions, *supra* note 54, at 13, 19–20.

⁵⁷ Presidency, *supra* note 43, at 27.

⁵⁸ Cf. Independent High-Level Expert Group, *supra* note 43, at 10.

⁵⁹ See *supra* Sections II, III.A.

⁶⁰ Paliwala, *supra* note 20, at 108.

⁶¹ *Id.*

Furthermore, as mentioned above, according to AI experts society is only decades away from AI reaching human level decision-making capacity. Again, this prediction cannot and shall not be challenged or verified in this article. For the purposes of this article, the availability of systems which are able to engage in comprehensive digital legal decision-making,⁶² will be assumed. From this point of view, many arguments against digital legal decision-making do no longer hold water.

b. Cybersecurity and Privacy

One reason commentators oppose digital legal decision-making is that they have doubts over whether cybersecurity, privacy⁶³ and data governance can be ensured.⁶⁴ With the increasing reliance on computers and computer networks in modern times, cyber-attacks, cybercrimes, and data leakages have indeed become a major problem.

[H]acker attacks have significantly increased during the pandemic, due to the massive use of digital devices by companies that have adopted the work from home model: with home systems potentially more exposed to the risk of unauthorized intrusions. In fact, according to a recent European Commission study on cybercrime, cyber-attacks in

⁶² Cf. Independent High-Level Expert Group on Artificial Intelligence, *supra* note 43, at 14–24 (discussing the requirements of proper AI systems and non-technical approaches to create trustworthy AI, through regulation, codes of conduct, standardization, certification, accountability via governance frameworks, education and training, stakeholder participation and social dialogue and diversity and inclusive design teams).

⁶³ See *Regulation (EU) 2016/679 of the European Parliament and of the Council*, OFFICIAL J. OF THE EU 1, ¶1 (Apr. 27, 2016), <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32016R0679> (“The protection of natural persons in relation to the processing of personal data is a fundamental right. Article 8 (1) of the Charter of Fundamental Rights of the European Union ... and Article 16 (1) of the Treaty on the Functioning of the European Union (TFEU) provide that everyone has the right to the protection of personal data concerning him or her.”); see also Ben Wolford, *What is GDPR, the EU’s new data protection law?*, GDPR.EU (2022), <https://gdpr.eu/what-is-gdpr/> (The GDPR “is the toughest privacy and security law in the world. Though it was drafted and passed by the European Union (EU), it imposes obligations onto organizations anywhere, so long as they target or collect data related to people in the EU. The regulation was put into effect on May 25, 2018. The GDPR will levy harsh fines against those who violate its privacy and security standards, with penalties reaching into the tens of millions of euros.”).

⁶⁴ See Calo, *supra* note 11, at 409 (demonstrating the flexible use of the term “governance”).

Europe in 2020 saw a 75% increase over 2019.⁶⁵

While related issues call for decisive action, the underlying reasons of cyber-attacks and other related cybercrimes are in the first place a result of technical and systemic failures. How systems can be improved and how legal systems can appropriately respond are hotly debated at the moment.⁶⁶ However, if the technical feasibility of digital legal decision-making is assumed, then this implies that robust systems that guarantee cybersecurity, privacy and data protection can be established.⁶⁷ While the risk of cyber-attacks, privacy infringements and data leakages is an inherent feature of computer systems and networks, nobody would consider discontinuing them. The same should apply to digital legal decision-making. A safe cyber-environment is not impossible, it is a matter of establishing proper systems.

c. Fairness, Accountability, Transparency and Explicability

Digital legal decision-making must be “fair, accountable, and transparent.”⁶⁸ Some commentators have argued that appropriate accountability systems for the use of AI in legal decision-making are not in place yet.⁶⁹ Critics have many questions, including: How can responsibility and liability be allocated in case of any problems?⁷⁰ Is it necessary to create certification procedures to ensure the quality of AI-systems before they are

⁶⁵ Margherita Stucchi, *Data Breach: the importance of cybersecurity*, LEXOLOGY (Oct. 27, 2021), <https://www.lexology.com/library/detail.aspx?g=a8d7e727-8dbf-42ab-8724-88315479319d>; cf. Calo, *supra* note 11, at 419–25; Mulligan & Bamberger, *supra* note 38, at 702; Branca Vuleta, *55+ Scary But Useful Cybersecurity Statistics in 2022*, LEGAL JOBS (Jan. 29, 2021), <https://legaljobs.io/blog/cybersecurity-statistics/>.

⁶⁶ Presidency, *supra* note 43, at 17–20; see also *Proposal for a Directive on adapting non contractual civil liability rules to artificial intelligence*, EUROPEAN COMMISSION (Sept. 28, 2022), https://commission.europa.eu/business-economy-euro/doing-business-eu/contract-rules/digital-contracts/liability-rules-artificial-intelligence_en; *What is the new EU AI Liability Regime?*, SIMMONS & SIMMONS (Nov. 4, 2022), <https://www.simmons-simmons.com/en/publications/cla2fpgw5uj20a94oagyszn/what-is-the-new-eu-ai-liability-regime->.

⁶⁷ Cf. Independent High-Level Expert Group, *supra* note 43, at 17.

⁶⁸ Calo, *supra* note 11, at 415; cf. Anika Gauja, *Digital Democracy: Big Technology and the Regulation of Politics*, 44 UNSW L.J., 959, 965 (2021); Simon Chesterman, *Through a Glass, Darkly: Artificial Intelligence and the Problem of Opacity*, 69 AM. J. COMPAR. L., 271, 272 (2021).

⁶⁹ Presidency, *supra* note 43, at 11.

⁷⁰ See Pinchas Huberman, *A Theory of Vicarious Liability for Autonomous-Machine-Caused Harm*, 58 OSGODE HALL L.J., 233 (2021); Independent High-Level Expert Group, *supra* note 43, at 19–20.

allowed to operate?⁷¹ How transparent are AI-systems? Will the use of AI lead to information asymmetries which enable elites and parties with special AI knowledge to exploit the system at the expense of others?⁷²

The ability of the machine to learn from its experience and to update its decision independently of human oversight causes a great concern for scholars, consumers and policy makers. The dynamic interaction of algorithm with big data and its ability to make biased and discriminatory decisions without the corresponding duty of explanation represents a new chapter in the algorithmic challenge. No legal regime today ... is equipped to deal with complex machine learning decision systems.⁷³

These are important questions which must be taken seriously. However, they do not make digital legal decision-making impossible. They just require action in the form of the development of proper systems which avoid technical problems, prevent abuse, and allow for appropriate responses in case that prevention fails.

Critics of AI-based legal decision-making have also drawn special attention to potential transparency problems. They argue that although in a digital legal decision-making process, the data used may be identifiable and the legal outcome will of course also be known, the decision-making process itself may not be traceable.⁷⁴ In other words, if AI engaged in truly independent legal decision-making, the underlying legal algorithm could not reveal how it came to a particular outcome.⁷⁵ The resulting “black-box” effect would prevent proper governance and monitoring compliance.⁷⁶ Furthermore, allocating responsibilities to involved parties for any mishaps could be impossible.⁷⁷ In addition:

⁷¹ Calo, *supra* note 11, at 419; *Codes of conduct and certification*, GDPR, <https://www.gdpr.org/regulation/section-5-codes-of-conduct-and-certification.html> (discussing from the viewpoint of data protection).

⁷² SURDEN, *supra* note 2, at 720–21, 735.

⁷³ Gikay, *supra* note 5, at 13; *cf.* Chesterman, *supra* note 68, at 281–85.

⁷⁴ Council Conclusions, *supra* note 54, at 41; *see also* Calo, *supra* note 11, at 414 (“AI can say what will happen but not why.”).

⁷⁵ Kleinberg ET AL., *supra* note 23, at 114; SURDEN, *supra* note 2, at 731–32; *cf.* Council Conclusions, *supra* note 54, at 17, 41; Citron, *supra* note 42, at 1253, 1295.

⁷⁶ Council Conclusions, *supra* note 54, at 41; *cf.* Chesterman, *supra* note 68, at 277; Jemina Kelly, *AI-driven justice may be better than none at all*, FINANCIAL TIMES (Sept. 28, 2022), <https://www.ft.com/content/a5709548-03bd-4f65-b9b5-7aa0325c0f6b>.

⁷⁷ Gikay, *supra* note 5, at 35–36; Independent High-Level Expert Group, *supra* note 43, at 13.

The legitimacy of legal adjudication depends, to some extent, on the performative and humanistic aspects of legal decisions – the ways in which parties come away from the courts *feeling* like they have had their opportunity to be heard and have been treated fairly and in a socially acceptable and justifiable way, quite apart from the underlying objective merits of the case. Thus to the extent that explanation and justification is a core value of a legal system, some critics are concerned that the increased use of AI-based decision-making might undervalue the necessary humanistic and performative components of legal adjudication.⁷⁸

Without proper explanation, outcomes based on legal algorithms could not be challenged and feelings of justice would be denied.⁷⁹

The rather convincing counterargument which beats all these concerns is that:

[W]ith the appropriate requirements in place, algorithms create the potential for new forms of transparency and hence opportunities that are otherwise unavailable. The specificity of algorithms also makes transparent tradeoffs among competing values. This implies algorithms are not only a threat to be regulated; with the right safeguards, they can be a potential positive force for equity. ... (A) well-regulated process involving algorithms stands out for its transparency and specificity: it is not obscured by the same haze of ambiguity that obfuscates human decision-making.⁸⁰

⁷⁸ SURDEN, *supra* note 2, at 731–32; *see also* Independent High-Level Expert Group, *supra* note 43, at 13, 18; Goodman & Flaxman, *supra* note 20, at 55–56; Gauja, *supra* note 68, at 965.

⁷⁹ SURDEN, *supra* note 2.

⁸⁰ Kleinberg ET AL., *supra* note 23, at 113, 116; SURDEN, *supra* note 2, at 731–32; *see also* Field, *supra* note 11 (“From a public policy perspective, and provided quality control concerns can be met, more people having greater access to the law at lower cost must be a good thing, and lawyers should be embracing it.”); Gikay, *supra* note 5, at 37; Michael Veale & Frederik Zuiderveen Borgesius, “Demystifying the Draft EU Artificial Intelligence Act”, 22 COMPUT. L. REV. INT’L., 97 (2021) (summary analysis of the “world-first attempt to horizontal regulation of AI systems,” i.e. the April 2021 proposal by the European Commission of a Regulation on Artificial Intelligence); Christopher Ferguson et al., *The Regulation of Artificial Intelligence in Canada and Abroad: Comparing the Proposed AIDA and EU AI Act*, LEXOLOGY (Oct. 18, 2022), <https://www.lexology.com/library/detail.aspx?g=894b90db-040b-4a20-a1f6-c2af4a09b69d>; Patricia C. Ernst ET AL., *AI Regulation in Europe*, SIMMONS & SIMMONS (Oct. 7, 2022),

In fact, it must be concluded that “algorithms can not only make more accurate predictions but offer increased transparency and fairness over their human counterparts.”⁸¹

d. Malicious AI

Related to doubts regarding proper governance in digital legal decision-making processes is the issue of control. Many commentators have warned that the delegation of decision-making to machines carries the risk that machines will take over and dominate the world.⁸² This is the scenario of “malicious AI” which has been portrayed in many science fiction movies.⁸³

“Malicious AI” can be created intentionally by those who design legal algorithms, but it can also be the result of human error,⁸⁴ e.g., when legal algorithms are wrongly designed or fed with wrong or biased data. It has also been envisaged that properly designed algorithms simply run out of control.⁸⁵ Some AI experts have regarded these problems as just a matter of proper technical design. “After all, AI is merely a tool that we, as humans, control and run. We are the ones who have free will and it is up to us to direct the plots of the AI story.”⁸⁶ However, other important voices are less optimistic.⁸⁷ In fact, since it is the very idea of AI to be cognitively independent, the

<https://www.simmons-simmons.com/en/publications/cla2fpgw5uj20a94oagyszn/what-is-the-new-eu-ai-liability-regime>.

⁸¹ Goodman & Flaxman, *supra* note 20, at 56.

⁸² Wolff 2019, *supra* note 3, at 503.

⁸³ Calo, *supra* note 11, at 430 (“[D]ecades of books, films, television shows, and even plays depict AI as a threatening substitute of people.”).

⁸⁴ *How to do some restrictions on Artificial Intelligence in the future?*, READY FOR AI (Jan. 28, 2019), <https://readyforai.com/article/how-to-do-some-restrictions-on-artificial-intelligence-in-the-future/>.

⁸⁵ See Luciano Floridi, *Should we be afraid of AI?*, AEON (May 9, 2016), <https://aeon.co/essays/true-ai-is-both-logically-possible-and-utterly-implausible> (The famous example of a Microsoft chatbot shows vividly what could happen: “... Microsoft introduced Tay – an AI-based chat robot – to Twitter. They had to remove it only 16 hours later. It was supposed to become increasingly smarter as it interacted with humans. Instead, it quickly became an evil Hitler-loving, Holocaust-denying, incestual-sex-promoting, ‘Bush did 9/11’-proclaiming chatterbox. Why? Because it worked no better than kitchen paper, absorbing and being shaped by the nasty messages sent to it. Microsoft apologised.”); David Lee, *Tay: Microsoft issues apology over racist chatbot fiasco*, BBC NEWS (March 25, 2016), <https://www.bbc.com/news/technology-35902104>.

⁸⁶ Christine N., *Hear the Oracle Speak – Lee Kai-fu forecasts the future of AI*, CUHK NEWSLETTER (April 19, 2019), <http://www.iso.cuhk.edu.hk/images/publication/newsletter/536/html5/4/#zoom=z>.

⁸⁷ Julia Bossmann, *Top 9 ethical issues in artificial intelligence*, WORLD ECONOMIC FORUM (October 21, 2016), <https://www.weforum.org/agenda/2016/10/top-10-ethical->

possibility that AI will run out of control appears rather real,⁸⁸ although of course not in the perfect AI world assumed for the purposes of this article.⁸⁹

e. Due Process and Judicial Independence

Other critics have suggested that the obvious advantages of digital legal decision-making “may deprive individuals of constitutionally enshrined rights to due process by failing to provide them with any or adequate notice of decisions, a proper opportunity to be heard, or meaningful judicial review.”⁹⁰ However, there is no evidence that this concern is valid in a scenario where technical challenges can be overcome. In contrast, as highlighted above,⁹¹ digital legal decision-making should improve the protection of procedural values. Compared with human legal decision-making, digital legal decision-making would be faster as well as more accurate, consistent and efficient.⁹²

Others have emphasized that judicial independence must be guaranteed even if legal decision-making was delegated to AI.⁹³ However, judicial independence is not an important notion for its own sake. It is rather meant to guarantee a legal decision-making process without external interference. And the lack of external interference is the main advantage of digital legal decision-making. In other words, digital legal decision-making would reinforce the rationale behind judicial independence rather than negatively affect it.

f. Quantified vs. Value-based Legal Decision-making

Some commentators insist that:

[M]aking decisions via machine learning can distort the values inherent to the task at hand by granting undue weight to quantified considerations at the expense of unquantified

issues-in-artificial-intelligence/;James Barrat, *OUR FINAL INVENTION: ARTIFICIAL INTELLIGENCE AND THE END OF THE HUMAN ERA* 5 (2013) (“Our species is going to mortally struggle with this problem.”); *cf.* Calo, *supra* note 11, at 431–35.

⁸⁸ Floridi, *supra* note 85; *cf.* Wolff 2019, *supra* note 3, at 503.

⁸⁹ *See supra*, Section III.B.v.

⁹⁰ Mulligan & Bamberger, *supra* note 38, 719; *see* SURDEN, *supra* note 2, at 720; Independent High-Level Expert Group, *supra* note 43, at 11; Council Conclusions, *supra* note 54, at 17; Citron, *supra* note 42, at 1281–88, 1298.

⁹¹ *Supra*, section III.C.i.2).

⁹² *Id.*

⁹³ Council Conclusions, *supra* note 54, at 4, 39.

ones . . . [A]lgorithms have the potential to distort the values underlying laws and policies that (in principle) society has collectively determined to be fair . . .⁹⁴

Again, the risk described here does genuinely exist. However, if digital legal-decision making can reach at least the level human legal decision-making,⁹⁵ then it must be concluded that such risk is not bigger than when human lawyers are in charge. In this regard, one also has to acknowledge that the reference to “quantified considerations” is misleading. It is correct that digital decision-making relies on data and other information collected and processed by the underlying AI-system. However, such reliance will lead to the ability of AI-systems to make rational decisions like humans and there does consequently not seem to be any room for criticism. In contrast, if one argues that human legal decision-making must—at least sometimes—be irrational then this requires different considerations which are addressed below.⁹⁶

Other commentators have drawn attention to the fact that reliance on data does not guarantee a correct application outcome because past data (training data) can be biased or compromised.⁹⁷ “It would be irresponsible—even dangerous—to confuse ‘data-driven’ with ‘nondiscriminatory’, ‘unbiased’ or ‘objective’.”⁹⁸ Again, this is a valid point. Data need to be assessed, e.g. in relation to group differences, geographical differences,⁹⁹ time differences and changing social circumstances.¹⁰⁰ No decision should be based on “biased” data or information, which fail to be objective in the sense that they do not reflect the core values underpinning a legal system.¹⁰¹ However, there is again no reason why algorithms supporting digital legal

⁹⁴ BEN GREEN, “Fair” Risk Assessments: A Precarious Approach for Criminal Justice Reform, 5TH WORKSHOP ON FAIRNESS, ACCOUNTABILITY, AND TRANSPARENCY IN MACHINE LEARNING (FAT/ML 2018) (2018), <https://scholar.harvard.edu/files/bggreen/files/18-fatml.pdf>.

⁹⁵ See *supra*, Sections III.B.i, v.

⁹⁶ See *supra*, Section III.C.iii.10.

⁹⁷ See Solon Barocas & Andrew D. Selbst, *Big Data's Disparate Impact*, 104 CAL. L. REV. 671, 677–93 (2016); SURDEN, *supra* note 2, at 719–36; Calo, *supra* note 11, at 411-13; Council of the European Union, *supra* note 43, at 5–6; Citron, *supra* note 42, at 1257.

⁹⁸ Kleinberg ET AL., *supra* note 23, at 115; see also SURDEN, *supra* note 2, at 719–36 (discussing the “illusion of mechanical neutrality”).

⁹⁹ See Goodman & Flaxman, *supra* note 20, at 4 (describing the relationship between geographic region, race, and income).

¹⁰⁰ See GREEN, *supra* note 94, § 3.1 (explaining the potential impact of changing social relations on risk assessments in criminal justice reform).

¹⁰¹ See Independent High-Level Expert Group, *supra* note 43, at 12 (emphasizing the importance of ensuring that AI systems are free of bias).

decision-making should be more vulnerable than algorithms designed and executed by human beings once machine intelligence has reached human-level cognitive ability.¹⁰² In other words, the fact that legal decisions are made by computer-systems and not by humans does not make a conceptual difference. Digital legal decision-making is not inferior to human legal decision-making in terms of avoiding biases. On the contrary, it has been pointed out correctly that “algorithmic systems of predefined rules and accurate and adequate data that is fit for purpose could be less prone to biased results than human-made decisions.”¹⁰³ In fact, because digital legal decision-making is based on automated data processing, it does offer better options to identify and exclude biased data, thus enhancing comparability, consistency, and, ultimately, the quality of the outcome of the legal decision-making process.¹⁰⁴

g. Job-killer

It is commonly acknowledged that AI will increasingly replace repetitive jobs.

Not just blue-collar work, but a lot of white collar work . . . 40% of jobs in the world, including truck drivers, telesales people’s, security guards and even radiologists will become displaceable by technology over the next 15 years.¹⁰⁵

In the legal field, “lawyers predict that artificial intelligence will halve the numbers working in law within 30 years.”¹⁰⁶ Many tasks which were

¹⁰² SURDEN, *supra* note 2, at 729 (“Judges, like all humans, are subject to a variety of conscious and unconscious biases.”); Goodman & Flaxman, *supra* note 20, at 7 (“The role of extraneous and ethically inappropriate factors in human decision making is well documented . . . , and discriminatory decision making is pervasive in many of the sectors where algorithmic profiling might be introduced.”).

¹⁰³ Presidency, *supra* note 43, at 11.

¹⁰⁴ *Id.*, at 21; Kleinberg ET AL., *supra* note 23, at 114–15.

¹⁰⁵ Christine N., *supra* note 86; Victor M. Palace, *What If Artificial Intelligence Wrote This: Artificial Intelligence and Copyright Law*, 71 FLA. L. REV., 217, 240–41 (2019); Denicola, *supra* note 20, 255–56.

¹⁰⁶ Johnathan Arnes, *Artificial intelligence takeover could halve law jobs in 30 years*, THE TIMES, (June 15, 2021),

previously conducted by lawyers are already discharged by AI.¹⁰⁷ E-due diligence is one of the most-cited examples in this regard.¹⁰⁸ But should legal innovation really be put on hold because of any impact on the legal job market?

The question of whether the protection of jobs is more important than innovation is of course not new. “Machines have been replacing people since the Industrial Revolution.”¹⁰⁹ And as with other technological developments in the past, it appears that given the major advantages of digital legal decision-making over human legal decision-making the claim that jobs in the legal sector must be protected does not seem to be a striking argument against moving forward in general and the use of digital legal technologies in particular.

h. Legal Creativity

One other issue to be acknowledged is the fact that digital legal decision-making, i.e. the delegation of legal decision-making powers to machines, entails the end of any legal creativity. As outlined above, digital legal decision-making means that an underlying algorithm triggers an automated decision-making process which – in a perfect AI world – allows only one outcome, i.e. the correct or – at least – the best outcome among different options. Furthermore, such outcome would never be coincidental, but rather the result of a structured and automated decision-making process. Risk-taking and creativity are often seen as an important feature of successful entrepreneurship. In an ideal AI world there would be no risk-taking or creative lawyering because the available data and other information only allow for one decision, i.e. the correct decision. The digital legal decision-making process would consequently not be revolutionary, but rather strictly evolutionary.¹¹⁰ This carries no disadvantages because in each given scenario only one solution can be the best and the AI system will identify and implement this solution in an automated manner.

¹⁰⁷ See Field, *supra* note 11 (discussing the replacement of legal work through automated computerization).

¹⁰⁸ See THE ECONOMIST, *supra* note 36; cf. Jeffery Wolff, *Artificial Intelligence in eDiscovery: Outlook for 2023 and Beyond*, IPRO ARTICLES ARCHIVE (Jan. 4, 2023), <https://ipro.com/resources/articles/artificial-intelligence-in-ediscovery-outlook-for-2023-and-beyond/> (discussing use of AI in e-discovery).

¹⁰⁹ Calo, *supra* note 11, at 426; also cf. John Thornhill, *Multiple red flags are not yet slowing the generative AI train*, FT 31 March 2023, 19 (“As a rule, it is better to debate how to use commercially valuable technologies appropriately than to curse their arrival.”)

¹¹⁰ This point was made by the participants of a seminar of the Deutsche Bank MCG Cadre Business Insights Series on December 7, 2021.

i. Democratic Legitimization

The notion of digital legal decision-making has also been subject to criticism based on the argument that it lacks “proper democratic input”.¹¹¹ While statements of this kind are often not supported by further arguments, it must first of all be acknowledged that democratic legitimization is not a core value in every society. But even when this is the case like in most parts of the Western world, a closer look reveals that matters are not at all that straight forward as they appear. In particular, it must be distinguished between two different stages of legal decision-making.

First, the initial delegation of legal decision-making to machines, i.e. the decision to enable digital legal decision-making, should not raise any concerns unless the party who delegates lacks the legitimate power to do so. This, however, is not a matter specific to digital legal decision-making but an issue for any delegation scenario whether the delegate is a human being, a legal entity, or an AI-system.

Second, for digital decision-making itself two types of decisions must be distinguished, namely first the execution of laws and regulations and second the creation of laws and regulations.¹¹² The execution does again not cause any problems provided that the democratic legitimization of laws and regulations in question themselves is guaranteed. In other words, the execution of laws and regulations derives its own legitimization from the decision to enact such laws and regulations.

As far as the digital creation of rules and regulations is concerned, one may argue that the legitimized decision to delegate law- and rulemaking to machines also legitimizes this activity.¹¹³ This may be convincing for a one-off legislative activity which is completed within a foreseeable period of time. The other extreme is of course the scenario outlined above,¹¹⁴ i.e. the

¹¹¹ GREEN, *supra* note 94, § 2.1; *see* Presidency, *supra* note 43, at 26 (“Direct, universal suffrage and free elections by secret ballot are the basis of the democratic process and a core element of our common values. They need to be preserved in the digital era.”); Independent High-Level Expert Group, *supra* note 43, at 11 (“AI systems should serve to maintain and foster democratic processes and respect plurality of values and life choices of individuals. AI systems must not undermine democratic processes, human deliberation or democratic voting systems.”); Citron, *supra* note 42, at 1288–91, 1296 (“But programmers who build code and design algorithms have no authority to engage in policymaking.”); Chesterman, *supra* note 68, at 277 (“There is a growing literature criticizing reliance on algorithmic decision making with legal consequences.”); Gauja, *supra* note 68, at 967 (“[T]echnological advances have profoundly affected the ways in which citizens practise politics.”).

¹¹² *See supra*, Section III.B.iii.

¹¹³ *See* Citron, *supra* note 42, at 1294 (“Automated systems can be conceptualized as *de facto* delegations of rulemaking power.”).

¹¹⁴ *See supra*, Section III.B.iii.

comprehensive delegation of legal decision-making powers to AI-systems without any restrictions in terms of the time. Can such delegation support digital legislative activities forever? If not, for how long can the delegation serve as democratic legitimization tool? Does democratic legitimization require that the delegation refers to specific legal activities or can it be general? If the assumption of a perfect AI world entails that digital legal decision-making will always lead to perfect outcomes, can perfect outcomes be unacceptable just because the decision-making process is based on a general delegation of decision-making powers to machines way back in the past?

In this context it may be helpful to compare the unlimited delegation of legislative powers to AI-systems with the democratically legitimized delegation of absolute powers to a “good dictator”, i.e. to a human being with unlimited decision-making powers who is perceived to act always in the best interest of the people. One may first consider that like in the case of the good dictator there is no guarantee that machines will remain “good” forever. While this would of course not be true in the perfect AI world assumed for the purpose of this article,¹¹⁵ concerns could be addressed by putting in place a proper governance and control system. Moreover, this aspect concerns the risk of a system failure and must be distinguished from the rather different question of democratic legitimization of digital legal decision-making.

Second, even if the decision to delegate absolute decision-making powers forever to AI-systems (or to a “good dictator”) was democratically legitimized, such delegation would be absolute and thus entail that democratic participation of humans is relinquished for the future altogether. It would, in other words, be a democratically legitimized decision to abolish the need for democratic legitimization. Even on the assumption of a perfect AI world such an abolishment cannot be acceptable in societies where democratic participation is a core value. Concerns can, however, again be addressed if a system is put in place that ensures proper human oversight and governance through monitoring and scrutiny mechanisms.¹¹⁶ It may in this regard be necessary to arrange for regular reconfirmations (better: “democratic re-legitimizations”) of the decision to delegate decision-making powers to the AI-system. And, this should not be a challenging task. In other words, the preservation of democratic values is (again) a matter of building a proper system.

¹¹⁵ *Id.*

¹¹⁶ See Antony Hinsworth ET AL., *The human factor in artificial intelligence*, SIMMONS & SIMMONS (October 14, 2022), <https://www.simmons-simmons.com/en/publications/cla2fpgw5uj20a94oaegyszn/what-is-the-new-eu-ai-liability-regime> (“[T]he human factor is key to ensure that AI is governed and overseen responsibly and that potential negative impacts ... are mitigated appropriately.”).

Finally, it is also important in this context that the legitimization issue is not only relevant at the level of states and constitutional structures. Take the example of companies: here the delegation of decision-making powers to AI systems may exclude shareholders from exercising their rights as the owners of the company. Likewise, the involvement of other stakeholders such as employees, creditors and suppliers would not be possible even if this was required or desired.¹¹⁷ It appears that the considerations set out in the previous paragraphs have to apply *mutatis mutandis*. It must consequently first be assumed that in a perfect AI world AI-systems would be able to generate decisions which reflect the interests of all shareholders and stakeholders as required by applicable law. Second, the absolute dereliction of legally guaranteed rights via the delegation of decision-making powers to AI-system(s) forever would not be acceptable. The corporate system must ensure continuing control.

j. Must Legal Decision-making Remain with Humans?

Some commentators have argued against the delegation of legal decision-making to computers because decisions—or at least “major decisions”—should remain with humans.¹¹⁸ Others have demanded a

‘[H]uman-centric approach’ in which human being enjoys a unique and inalienable moral status of primacy in the civil, political and social fields. . . . Human beings should remain free to make life decisions for themselves. . . . The allocation of functions between humans and AI systems should follow human-centric design principles and leave meaningful opportunity for human choice. This means securing human oversight over work processes in AI systems.¹¹⁹

The EU’s General Data Privacy Regulation of 27 April 2016

¹¹⁷ Cf. Lutz-Christian Wolff, *THE LAW OF CROSS-BORDER BUSINESS TRANSACTION* (2d ed., 2018), 359–60 (discussing the fact that the so-called stakeholder value approach has lost its appeal since the end of the 1990s when corporate disasters like Enron led to a refocusing on the shareholder value).

¹¹⁸ Cf. Ferdinand von Schirach, *JEDER MENSCH (EVERY HUMAN)*, 19 (Ferdinand von Schirach trans., 2021) (“Every human has the right that algorithms which affect him/her, are transparent, verifiable and fair. A human must make major decisions.”); SURDEN, *supra* note 2, at 734 (“Currently, our system is constructed so that human judges are called upon to make judgments upon other humans. If judges begin routinely adopting, by the default, the recommendation of the system, this results in subtle shift of responsibility and accountability away from the judge and towards the AI recommendation systems and their creators.”).

¹¹⁹ Independent High-Level Expert Group, *supra* note 43, at 10, 12, 16.

(“GDPR”)¹²⁰ takes the same approach—although from the viewpoint of data protection and not specifically in relation to legal decision-making—when stipulating:

The data subject should have the right not to be subject to a decision, which may include a measure, evaluating personal aspects relating to him or her which is based solely on automated processing and which produces legal effects concerning him or her or similarly significantly affects him or her, such as automatic refusal of an online credit application or e-recruiting practices without any human intervention. Such processing includes ‘profiling’ that consists of any form of automated processing of personal data evaluating the personal aspects concerning the data subject’s performance at work, economic situation, health, personal preferences or interests, reliability or behaviour, location or movements, where it produces legal effects concerning him or her or similarly significantly affects him or her.¹²¹

Demands that legal decisions must be made by humans often build on an unspecified fear that malicious machines will “take over.” This aspect was addressed in an earlier section. But does legal decision-making really need human elements? What are these human elements? Irrationality, emotions,¹²² delays and errors? What is wrong with a clinical approach without “human elements” adopted by digital legal decision-making if it leads to the correct legal outcome?

Algorithms have been perceived as “technocratic and dispassionate in a way that creates the veneer of unimpeachable objectivity”.¹²³ But again, a technocratic and dispassionate legal decision-making is exactly what the rule of law requires. In fact, legal decision-making must be technocratic and dispassionate in order to ensure absolute objectivity and a mechanical and predictable decision-making process.

¹²⁰ See *supra*, note 63.

¹²¹ See Art. 22, GDPR, <https://gdpr-info.eu/art-1-gdpr/> (last visited Nov. 1, 2021) (“1. The data subject shall have the right not to be subject to a decision based solely on automated processing, which produces legal effects concerning him or her or similarly significantly affects him or her. ...”); cf. *Recital 71*, GDPR, <https://gdpr-info.eu/recitals/no-71/> (last visited Nov. 1, 2021) (discussing profiling).

¹²² See Susan A. Bandes, *Feeling and Thinking Like a Lawyer: Cognition, Emotion, and the Practice and Progress of Law*, 89 *FORDHAM L. REV.*, 1 (2021) (discussing the powerful pleading in favor of accepting emotions as part of legal reasoning).

¹²³ Kleinberg ET AL., *supra* note 23, at 138.

It has also been argued that “(n)otions such as prosecutorial discretion, the rule of lenity, and executive pardon may not admit of mechanization at all. Certain decisions, such as the decision to take an individual off of life support, raise fundamental concerns over human dignity and thus perhaps cannot be made even by objectively well-designed machines.”¹²⁴ This statement leads to the much wider question of whether rule of law-based legal systems can leave any room for legal decision-making which can be exercised at will, which is outside the scope of this article.

However, two points must be highlighted in this regard. First, if digital legal decision-making is able to simulate human legal decision-making, then there is no reason why AI-systems should not as well be able to mirror decisions which entail discretion, lenity, or pardoning. Second, if discretion, lenity, and executive pardons were indeed open-ended, then the predictability requirement of the rule of law¹²⁵ would have to be given up. This seems not acceptable. It is more convincing that where legal rules contain undefined terms and concepts or allow discretion to request methodological tools which allow the identification of the correct solution.¹²⁶ The consistent application of these methodological tools would guarantee predictability and equal treatment. The question of what these methodological tools have to look like was previously addressed.¹²⁷ It requires using a legal algorithm that provides step-by-step instructions to reach the desired legal outcome while considering all relevant circumstances. This, of course, is what should ideally happen. In the real world, this ideal outcome may often not be achievable. But this of course is true for the rule of law concept altogether.¹²⁸

It has been argued that “(t)he overall principle of user autonomy must be central to the system’s functionality. Key to this is the right not to be subject to a decision based solely on automated processing which produces legal effects on users or similarly significantly affects them.”¹²⁹ But why should digital legal decision-making systems, which rely on automated processing, not be used if they achieve outcomes as good or better than the outcomes of human legal decision-making? And what does “solely on automated processing” mean?¹³⁰ In other words, how much human input is

¹²⁴ Calo, *supra* note 11, at 414; *cf.* SURDEN, *supra* note 2, at 727–30; Citron, *supra* note 42, at 1297–98, 1303–04.

¹²⁵ *See supra*, Section III.C.i.2).

¹²⁶ *Cf.* Wolff 2011, *supra* note 22, at 566.

¹²⁷ *See supra*, Section III.B.ii.

¹²⁸ Wolff 2011, *supra* note 22, at 560.

¹²⁹ Independent High-Level Expert Group, *supra* note 43, 16.

¹³⁰ *Id.*

needed to make digital legal decision-making acceptable? Again, if digital legal decision-making is possible at least at the level of human legal decision-making, then any insistence on a human element is unconvincing. This is particularly true if the system incorporates “human oversight” through appropriate governance structures.¹³¹

In a recent attempt to identify advantages of human lawyering over digital legal decision-making, it has first been claimed that human lawyers can provide “insights and opportunities.”¹³² This of course fails to take into account that—with comprehensive data and information access—AI could do the same, although faster and more accurately, consistently, and efficiently.¹³³ Next, the same author has suggested that human lawyers have “the ability to go beyond data to a synthesis of complex environmental factors that shape or constrain the courses of action that are genuinely available.”¹³⁴

[A] company’s contractual rights may be perfectly clear, but if enforcement of those rights would be judged harshly by a substantial community when reported or discussed on Facebook, Twitter, or talk-back radio, then any quality legal advice on the subject should reflect this.¹³⁵

AI currently does not offer the holistic assessment that this statement envisages. However, with comprehensive access to data and the ability to process it as humans do, there is no reason why digital legal decision-making should be inferior from this point of view.

Finally, empathy, or “the ability to understand the thoughts and feelings of another human”, has been identified as something humans offer and AI lacks.¹³⁶

Ultimately, law is a human system. Yes, the practice of law involves data and logic-flows in ways that may not have been apparent to our legal forbears, but ultimately legal systems add the most value when they serve humans. Across the economy there is strong market demand for people with skills,

¹³¹ *Id.*

¹³² Field, *supra* note 11.

¹³³ *See supra*, Section III.C.i.2).

¹³⁴ Field, *supra* note 11; *see also* SURDEN, *supra* note 2, at 735.

¹³⁵ *Id.*

¹³⁶ Field, *supra* note 11; *cf.* Bandes, *supra* note 121, at 4; *see* Drew Honeywell Kulow & Christopher Tart-Roberts, *The human side of legal tech*, LEXOLOGY (October 21, 2021), <https://www.lexology.com/library/detail.aspx?g=84b4042c-51c7-435f-8fff-64d796260e1e> (discussing the empathy in lawyer-client relationships).

awareness, and passion to make systems work better for humans, and I personally believe the legal profession will not be an exception.¹³⁷

It is again true that technical constraints currently limit AI's ability to employ empathy as a factor in decision making.¹³⁸ However, the whole point of AI is to simulate human decision-making. Consequently, on the basis of available data and other information AI will be able to make rational choices like human beings.¹³⁹ In contrast, if empathy builds on irrational "human factors", e.g. emotions, passion and compassion, then it should be disregarded in any event because this would lead to randomness.¹⁴⁰ In other words, human elements can and should only be considered if they support objective and predictable decisions. In contrast, there is no room for human elements which lead to subjective and thus unpredictable legal outcomes. As highlighted before, it is one of the major advantages of digital legal decision-making that irrational factors can be excluded.¹⁴¹

What remains to be considered is human dignity. If all legal decision-making was delegated to machines, humans would be legally infantilized and their existence in the legal sphere would *de facto* be extinguished.¹⁴² Humans would be dominated by machines. And this creates a dilemma. If one believes, on the one hand, that the ability to decide one's own fate is the essence of human existence, then absolute digital legal decision-making cannot be acceptable despite its advantages.¹⁴³ On the other hand, in a perfect AI world, digital legal decision-making would always lead to the creation of perfect laws and regulations and to their execution without errors, omissions, or delays.¹⁴⁴ If perfect legal decision-making is the ultimate goal of a legal system, then digital must be preferred over human legal decision-making simply because it is the superior way to achieve justice. The question is

¹³⁷ Field, *supra* note 11.

¹³⁸ Christine N., *supra* note 86.

¹³⁹ Cf. SURDEN, *supra* note 2, at 733 ("[J]udges can take into account a wide range of holistic and testimonial evidence in making a decision, much of which will be unavailable to the computerized algorithm when it cannot easily captured in data.").

¹⁴⁰ See Christine N., *supra* note 86 (stating the common understanding that AI does not have emotions).

¹⁴¹ SURDEN, *supra* note 2, at 733 ("Much research shows that humans reason poorly when it comes to probability due to various cognitive biases."); Chesterman, *supra* note 68, at 280–81.

¹⁴² Kelly, *supra* note 76 (discussing the "dehumanizing aspect" of AI taking over legal decision-making).

¹⁴³ See *supra*, Section III.C.i.

¹⁴⁴ See *supra*, Section III.B.v.

whether both positions are mutually exclusive. That is, does digital legal decision-making necessarily exclude human involvement, and *vice versa*? The answer to this question is a firm “No”.

As discussed in relation to the question of how democratic legitimization of digital legal decision-making can be ensured, ultimate human control over the digital legal decision-making process can (and must!) be achieved through an appropriate governance system. This may include a regular reassessment of whether to delegate legal decision-making to AI systems. With such a system in place, legal decision-making can be traced back to humans while the advantages outlined above could be utilized. AI-systems would be involved in the legal decision-making process like other tools used by humans, such as computers and databases. Furthermore, the delegation of legal decision-making powers to AI-systems would not be absolute, but only to the extent which ensures continuing control by humans. The discussion of what this means in detail has already started and will take center stage in the decades to come.

IV. FINAL REMARK

This article has highlighted the advantages as well as the perceived downsides of digital legal decision-making. Technical constraints limit digital legal decision-making presently. It will take decades until digital legal decision-making will reach the level of human capabilities. But, according to AI-experts, this possibility is real.¹⁴⁵ To get there, many problems will have to be solved and many risks will have to be addressed. These problems and risks have to be accepted because of the competitive advantages of digital legal decision-making over human legal decision-making. “The end game of designing systems that reflect justice and equity will involve very considerable interdisciplinary efforts and is likely to prove a defining policy issue of our time.”¹⁴⁶

¹⁴⁵ See *supra*, Section II.

¹⁴⁶ Calo, *supra* note 11, at 415.