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Chapter 2

Artificial Intelligence as a New Component of the Justice System: How it creates New Possibilities, but has Limitations especially with regards to Governance

JOHN ZELEZNIKOW AND FERNANDO ESTEBAN DE LA ROSA

SUMMARY: I. INTRODUCTION: THE CHALLENGE OF INCORPORATING ARTIFICIAL INTELLIGENCE INTO JUSTICE SYSTEMS. II. DESIGNING ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS FOR THE ADMINISTRATION OF JUSTICE. II.1. *Technical possibilities*. II.2. *The limitations of using Artificial Intelligence in the Justice System*. II.2.1. Examining discretion and the use of rule based Artificial Intelligence. II.2.2. Machine Learning: the need for cleaning data to avoid biases. II.3. *The distinction between Decision Support and Decision-Making Systems*. II.4. *Self-Represented Litigants: Bargaining in the Shadow of the Law*. II.5. *Online Dispute Resolution Tools and Decision Support for Self-Represented Litigants*. III. EXAMPLES USING ARTIFICIAL INTELLIGENCE. III.1. *First experiences*. III.2. *The Dutch platform Rechtwijzer*. III.3. *The British Columbia Civil Resolution Tribunal*. III.4. *The Internet Courts in China*. III.5. *The Estonian Project*. IV. USES AND GOVERNANCE OF ARTIFICIAL INTELLIGENCE IN THE FIELD OF THE JUDICIAL SYSTEM: AN EUROPEAN PERSPECTIVE. V. CONCLUSION. VI. REFERENCES.

I. INTRODUCTION: THE CHALLENGE OF INCORPORATING ARTIFICIAL INTELLIGENCE INTO JUSTICE SYSTEMS

Richard Susskind (2019) argues that ‘in most legal systems, the resolution of civil disputes takes too long, costs too much and the process is not just antiquated; it is unintelligible to ordinary mortals. ... Online courts use technology to enable courts to deliver more than judicial decisions. They provide tools to help users understand relevant law and available options, and to formulate arguments and assemble evidence. They offer non-judicial settlements such as negotiation and early neutral evaluation, not as an alternative to the public court system but as part of it’.¹

Advances in Computing and Information and Communication Technology have opened new possibilities for traditional models of justice systems. The rise of Online Dispute Resolution (ODR)² has led to the incorporation of a wide range of technological tools into dispute resolution with the aim of helping to facilitate access to justice. The pioneers of ODR saw it as a futuristic idea that could cope with ecommerce disputes. Today, however, ODR has moved beyond E-commerce and is being used even for non-financial disputes.³ Today, ODR is even suggested as being capable of supporting Self Represented Litigants (SRL).

Legal communities are now realising the benefits of using the technology and ODR. This feeling is stronger today due to the situation created by the pandemic Covid19,⁴ and the possibility that ODR allows the avoidance of face-to-face requirements. The tools that ODR has been able to incorporate into dispute resolution are very diverse. ODR allows, for instance, that the various phases of the process, such as

1. Richard Susskind, *Online Courts and the Future of Justice* (OUP 2019).
2. Lodder and Zeleznikow indicate, whilst there is no generally accepted definition of Online Dispute Resolution (ODR), *we can think of it as using the Internet to perform Alternative Dispute Resolution (ADR)*. Arno Lodder and John Zeleznikow, *Enhanced dispute resolution through the use of information technology*, Cambridge University Press, 2010. While this is a helpful working definition, it is important to note that one difficulty in providing a more precise and widely accepted definition is that ODR is many things, to many people. ODR is often described as: a. Technology Assisted Dispute Resolution; or b. Technology Facilitated Dispute Resolution; or c. Technology Based Dispute Resolution. The one common factor in all these descriptions is the existence of a fourth party – *the technology*.
3. See for instance the work of Ethan Katsh and Orna Rabinovich-Einy, *Digital Justice. Technology and the Internet of Disputes*, OUP, 2017.
4. See Tania Sourdin and John Zeleznikow, “Courts, Mediation and COVID-19”, 48-2 *Australian Business Law Review*, (2020) 138 and Fernando Esteban de la Rosa and Cátia Marques Cebola, “Litigios de consumo y ODR: el modelo institucional europeo en la era del covid-19” in Bibiana Beatriz Luz Clara and Marcelo Eduardo Bauzá Reilly (eds), *Resolución de disputas en línea. Instrumentos para la justicia del siglo XXI*, (Thomson Reuters, 2020).

submissions, notifications, deliberations and results, can be carried out through electronic means using, for example multifunctional platforms, negotiation software, documents and online forms, electronic signature, security software, chat rooms synchronised or unsynchronised, instant messaging, email, videoconference, voice over IP, and many other means typical of virtual environments.⁵

Alan Turing proposed the Turing Test as a replacement for the question “Can machines think?”⁶ Since then, Turing’s ideas have been widely discussed, attacked, and defended. At one extreme, Turing’s paper has been considered to represent the “beginning” of Artificial Intelligence (AI) and the Turing Test has been considered as its ultimate goal. At the other extreme, the Turing Test has been called useless, even harmful. In between are arguments on consciousness, behaviorism, the ‘other minds’ problem, operational definitions of intelligence, necessary and sufficient conditions for intelligence-granting, and so on.⁷ Traditional AI has included major components of rule-based reasoning, case-based reasoning and machine learning. These were distinguished from other less cognitive but more numerically based techniques such as operations research and statistics.

The latest developments in AI hold new promises for improving efficiency and quality in the provision of access to justice. The creation of powerful engines for searching of previous decisions, has led to the development of tools for assisting in the provision of legal information, by means of a robot, which can help in drafting documents and advising the user during the decision-making process. The contribution of AI can also be measured in terms of improved transparency and standardisation of case-law. Judicial decision processing by AI may also help to improve the predictability of legal decisions and may play a role by enhancing the consistency of court decisions. But artificial intelligence tools can also lead to the possibility of the so-called robot judge. For instance, the Internet Courts in China can make an assessment of potential litigation outcomes prior to the filing of the lawsuit and the Civil Resolution Tribunal (CRT) in the Canadian province of British Columbia diagnoses the dispute and provides legal information related to the case. In an interesting project in Estonia a “robot judge” is used to decide disputes of up to 7,000 euros.

5. See Fernando Esteban de la Rosa, “Principios de protección del consumidor para una iniciativa europea en el ámbito de la resolución electrónica de diferencias (ODR) de consumo transfronterizas” (2011) 25 *Revista General de Derecho Europeo* 5, 5-6.
6. See Allan Turing, “Computing machinery and intelligence”, (1950) LIX Issue 236 *Mind*, 433.
7. See Ayse Pinar Saygin, Ilyas Cicekli and Varol Akman, “Turing Test: 50 Years Later”, (2000), *Minds and Machines*, pp. 463-518.

The development of a technology such as AI, which aspires to compare itself with human intelligence, or even to improve or surpass it, constitutes a great scientific challenge for mankind. The assumption of the potential of this technology in both technical and human terms has placed AI systems in two spheres of knowledge: technical and ethical.

On the technical side, the question lies in discovering the real possibilities and identifying the technical and theoretical limitations of AI. The last thirty years have seen the development of much research shedding light on how AI may help the administration of justice, in which sectors, in what way and which difficulties should be taken into consideration. Machine-learning has been discovered as one important element for further development of AI systems. Using AI to support the legal process is no longer a theoretical question – there are now Expert Systems assisting in the modernization of Justice.

On the ethical side, the debate focuses on how the use of AI can affect the fundamental principles under which a judicial system is built. Research on the ethical barriers to using AI in legal domains is occurring in the technologically most developed countries such as the OECD, the Council of Europe, the EU, the G7 and the G20.⁸ In the European Union MEPs are calling for a legal framework for AI and on the 4th of April 2021 it was launched the Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence.⁹ Technical and ethical analysis are of interest in order to promote the debate on the legal development concerning the use of AI in the field of the administration of justice. Unlike the situation in China, Canada or the United States of America, where significant developments are occurring (such as the British Columbia Online Civil Resolution Tribunal), the use of AI algorithms in European Judicial Systems, save for the projects in Estonia,¹⁰ and some experiments in France¹¹ the Netherlands¹² and the

8. Margarita Robles Carrillo, “La Gobernanza de la inteligencia artificial: Contexto y Parámetros Generales”, (2020) 39 *Revista Electrónica de Estudios Internacionales*, 5.

9. COM (2021) 206 final. 2021/0106 COD). Available here: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=COM:2021:206:FIN>.

10. See Eric Niiler, (2019) Can AI be a Fair Judge in Court? Estonia Thinks So. <https://www.wired.com/story/can-ai-be-fair-judge-court-estonia-thinks-so/> last accessed September 6 2021.

11. The Douai and Rennes Courts of Appeal conducted a three-month trial in 2017 with a software programme labelled “predictive” by a panel of judges. See CEPEJ, Appendix I for an in-depth study on the use of AI in Judicial systems, notably AI applications processing judicial decisions and data.

12. The Dutch Judicial Authority (Rechtspraak) conducted an experiment in September 2017 where two real cases were submitted for the system’s assessment and to test the ability of its AI programme called LexIQ in proposing solutions to such real court

European Court of Human Rights,¹³ remain primarily a private sector commercial initiative aimed at insurance companies, legal departments, lawyers and individuals.¹⁴ However, Public decision-makers are beginning to be increasingly solicited by a private sector wishing to see these tools integrated into public policies. It is the time to discover what role should be given to AI in the Public Judicial System, as a new component in the administration of justice.

The aim of this paper is to contribute to identifying the real potential of the use of AI tools not only to promote efficiency of judicial Systems but to strengthen the guarantees of the rule of law, together with the quality of public justice, discovering the role that modern societies should give to the use of AI and Expert Systems. Before we make public decisions, it is important to discover how AI may help, in which sectors AI would have a useful impact, and what kind of safeguards should be implemented to avoid the difficulties in using AI. Let us commence by reviewing the technical possibilities and limitations of using AI.¹⁵

II. DESIGNING ARTIFICIAL INTELLIGENCE AND EXPERT SYSTEMS FOR THE ADMINISTRATION OF JUSTICE

II.1. TECHNICAL POSSIBILITIES

AI is a field of study and application concerned with identifying and using tools and techniques that allow machines to exhibit behaviour

cases. The decisions made by LexIQ were tested against those made by human judges. See Viviane Lindenbergh, Legal Certainty and the Possibility of Computer Decision Making in the Courtroom, in <https://towardsdatascience.com/legal-certainty-and-the-possibility-of-computer-decision-making-in-the-courtroom-ac4b1a6c42d1> (last viewed September 6 2021).

13. It is announced that the model built can predict the court's decisions with a strong accuracy (79% on average). See Nikolaos Aletras, Dimitrios Tsarapatsanis, Daniel Preotiuc-Pietro and Vasileios Lampos, "Predicting judicial decisions of the European Court of Human Rights: a Natural Language Processing perspective", *PeerJ Comput. Sci.* 2:e93; DOI 10.7717/peerj-cs.93.
14. See Appendix I, "In-depth study on the use of AI in judicial systems, notably AI applications processing judicial decisions and data" in CEPEJ, *European Ethical Charter on the Use of AI in Judicial Systems and their Environment*, (2018). As explained, "the initiative for the development of these tools comes largely from the private sector, whose clientele so far has been made up mostly of insurance companies, lawyers and legal services wanting to reduce legal uncertainty and the unpredictability of judicial decisions".
15. For an excellent new book on this topic see Tania Sourdin, *Judges, Technology and Artificial Intelligence. The Artificial Judge* (2021 Elgar Law).

that would be considered intelligent if it were observed in humans.¹⁶ In the area of court decisions, expert systems or AI can be used to help make a decision, either for the case at hand or for procedural decisions taken during the course of legal proceedings (for instance, ruling on the sentence, precautionary measures, evaluation of evidence, drawing conclusions from the information obtained during the proceedings). There are different methods that have been used to develop intelligent systems. They may belong to the following main categories:

Rule-based reasoning - In the rule-based approach, the knowledge of a specific legal domain is represented as a collection of rules of the form IF <condition(s)> THEN action/conclusion. For example, consider the domain of driving offences in Victoria, Australia. Drivers can lose their license either by being drunk whilst driving, or exceeding a specified number of points in a given time. More specifically, probationary drivers (those who have held a driver's license for less than three years) are not permitted to have even a trace of any alcohol in their blood. Other drivers must have a blood alcohol level not exceeding 0.05%. This knowledge can be modeled by the following rules: (a) IF drive(X) & (blood_alcohol(X) > .05) & (license(X) >= 36) THEN licence_loss (X); (b) IF drive(X) & (blood_alcohol(X) > .00) & (license(X) < 36) THEN licence_loss (X). This kind of method belongs to the first wave of AI, characterised by the deductive method and by the fact that it can be programmed by humans. The first wave of AI systems was developed through an interview process called knowledge acquisition. This involved trying to extract knowledge and reasoning processes from the minds of legal experts: going to the mine, as they said back then. The knowledge obtained was then codified in the form of complex decision trees, which were integrated into computer systems, thus generating flow charts through which non-expert users could navigate. We call these rule-based expert systems.¹⁷ They posed questions to users and could provide judicial answers and draft legal documents often at a higher level than human experts.

Rule based reasoning through the use of Decision Trees - The process of discovering a solution to a case may involve using decision trees. A decision tree is a tree-shaped representation in which branches branch off according to the values taken by the variables and which end in a specific proposal for decision (a leaf). The creation of a decision tree can help to qualify the claim and to position the users to possible solutions to the case. They can be envisaged as check lists and template systems. In this way,

16. C.W. Holsapple and A.B. Whinston, *Decision Support Systems: A Knowledge-Based Approach*. (West Publishing Company, Minneapolis/St. Paul, 1996).

17. Richard E Susskind, *Expert Systems in Law*, (Clarendon Press, Oxford, 1987).

decision trees also belong to the first wave of artificial intelligence.¹⁸ In AI Terms, we would be using an Expert System where designers acquire knowledge from human experts.¹⁹ This is the method used by the Civil Resolution Tribunal in British Columbia, which, as in the previous case, uses the deductive method.

Case-based reasoning – Precedents play a more central role in Common law than they do in Civil Law and are therefore the most obvious application of adversarial case-based reasoning in the legal domain. However, partly due to the electronic availability of case law, in particular via the Internet, the role of precedents seems to be becoming at least informally more important in Civil Law countries.²⁰ Using the principle of *stare decisis*, to make a decision in a new case, legal decision-makers search for the most similar case decided at the same or higher level in the hierarchy. Case-based reasoning is the process of using previous experience to analyse or solve a new problem, explain why previous experiences are or are not similar to the present problem and adapting past solutions to meet the requirements. Case based AI models search for relevant similarities (or differences) among cases. These systems rely on various approaches including semantic analyses or other algorithms to model various “factors” within cases, which are then weighted and compared. But there is an important difference with the use of jurisprudence to resolve a case. The AI method for case-based reasoning poses and solves the problems of knowledge through empirical research and the mathematical treatment of the data obtained, more attached to jurimetrics than jurisprudence. The fields for the jurimetrics would be the quantitative analysis of judicial behaviour, the use of mathematical logic in law, the retrieval of legal data by electronic means and the formulation of a legal prediction calculus. Loevinger underlined that Jurimetrics would help to make predictions in the legal field.²¹ If necessary, it would be possible to build deductive rules emulating a case-based approach.²² A comprehensive discussion of

18. Richard Susskind, *Online Courts and the Future of Justice* (OUP 2019).

19. Darin Thompson, “Creating New Pathways to Justice Using Simple Artificial Intelligence and Online Dispute Resolution”, (2015), vol 1 (2) *International Journal of Online Dispute Resolution*, 4, 13.

20. Kevin D. Ashley, “Case-based models of legal reasoning in a civil law context” in *International congress of comparative cultures and legal systems of the instituto de investigaciones jurídicas*. (2004).

21. Lee Loevinger, “Jurimetrics. The methodology of legal inquiry”, (1963), 28 (1), *Contemporary Problems* 5, 8.

22. Darin Thompson, “Creating New Pathways to Justice Using Simple Artificial Intelligence and Online Dispute Resolution”, (2015), vol 1 (2) *International Journal of Online Dispute Resolution*, 4, 13.

the application of this approach to the legal domain is provided by Kevin Ashley.²³

Machine learning – Machine learning is that subsection of learning in which the AI system attempts to learn automatically. Knowledge Discovery from Databases is the ‘non-trivial extraction of implicit, previously unknown and potentially useful information from data.’ Data mining is a problem-solving methodology that finds a logical or mathematical description, eventually of a complex nature, of patterns and regularities in a set of data.²⁴ An in-depth discussion of Knowledge Discovery from Legal Databases can be found in Stranieri and Zeleznikow (2005).²⁵ To better support the learning process, it is crucial to have a specific well defined training data set in terms of format, language and other characteristics.

One of the earliest forms of machine learning is that of rule induction. Whilst the representation of knowledge in decision trees is deductive (see above), we can use rule induction to automatically learn relevant decision trees.²⁶ Another Machine Learning method is the technique of Neural Networks,²⁷ based on a collection of connected units or nodes called artificial neurons which loosely model the neurons in a biological brain.

II.2. THE LIMITATIONS OF USING ARTIFICIAL INTELLIGENCE IN THE JUSTICE SYSTEM

II.2.1. Examining discretion and the use of rule based Artificial Intelligence

Developing a generic AI system, even in the field of law, is challenging because it involves the development of general-purpose machines that are capable of performing all or most of the tasks that can be conducted

23. Kevin D. Ashley, “Case-Based Reasoning and Its Implications for Legal Expert Systems”. (1992) 1 *Artificial Intelligence and Law*, p. 113-208. <https://doi.org/10.1007/BF00114920>.

24. See Usama Fayyad, Gregory Piatetsky-Shapiro, and Padhraic Smyth, “From Data Mining to Knowledge Discovery in Databases”, (1996), Volume 17, Number 3, *AI Magazine*.

25. Andrew Stranieri and John Zeleznikow, *Knowledge Discovery from Legal Databases* (Springer 2005).

26. See. Quinlan, J. Ross. “Induction of decision trees.” *Machine learning* 1.1 (1986): 81-106.

27. See Andrew Stranieri, John Zeleznikow, Mark Gawler, and Bryn Lewis. “A hybrid rule–neural approach for the automation of legal reasoning in the discretionary domain of family law in Australia.” *Artificial intelligence and Law* 7, no. 2 (1999): 153-183.

by intelligent humans.²⁸ So efforts in the legal field have focused on systems for limited activities. As the variety of legal problems is wide, a first limitation for the potential use of AI in law requires us to examine specific legal problems.²⁹ Solely using a deductive method it is difficult to imagine a machine capable of having so many branches as to cover all areas of law. That is why Expert Systems have been built to resolve legal problems in only a narrow field of law. The experiences, for instance, in constructing the British Columbia Civil Resolution Tribunal, make clear the practical need to define areas of legal issues in order to build Expert Systems, potentially through the use of decision trees, that will enable the most precise answers to be drawn up for the various types of problems that may arise in a given area.³⁰

It is best to build a Legal Expert System when tasks are well defined (there are no open textured predicates) and bounded (decision makers have limited options). Fields like these can be modelled using rules. Such examples are drink driving in Victoria (Australia) and *U.S. Sentencing Guidelines* [USSG 18 USCS Appx.]. *U.S. Sentencing Guidelines* have actually been modelled by a (rule-based) computer system.³¹ Indeed, most jurisdictions dealing with driving infringements are rule-based and totally automated. This is also the case with the determination of social security benefits. Sarder submits that algorithmic decision-making has enormous potential to do good. From identifying priority areas for first response after an earthquake hits, to identifying those at risk of COVID-19 within minutes, their application has proven hugely beneficial.³² There has been extensive research in the development of decision support systems to model administrative justice, including the seminal work of Sergot et al.

28. Richard Susskind, *Online Courts and the Future of Justice* (OUP 2019).

29. See Fernando Esteban de la Rosa, "ADR-Rooted ODR Design in Europe. A Bet for the Future", 2018 5 *International Journal on Online Dispute Resolution* 161.

30. Related to the types of dispute the British Columbia Civil Resolution Tribunal has jurisdiction, see <https://civilresolutionbc.ca/resources/crt-jurisdiction/#what-types-of-strata-disputes-can-the-crt-resolve>, last viewed September 6 2021.

See also Darin Thompson, "Creating New Pathways to Justice Using Simple Artificial Intelligence and Online Dispute Resolution", 2015, vol 1 (2) *International Journal of Online Dispute Resolution*, 4.

31. See E. Simon and G. Gaes, 'ASSYST - Computer Support for Guideline Sentencing', The Second International Conference on Artificial Intelligence and Law: Proceedings of the Conference, Vancouver 1989, pp. 195-200.

32. Monika Sarder From robodebt to racism; what can go wrong when governments let algorithms make the decisions, *The Conversation Australia* June 5 2020, <https://theconversation.com/from-robodebt-to-racism-what-can-go-wrong-when-governments-let-algorithms-make-the-decisions-132594>, last viewed September 6 2021.

(1986)³³ in interpreting the *British Nationality Act* of 1981. The use of code as rules to support legal decision making is most useful in administrative law domains. However, the coded version produced during drafting may be too rigid to respond appropriately and fairly to unforeseen cases.³⁴

Deductive AI tools allow transparency and the monitoring of the machine output is facilitated to be able to rectify what is necessary in case any errors in the programming are discovered. Programming is, however, a delicate process and if not done well can lead to unfair treatment when the algorithm doesn't match reality. This can occur when a one-size-fits-all rule is implemented in a complex environment. The most recent devastating example is *Australia's Centrelink "robodebt" debacle*.³⁵ In that case, welfare payments made on the basis of self-reported fortnightly income were cross-referenced against an *estimated* fortnightly income, taken as a simple average of annual earnings reported to the Australian Tax Office, and used to auto-generate debt notices without any further human scrutiny or explanation. This assumption is at odds with how Australia's highly casualised workforce³⁶ is actually paid. For example, a graphic designer who was unable to find work for nine months of the financial year but earned A\$12,000 in the three months before June would have had an automated debt raised against her. This is despite no fraud having occurred, and this scenario constituting exactly the kind of hardship Centrelink is designed to address.

The development of Legal Expert Systems is more difficult in discretionary domains. Such domains cannot be modelled solely using rule-based systems. Schild, Kannai and Zeleznikow (2007)³⁷ investigated how to best model judicial decision-making in order to use information technology to support enhanced legal decision-making in discretionary

33. See Marek J Sergot, Fariba Sadri, Robert.A. Kowalski, Frank R. Kriwaczek, Peter Hammond and H. Terese Cory, "The British Nationality Act as a logic program", (1986), *Communications of the ACM*, 29 (5): 370-386.

34. See Guido Governatori, Jeffrey Barnes, John Zeleznikow, Louis de Koker, Marta Poblet, Mustafa Hashmi and Pompeu Casanovas Romeu, 2020 '*Rules as Code' will let computers apply laws and regulations. But over-rigid interpretations would undermine our freedoms*', <https://theconversation.com/rules-as-code-will-let-computers-apply-laws-and-regulations-but-over-rigid-interpretations-would-undermine-our-freedoms-149992> last viewed September 6 2021.

35. See <https://theconversation.com/from-robodebt-to-racism-what-can-go-wrong-when-governments-let-algorithms-make-the-decisions-132594>.

36. See <https://theconversation.com/the-costs-of-a-casual-job-are-now-outweighing-any-pay-benefits-82207>.

37. See Ruth Kannai, Uri J. Schild and John Zeleznikow, "Modeling the Evolution of Legal Discretion - An Artificial Intelligence Approach", (2007) Vol. 20, Issue 4, *Ratio Juris*, pp. 530-558.

domains. They developed cognitive models of the exercise of discretion. They examined different levels of legal discretion in order to choose better candidates for the use of automatic systems.

They observed that discretionary decision-making can best be modelled using three independent axes: bounded and unbounded, defined and undefined, and binary and continuous decisions. Bounded and well-defined domains can be modelled using rule-based systems. Bounded undefined domains are amenable to the use of case-based reasoning and machine learning.

Discretion is closely associated with the concept of “open texture,” a term first used by Waismann (1951)³⁸ to assert that concepts are necessarily indeterminate. Open texture is frequently used to describe the ambiguity or vagueness in the natural-language descriptions found in legal provisions or judgments. Bench-Capon and Sergot (1988)³⁹ define an open textured term as one whose extension or use cannot be determined in advance of its application. The distinct types of situations that are difficult to resolve because of the open textured nature of law are: 1. Classification difficulties, 2. Vague terms, and 3. Defeasible rules.

Stranieri et al. (1999)⁴⁰ note that their classification of legal tasks reflects domain experts’ beliefs about four factors: a. the extent to which the task contains ambiguous definitions; b. the extent to which the predicates in the task are coarse; c. the experts’ jurisprudential perspectives; d. the social and political environment. As an example, the regulation of road traffic rules is rule-based, the contribution of both parents to a marriage requires both rules and machine learning whilst the issue of the paramount interests of a child in a parenting dispute is intractable and so should not be automated. No matter how clear the words of a law are, it is always necessary to relate the words of the text to the context. It is always important to take into account the social reality of the time in which these words have to be applied, as expressed for example in article 3.1 of the Spanish Civil Code. Various rules may not be applied on a strictly literal basis because the result would be absurd or unjust. Such results can be

38. See Frederick Waismann, (1951). “Verifiability”. *Logic and Language*. 1: 119-123.

39. Trevor Bench-Capon and Marek Sergot, “Towards a rule-based representation of open texture in law”, In: Walter, C. (ed.) *Computer Power and Legal Language: The Use of Computational Linguistics, Artificial Intelligence, and Expert Systems in the Law*, Quorum, New York, ch. 6, pp. 39–60 (1988); From the Second Annual Conference on Law and Technology, June 24-28. University of Houston (1985).

40. Andrew Stranieri, John Zeleznikow, Mark Gawler, and Bryn Lewis. “A hybrid rule-neural approach for the automation of legal reasoning in the discretionary domain of family law in Australia.” *Artificial intelligence and Law* 7, no. 2 (1999): 153-183.

avoided by using precisely the criteria of interpretation or hermeneutic criteria, as hermeneutic technique is the art of explanation.⁴¹

II.2.2. Machine Learning: the need for cleaning data to avoid biases

First of all, the use of machine learning is related to the existence of data. However, in some areas there is insufficient data and ML cannot establish statistically valid relationships.⁴² On the other hand, two of the disadvantages of the use of Machine Learning systems are that they are not transparent, and the data and the software on which they are based may be manipulated. There is also a concern that the use of ML in the legal system will worsen biases against minorities or deepen the divide between those who can afford quality legal assistance and those who cannot. There is no doubt that algorithms will continue to reinforce existing biases against vulnerable groups,⁴³ but this is because the algorithms are largely copying and amplifying the decision-making trends embedded in the legal system. In reality, there is already a class divide in legal access – those who can afford high quality legal professionals will always have an advantage. The development of intelligent support systems can partially redress this power imbalance by providing users with important legal advice that was previously unavailable to them.

Systemic racism has been repeated, more insidiously, in algorithmic processes. One example is COMPAS, a controversial “decision support” system designed to help parole boards in the United States⁴⁴ decide which prisoners should be released early, by providing a probability score of their likelihood of reoffending. Rather than relying on a simple decision rule, the algorithm used a range of inputs, including demographic and survey information, to derive a score. The algorithm did not use race as an explicit variable, but it did embed systemic racism by using variables that were shaped by police and contained on the ground judicial biases. Applicants were asked a range of questions about their interactions with the justice

41. See Ettore Battelli, “La decisión robótica: algoritmos, interpretación y justicia predictiva”, (2020) 38, *Revista de Derecho Privado* 45, 55-58.

42. See Ray Worthy Campbell, “Artificial Intelligence in the Courtroom: the delivery of Justice in the age of Machine Learning”, *Colorado Tech Law Journal*, vol. 18.2, 2020, pp. 323-350.

43. Goel, S., Shroff, R., Skeem, J., & Slobogin, C. (2021). The accuracy, equity, and jurisprudence of criminal risk assessment. In *Research Handbook on Big Data Law*. Edward Elgar Publishing.

44. See Zalnieriute, Monika, Lyria Bennett Moses, and George Williams. “The rule of law and automation of government decision-making.” *The Modern Law Review* 82.3 (2019): 425-455.

system, such as the age they first came in contact with police, and whether family or friends had previously been incarcerated. This information was then used to derive their final “risk” score.

It would be wonderful if we could program an algorithm to respond to ethical concerns. To use the terminology of Kannai et al (2007)⁴⁵ the number of possible interpretations for unethical predicates is unbounded i.e. we cannot enumerate all the possible unethical behaviours of an unethical predicate. Hence it is impossible to model unethical behaviour. Whilst it is possible to determine if a behaviour is unethical, it is not possible to list all unethical behaviours⁴⁶.

II.3. THE DISTINCTION BETWEEN DECISION SUPPORT AND DECISION-MAKING SYSTEMS

It should be stressed there is a major difference between Decision Support and Decision Making. Decision support tools help decision-makers improve their performance. Decision-making tools automate the process, leaving a minimal role for the user. (Zeleznikow 2002)⁴⁷ states that when considering decision making as a knowledge-manufacturing process, the purpose of a decision support system is to help the user manage knowledge. A decision support system fulfils this purpose by enhancing the user’s competence in representing and processing knowledge. It supplements human knowledge management skills with computer-based means for managing knowledge. A decision support system accepts, stores, uses, receives and presents knowledge pertinent to the decisions being made. Its capabilities are defined by the types of knowledge with which it can work, the ways in which it can represent these various types of knowledge, and its capabilities for processing these representations.

As we noted above, Kannai et al (2007)⁴⁸ examine different levels of legal discretion in order to be a better candidate for the use of automated systems. They considered issues of binary nature of decisions (versus a

45. See Ruth Kannai, Uri J. Schild and John Zeleznikow, “Modeling the Evolution of Legal Discretion - An Artificial Intelligence Approach”, *cit.*

46. For example, who could have foreseen that in a US presidential election, a president would incite a mob to attack his chosen vice-president against an election result from an election run by his government.

47. See John Zeleznikow, “An Australian Perspective on Research and Development Required for the Construction of Applied Legal Decision Support Systems”, (2002) 10, *Artificial Intelligence and Law*, pp. 237–260. <https://doi.org/10.1023/A:1025450828280>.

48. See Ruth Kannai, Uri J. Schild and John Zeleznikow, “Modeling the Evolution of Legal Discretion - An Artificial Intelligence Approach”, *cit.*

continuum). Much of the seminal work in AI and Law came from law professors Kevin Ashley (1990)⁴⁹, Thorne McCarty (1976)⁵⁰ and Richard Susskind (1987).⁵¹ An excellent discussion of such work can be found in Zeleznikow and Hunter (1994).⁵²

For the past thirty years, Artificial Intelligence, Expert Systems, Case Based Reasoning and Machine Learning have been used by the legal profession, often to provide advice about the potential result of court related action{(Zeleznikow and Hunter 1994), Stranieri and Zeleznikow (2005) and Lodder and Zeleznikow (2010)}. Zeleznikow and his research group at the Donald Berman Laboratory, Latrobe University, Melbourne, Australia, used a number of inferencing techniques in legal domains, including: association rules, case-based reasoning, machine learning, neural networks and rule induction. Domains investigated include: Workers Compensation (IKBALS), Credit Law (CAAS), Family Law Property Distribution (Split Up), Family Law Mediation (Asset Divider), Refugee Law (Embrace), Eligibility for Legal Aid (GetAid), Copyright Law (RightCopy), Eye-Witness Identification (ADVOKATE), Examining the causes of death (natural causes, suicide or homicide), Sentencing and the Building Industry.⁵³

The decade of the 1980s saw the development (and hype about) futuristic expert systems to model legalistic decision making. It was proposed that eventually such expert systems could change the nature of legal practice. An example of such systems include TAXMAN (McCarty 1976)⁵⁴ and the Latent Damage Advisor of Capper and Susskind (Susskind 1987).⁵⁵

II.4. SELF-REPRESENTED LITIGANTS: BARGAINING IN THE SHADOW OF THE LAW

An increasing phenomenon in Common Law countries is the growing number of pro se litigants. In Europe, the UK is one exponent of a system

49. Ashley, Kevin D. "Modeling Legal Argument: reasoning with cases and hypotheticals. A Bradford book." (1990).

50. McCarty, L. Thorne. "Reflections on TAXMAN: An experiment in artificial intelligence and legal reasoning." *Harv. L. Rev.* 90 (1976): 837.

51. Richard E Susskind, *Expert Systems in Law*, (Clarendon Press, Oxford, 1987).

52. See John Zeleznikow and Dan Hunter, *Building Intelligent Legal Information Systems. Representation and reasoning in Law*, (Kluwer, 1994).

53. John Zeleznikow, "An Australian perspective on research and development required for the construction of applied legal decision support systems." *Artificial Intelligence and Law* 10.4 (2002): 237-260.

54. L. Thorne McCarty, Reflections on TAXMAN: An experiment in artificial intelligence and legal reasoning. (1976) 90 *Harv. L. Rev.*, 837.

55. Richard E Susskind, *Expert Systems in Law*, (Clarendon Press, Oxford, 1987).

where a legal assistant is not required. In the rest of Europe a lawyer should be used to file a claim, although the number of exceptions to this principle is increasing. A pro se or self-represented litigant (SRL) is one who does not retain a lawyer and appears for himself in court (Landsman 2009).⁵⁶ Landsman argues that Pro se cases pose inherent problems: they can cause delays, increase administrative costs, undermine the judges' ability to maintain impartiality and can leave the often unsuccessful litigant feeling as though she has been treated unfairly.

He claims two broad factors may be responsible for the large volume and growth of pro se litigation. First, multiple trends have made legal services increasingly unavailable at an affordable price. The legal profession has tilted away from representing individuals and towards representing businesses. Federal (US) support for legal services for the poor has declined by a third over the period. Tort reform has set caps on damages awards thereby reducing available contingent fees, and the power of the courts to require the provision of counsel has been narrowed. Second, American culture has long celebrated the notion of the "noble amateur." Do-it-yourself legal guides are a thriving industry, providing self-help manuals for everything from wills to divorces. Many laypeople believe that with the right guidebook they can master whatever legal challenge they face. At the same time the legal community's investment in the adversarial method has delayed reform. The organized bar has a long history of protecting its monopoly on the practice of law and has resisted measures that could broaden competition to provide legal services.

Research has shown that SRLs may have limited formal education and low income and be unemployed and are slightly more likely to be men (Dewar et al. 2000)⁵⁷. Some will have fewer social resources than others or additional barriers, such as physical or mental disabilities, to accessing justice (Stratton 2007)⁵⁸. Some may wish to have a lawyer but cannot access one, while others may have had representation previously (Dewar et al. 2000).⁵⁹ Further, some

56. Stephan Landsman, "The growing challenge of pro se litigation" (2009) 13 *Lewis & Clark L. Rev.*, 439.

57. J. Dewar, B. Smith & C. Banks (2000) *Litigants in Person in the Family Court of Australia – Research Report No 20*, Family Court of Australia, available at http://www.familycourt.gov.au/wps/wcm/connect/fcoaweb/reports-and_publications/reports/2000/FCOA_pr_Litigants_in_person last viewed 4 January 2020.

58. M. Stratton, *Alberta SRLs Mapping Project: Final Report*, Canadian Forum on Civil Justice, available at <http://www.cfcj-fcjc.org/sites/default/files/docs/2007/mapping-en.pdf> last viewed 6 February 2021.

59. *Ibid.*

may prefer to represent themselves or in some cases legal representation might be unnecessary (Stratton 2007).⁶⁰

Earlier research conducted in the Family Court of Australia shows that there are a range of reasons why people represent themselves, such as funding cuts and changes in eligibility to legal aid (Dewar et al. 2000)⁶¹. Other contributing factors include changes in technology, cultural shifts towards self-help and self-representation, and changes in legislation (Dewar et al. 2000).⁶² Economic conditions such as the global economic crisis have also caused increases in self-representation (Woodyatt et al. 2011).⁶³

The experiences of self-representation in Australian law has generally accepted that SRLs are at a disadvantage in legal proceedings and their experience of the legal system may indeed be negative.⁶⁴ The lack of knowledge or skills of SRLs means that some are not able to access fair and equal justice in a system often geared towards legal representation. Anecdotal evidence suggests that SRLs take up more court time and demand more staff and judicial attention than represented litigants; in turn they may become stressed and emotional dealing with court staff and in court. Court staff and judicial officers also experience stress and frustration in dealing with SRLs (Dewar et al. 2000).⁶⁵

Another example is given by the UK. Although in England litigants can go to court without legal aid, in practice the technical and formal nature of proceedings, with the exception of the small claims procedure (for claims up to £10,000), makes legal aid necessary. Its lack has led to public dissatisfaction but also frustration among judges, faced with the need to inform lay litigants about the technicalities of the process without being able to cross the line between providing information and giving legal aid. This situation led to a considerable increase in the time and cost spent on each judicial decision, even doubling it.⁶⁶ Opposing parties and their legal representatives may also be negatively affected. While some SRLs can present their case competently, most research suggests that SRLs

60. Ibid.

61. Ibid.

62. Ibid.

63. T. Woodyatt, A. Thompson & E. Pendlebury (2011) vol. 20, 'Queensland's self-represented services: A model for other courts and tribunals', *Journal of Judicial Administration*, 225-239.

64. See F: Litigants in Person Guidelines (2001) 161 FLR 189.

65. Ibid.

66. JUSTICE, "Delivering Justice in an Age of Austerity" (april 2015). Available in <https://justice.org.uk/justice-age-austerity-2/> last viewed 6 September 2021.

struggle with substantive law and procedure (Genn and Genn 1989)⁶⁷. Self-representation can have an impact on settlement rates, case outcomes and case duration (Moorhead & Sefton 2005),⁶⁸ but this impact varies significantly according to case complexity and the forum.

Galanter (2005)⁶⁹ states that in the United States an abundance of data shows that the number of trials - federal and state, civil and criminal, jury and bench - is declining. The shrinking number of trials is particularly striking because virtually everything else in the legal world is growing - the population of lawyers, the number of cases, expenditures on law, the amount of regulation, the volume of authoritative legal material, and not least the place of law, lawyers, and courts in public consciousness.

In Galanter (2004)⁷⁰ he provides empirical evidence that the portion of federal civil cases resolved by trial fell from 11.5 percent in 1962 to 1.8 percent in 2002, continuing a long historic decline. More startling was the 60 percent decline in the absolute number of trials since the mid-1980s. The makeup of trials shifted from a predominance of torts to a predominance of civil rights, but trials are declining in every case category. A similar decline in both the percentage and the absolute number of trials is found in federal criminal cases and in bankruptcy cases. The phenomenon is not confined to the federal courts; there are comparable declines of trials, both civil and criminal, in the state courts, where the great majority of trials occur. Plausible causes for this decline include a shift in ideology and practice among litigants, lawyers, and judges.

Another manifestation of this shift is the diversion of cases to alternative dispute resolution forums. Within the courts, judges conduct trials at only a fraction of the rate that their predecessors did, but they are more heavily involved in the early stages of cases. Although virtually every other indicator of legal activity is rising, trials are declining not only in relation to cases in the courts but to the size of the population and the size of the economy.

In Common Law countries, for cases where litigants cannot afford the assistance of lawyers, or choose to appear in court unrepresented,

67. H. Genn & Y. Genn, (1989) *The effectiveness of representation at tribunals*, Lord Chancellor's Department.

68. R.L. Moorhead and M. Sefton, (2005) *Litigants in person: Unrepresented litigants in first instance proceedings*. Department for Constitutional Affairs. Available at <http://orca.cf.ac.uk/2956/1/1221.pdf> last viewed 4 January 2020.

69. Marc Galanter, "The hundred-year decline of trials and the thirty years war" (2005) *Stanford Law Review*, 1255-1274.

70. Marc Galanter, "The vanishing trial: An examination of trials and related matters in federal and state courts" (2004) 1 (3) *Journal of Empirical Legal Studies*, 459.

systems have been developed that can advise about the potential outcome of their dispute. Such systems assist potential litigants to have reasonable expectations and make acceptable arguments.

Mnookin and Kornhauser (1979)⁷¹ developed the notion of Bargaining in the Shadow of the Law in the domain of divorce law. They contended that the legal rights of each party could be understood as bargaining chips that can affect settlement outcomes. They argued that parties negotiate the terms of a divorce in the shadow of matrimonial law rather than pursue their respective rights in the courtroom. Bibas (2004)⁷² has claimed that some scholars (but not himself) treat plea-bargaining as simply another case of bargaining in the shadow of a trial. He notes that *'the conventional wisdom is that litigants bargain towards settlement in the shadow of expected trial outcomes. In this model, rational parties forecast the expected trial outcome and strike bargains that leave both sides better off by splitting the saved costs of trial. ... This shadow of trial model now dominates the literature on civil settlements'*.

In line with this idea, there is already a judicial system (Civil Resolution Tribunal in British Columbia, Canada) that offers basic artificial intelligence tools to allow parties to find out what the solution of the case might be and thus facilitate the negotiation and agreement of the parties to bring the dispute to an end. In an address to the Australian Disputes Centre annual ADR Awards night in Sydney Australia on August 10th 2017, the then Chief Justice of the Australian High Court, Hon. Robert French AM said⁷³ *'Nowhere is the potential for change more dramatic than in the use of technology and, in particular, artificial intelligence. An immediate application is online dispute resolution using what has been described as 'a virtual space in which disputants have a variety of dispute resolution tools at their disposal'*.

In the Internet Courts set up in China, the Court's artificial intelligence system can make an assessment of the possible outcomes of litigation prior to the filing of the lawsuit. The online platform makes an intelligent litigation risk assessment system available to the user, and can provide a report synthesising the litigants' case and the corresponding risk based on the analysis of court data and similar cases. Litigation risk assessment can help the party without legal knowledge to identify and exclude common litigation risks, thereby reducing unnecessary losses. Meanwhile, the

71. Mnookin, Robert H., and Lewis Kornhauser. "Bargaining in the shadow of the law: The case of divorce." *The Yale Law Journal* 88.5 (1979): 950-997.

72. Bibas, Stephanos. "Plea bargaining outside the shadow of trial." *Harvard Law Review* (2004): 2463-2547.

73. See <https://www.disputescentre.com.au/wp-content/uploads/2017/09/Robert-French-Address-Australian-Disputes-Centre-ADR-Award-Evening-10-8-.pdf> last viewed 7 September 2021.

assessment can make the party aware that litigation is risky and costly and guide the parties to choose alternative dispute resolution or diversified dispute resolution.⁷⁴

Arno Lodder and John Zeleznikow⁷⁵ have proposed a three-step model using a 'negotiation support tool' which can:

1. provide feedback on likely outcomes if the negotiation fails – BATNA;
2. attempt to resolve existing conflicts using argumentation or dialogue techniques;
3. employ decision analysis techniques and compensation/trade-off strategies to facilitate resolution.

If step three fails, the parties go back to step two and try again until resolution or stalemate. Even then blind bidding or arbitration can be used to narrow the issues.

Systems available to support such negotiations include rule-based reasoning, case-based reasoning, machine learning and neural networks. There are challenges in connection with the use of artificial intelligence in this area, especially in relation to machine-based application of legal rules whether they be statutory or common law. Such rules are rarely unambiguous and generally offer constructional choices which don't readily translate into machine logic.

An alternative approach is called a 'Data-centric approach'. The relevant computer is provided with data about the facts and outcomes of a large number of cases on the basis of which it is asked to estimate the probabilities of outcomes given a particular set of facts and relevant legal issues. Such a tool might be useful as a kind of surrogate early neutral evaluator.

The template-based software systems used to help lawyers negotiate include *Deus*, *Inspire*, *Adjusted Winner* and *Smartsettle*. In the field of family law '*Family-Winner*' includes techniques such as issue decomposition strategy, a compensation and trade-off strategy and an allocation strategy⁷⁶.

74. Xuhui Fang, "Recent Development of Internet Courts in China", *International Journal on Online Dispute Resolution*, 2018 (5), 1-2, pp. 49-55; Xuhui Fang, "Recent ODR Developments in China", *International Journal on Online Dispute Resolution*, 2017 (4), 2, pp. 32-37.

75. Arno Lodder and John Zeleznikow "Developing an Online Dispute Resolution Environment: Dialogue Tools and Negotiation Systems in a Three Step Model" (2005) vol. 10 *The Harvard Negotiation Law Review* 287.

76. For more information of these systems see Arno R. Lodder and John Zeleznikow, *Enhanced dispute resolution through the use of information technology* (Cambridge University Press, 2010).

There are, of course, issues of justice which transcend the negotiating objectives of the parties, particularly in family law disputes where the law requires that the interests of affected children be treated as paramount. And in complex multi-party negotiations such as environmental or native title disputes, the question of the public interest is a very large aspect of the context in which negotiations must be undertaken. The challenge is to take the benefits of technology without compromising the essential characteristics of courts in terms of independence, openness, fairness and accountability through the provision of reasoned decisions’.

Clearly, Justice French sees the benefits of using Artificial Intelligence for Dispute Resolution. And such systems will greatly support self-represented litigants. We are here discussing one element that Richard Susskind has referred as court’s extended functions in the field of online tribunals.

Zelevnikow⁷⁷ argues that the development of web-based legal decision support systems can help assist the growing rise in the number of self-represented litigants to help alleviate this problem. He has illustrated techniques for building web-based legal decision support systems, especially with regards to Australian family law.

Sela (2016)⁷⁸ builds on this research saying that the tide of pro se litigation in the American justice system imposes significant constraints on self-represented litigants’ access to justice and courts’ ability to administer justice. Mitigating the challenges requires a systemic institutional and procedural reform. She proposes that online courts would alleviate many of the challenges associated with pro se litigation, and is the first researcher to put this proposition to an empirical test. She analyses the challenges experienced by SRLs and courts and models the procedural and technological properties that would promote SRLs’ “day in court” as well as courts’ provision of fair and efficient access to justice. Based on her analysis and on a review of successful implementations of judicial online dispute resolution systems, she proposes a detailed policy design framework for a judicial online dispute resolution system for pro se litigation. She also reports and discusses the results of an experiment evaluating the effect of the proposed framework on SRLs’ procedural justice experiences.

II.5. ONLINE DISPUTE RESOLUTION TOOLS AND DECISION SUPPORT FOR SELF-REPRESENTED LITIGANTS

Zelevnikow’s initial approach, in the Split-Up system, for providing support about the distribution of marital property following divorce in

77. Ibid.

78. A. Sela, “Streamlining Justice: How Online Courts Can Resolve the Challenges of Pro Se Litigation” (2016) 26, *Cornell JL & Pub. Pol’y*, 331.

Australia was to use machine learning to provide advice about BATNAs⁷⁹ (a BATNA is used to inform disputants of the likely outcome if the dispute were to be decided by decision-maker e.g. judge, arbitrator or ombudsman) re the distribution of marital property following divorce.

Despite the system using Artificial Intelligence, it involved the development of 94 Toulmin argument structures to model the domain as it existed in 1995.⁸⁰ Family law solicitors at Victoria Legal Aid assisted in developing the system of argument structures.

Twenty-five years later, the theoretical principles behind artificial intelligence software have not changed. But computer software is now much cheaper and data can be much more easily stored. This has led to the development of ‘quicker systems’, which the community has seen as ‘more intelligent’⁸¹.

Whilst the Split-Up system provides advice about BATNAs, the Family Winner System (Bellucci and Zeleznikow 2006)⁸² provided advice to disputing parents on how they could best negotiate trade-offs. The disputing parties were asked to indicate how much they valued each item in dispute. Using logrolling, parties obtained what they most desired.

Zeleznikow (2020) and (Zeleznikow 2021) discusses how can we build ODR systems that support self-represented litigants and what skills do self-represented litigants require to use such systems⁸³. So what are the various types of ODR systems and how can self-represented litigants use them? From our research, we believe that a truly helpful ODR system

79. A BATNA is your best alternative to a negotiated agreement. The reason you negotiate with someone is to produce better results than would otherwise occur. If you are unaware of what results you could obtain if the negotiations are unsuccessful, you run the risk of entering into an agreement that you would be better off rejecting; or rejecting an agreement you would be better off entering into. See Roger Fisher and William Ury, *Getting to Yes* (PenguinGroup 1981).

80. See Andrew Stranieri, John Zeleznikow, Marc Gawler and Bryn Lewis, A hybrid rule–neural approach for the automation of legal reasoning in the discretionary domain of family law in Australia (1999) 7 (2-3) *Artificial Intelligence and Law* 153; Andrew Stranieri and John Zeleznikow, *Knowledge discovery from legal databases* (2006. Vol. 69, Springer) Science & Business Media for a detailed discussion of the Split-Up systems. Details about Stephen Toulmin’s theory of argumentation can be found in Stephen E. Toulmin, *The use of argument* (1958 Cambridge University Press).

81. See for example amica.gov.au which uses machine learning to advise upon property distribution amongst separating couples in Australia.

82. *ibid.*

83. John Zeleznikow, “The challenges of using Online Dispute Resolution to support Self Represented Litigants”, (2020) 23(7) *Journal of Internet Law* 3.

should provide the following facilities. Some of them refers to the use of AI Tools:

1. **Case management:** the system should allow users to enter information, ask them for appropriate data and provide for templates to initiate the dispute. For example, currently most clients of Victoria Legal Aid phone the organisation to seek help. It is expensive time consuming and often inaccurate for telephonists to enter data. Mistakes are often made. Self-represented litigants should be able to initiate the dispute, enter their pertinent data and also track what is happening during the dispute as well as being aware of what documents are required at specific times. Because they have a limited knowledge of legal processes, such support is vital;
2. **Triaging:** the system should make decisions on how important it is to act in a timely manner and where to send the dispute. This may be particularly important in cases of domestic abuse or where there is a potential for children to be kidnapped. One would not expect self-represented litigants to use triaging systems. But triaging systems are vital for expediting action in high risk cases. Such systems are thus vital for protecting the interests of at risk self-represented litigants;
3. **Advisory tools:** the system should provide tools for reality testing: these could include, books, articles, reports of cases, copies of legislation and videos; there would also be calculators (such as to advise upon child support) and BATNA advisory; systems (to inform disputants of the likely outcome if the dispute were to be decided by decision-maker e.g. judge, arbitrator or ombudsman). Other useful advice that could be included are copies of the relevant Acts, links to landmark cases, relevant books and reports and videos providing useful parenting advice. Advisory tools (as suggested by Zeleznikow (2002)⁸⁴ are a vital cog in supporting self-represented litigants. An important associated question is how we can design advisory tools that self-represented litigants can gainfully use. Are the legal concepts behind these tools too difficult for amateurs to understand? How do we construct suitable user interfaces? This will be the subject of much future research,⁸⁵

84. *ibid.*

85. See Darin Thompson, "Creating New Pathways to Justice Using Simple Artificial Intelligence and Online Dispute Resolution", (2015) (2) 1, *International Journal of Online Dispute Resolution*, 4; Darin Thompson, *Interacting with Disputants' Emotions in Online Dispute Resolution*, 2019 CanLIIDocs 24, <https://canlii.ca/t/2fc3>.

4. **Communication tools** – for negotiation, mediation, conciliation or facilitation. This could involve shuttle mediation if required. For many ODR providers, the provision of communication tools is their main goal. Thomson (2011)⁸⁶ describes how Relationships Australia Queensland built a Family ODR system that used AdobeConnect to emulate Australian Online Family Dispute Resolution. Online communication tools will be important for both represented and self-represented litigants;
5. **Decision Support Tools** – if the disputants cannot resolve their conflict, software using game theory or artificial intelligence can be used to facilitate trade-offs. Family Winner and Smartsettle provide such services. Professionals (such as lawyers) can provide useful advice re trade-offs. In their absence, suitable decision support tools are vital;
6. **Drafting software:** if and once a negotiation is reached, software can be used to draft suitable agreements. Drafting plans (such as parenting plans) once there is an in principle agreement for a resolution of a dispute, is a non-trivial task. And the task is of course more difficult when one or two of the litigants are not represented.

No single dispute is likely to require all six processes. However, the development of such a hybrid ODR system would be very significant, but costly and very time and resource consuming. A total system would require us to construct the appropriate systems 1 to 6, and the ultimate solution is to make sure that all the systems are capable of talking to each other. But such a system would be an important starting point for expanding into a world where Artificial Intelligence is gainfully used. And it would be very useful for the growing multitude of self-represented litigants.

III. EXAMPLES USING ARTIFICIAL INTELLIGENCE

III.1. FIRST EXPERIENCES

As described above, the very early use of Artificial Intelligence involved the use of Rule Based Reasoning to develop Expert Systems. The same was true in the development of Artificial Intelligence in the legal

86. Mark Thomson, "Alternative modes of delivery for family dispute resolution: The Telephone Dispute Resolution Service and the online FDR project" (2011) 17 (3), *Journal of Family Studies*, 253-257.

domain. TAXMAN⁸⁷ modelled US tax law as a series of rules. The British Nationality Act as a Logic Program⁸⁸ also used rules (but in the form of logic) to model the action of the British Nationality Act of 1986. The late 1970s and 1980s, which preceded the development of the world-wide-web, was an era in which stand-alone software was developed, that assisted with decision-making in specific legal and negotiation domains.

In this era, we saw the development of (and hype about) futuristic legal expert systems to support decision making. Researchers speculated that eventually such expert systems could change the nature of legal practice. Examples of such systems include the Latent Damage Advisor of Capper and Susskind.⁸⁹

Ernst and Young (UK) created three legal expert systems: VATIA, Latent Damage Adviser and THUMPER. VATIA (Value Added Tax Intelligent Assistant) placed specialist value added tax expertise in the hands of auditors enabling them to carry out overviews of clients; value added tax affairs. The Latent Damage Adviser modelled the UK Latent Damage Act of 1986. THUMPER was developed for use by corporate tax practitioners and advised on the structuring of commercial transactions and tax and financial planning with regard to tax planning (Zeleznikow and Hunter 1994).⁹⁰

The earliest negotiation support systems that used artificial intelligence were developed by the Rand Corporation in the early 1980's to advise upon risk assessment in damages claims. Lift Dispatching System (LDS) (Waterman and Peterson 1981)⁹¹ assisted legal experts in settling product liability cases. LDS's knowledge consisted of legislation, case law and, importantly, informal principles and strategies used by lawyers and claims adjusters in settling cases.

SAL, the system for asbestos litigation (Waterman et al 1986)⁹² helped insurance claims adjusters evaluate claims related to asbestos exposure. SAL used knowledge about damages, defendant liability, plaintiff responsibility

87. McCarty, L. Thorne. "Reflections on TAXMAN: An experiment in artificial intelligence and legal reasoning." *Harv. L. Rev.* 90 (1976): 837.

88. See Marek J Sergot, Fariba Sadri, R.A. Kowalski, Frank R. Kriwaczek, Peter Hammond and H.T. Cory, "The British Nationality Act as a logic program", (1986), Communications of the ACM.

89. See Richard E Susskind, *Expert Systems in Law*, (Clarendon Press, Oxford, 1987).

90. See John Zeleznikow and Dan Hunter, *Building Intelligent Legal Information Systems. Representation and reasoning in Law*, (Kluwer, 1994).

91. See D. A. Waterman and Mark A. Peterson, *Models of Legal Decisionmaking. Research Design and Methods*, (Rand, The Institute for Civil Justice 1981).

92. Donald A. Waterman, Jody Paul and Mark Peterson. "Expert systems for legal decision making." *Expert Systems* 3.4 (1986): 212-226.

and case characteristics such as the type of litigants and skill of the opposing lawyers. These two systems represented the first steps in recognizing the virtue of settlement-oriented decision support systems.

Schlobohm and Waterman⁹³ developed EPS (Estate Planning System). It was a prototype expert system that performed testamentary estate planning by interacting directly with clients or paralegal professionals. The result of a consultation between a client and EPS is the client's will, printed by a form generating program that EPS accesses. The system was written in ROSIE (an expert system shell). Estate planning is the process by which a person plans the accumulation, management, conservation, and disposition of his or her estate, so as to derive the maximum benefit and satisfaction during the person's lifetime and also for his or her family after death. To develop a prototype, Schlobohm and Waterman initially limited EPS' domain to testamentary estate planning, that is, the knowledge necessary to create a client's will or revocable trust.

NEGOPLAN⁹⁴ was a rule-based system written in PROLOG. It addressed a complex, two-party negotiation problem containing the following characteristics: a) the many negotiation issues that were elements of a negotiating party's position; b) the negotiation goals that could be reduced to unequivocal statements about the problem domain, and that represented negotiation issues; c) the existence of a fluid negotiating environment characterised by changing issues and relations between them; and d) the parties negotiated to achieve goals that may change.

Although all of the above systems were rule-based, none of them attempted to interpret legal rules as code! But as Kannai et al (2007)⁹⁵, point out the automation of road traffic rules has seen legal rules being interpreted as codes. Traffic violations such as speeding or going through a red light rely upon cameras to observe the infringement and the software to raise the fines. No human intervention is required. Similarly, the granting of social security benefits and administration of many tax laws has been automated⁹⁶.

93. Dean A Schlobohm and Donald A. Waterman, "Explanation for an expert system that performs estate planning", (1987) ICAIL '87: Proceedings of the 1st international conference on Artificial intelligence and law, pp. 18–27, <https://doi.org/10.1145/41735.41738>.

94. S. Matwin, S. Szpakowicz, Z. Koperczak, G. Kersten, W. Michalowski, "NEGOPLAN: An expert system shell for negotiation support", (1989) 4 (4) IEEE Expert, 50.

95. Ruth Kannai, Uri J. Schild and John Zeleznikow, "Modeling the Evolution of Legal Discretion - An Artificial Intelligence Approach", *cit.*

96. See Guido Governatori, Jeffrey Barnes, John Zeleznikow, Louis de Koker, Marta Poblet, Mustafa Hashmi and Pompeu Casanovas Romeu, 2020 '*Rules as Code*' will let computers apply laws and regulations. But over-rigid interpretations would undermine our

A major area of the use of case-based reasoning in the legal domain has been the development of tutoring systems by Kevin Ashley at University of Pittsburgh/Carnegie Mellon University. Ashley argues that they are even relevant in civil law domains⁹⁷.

Surden discusses the potential for the use of machine learning in law. What he does not realise is that machine learning had been used by Stranieri and Zeleznikow twenty years earlier to provide decision support about the distribution of property in Australian Family Law⁹⁸. Surden and Ashley and Bridewell discuss how E discovery has relied upon Machine Learning⁹⁹.

Two (at times) widely available systems that assist in the resolution of disputes are Rechtwijzer (wiser law in Dutch) and the British Columbia Civil Resolution Tribunal. China has also incorporated AI in the new Internet Courts and there are also interesting projects in the judicial system of Estonia.

III.2. THE DUTCH PLATFORM RECHTWIJZER

Rechtwijzer¹⁰⁰ (Roadmap to Justice) was designed for couples who are separating or divorcing. The aim of Rechtwijzer was ‘to empower citizens to solve their problems by themselves or together with his or her partner. If necessary, it refers people to the assistance of experts.’ Couples pay €100 for access to Rechtwijzer, which starts by asking each partner for information such as their age, income, education, whether they want the children to live with only one parent or part time with each, then guides them through questions about their preferences.

freedom’s’, <https://theconversation.com/rules-as-code-will-let-computers-apply-laws-and-regulations-but-over-rigid-interpretations-would-undermine-our-freedoms-149992>.

97. K.D. Ashley, (2004), Case-based models of legal reasoning in a civil law context. In *International congress of comparative cultures and legal systems of the instituto de investigaciones jurídicas*.

98. See Stranieri, A., Zeleznikow, J., Gawler, M. and Lewis, B. 1999. A hybrid-neural approach to the automation of legal reasoning in the discretionary domain of family law in Australia. *Artificial Intelligence and Law* 7(2-3):153-183. and Stranieri, A. and Zeleznikow, J. 2005. *Knowledge Discovery from Legal Databases*, Springer Law and Philosophy Library, Volume 69, **Dordrecht, The Netherlands**.

99. Ashley, K.D. and Bridewell, W., 2010. Emerging AI & Law approaches to automating analysis and retrieval of electronically stored information in discovery proceedings. *Artificial Intelligence and Law*, 18(4), pp. 311-320.

100. <https://rechtwijzer.nl/> last viewed 5 February 2021.

The platform had a diagnosis phase; an intake phase for the initiating party; and then invited the other party to join and undertake the same intake process. Once intake was completed, the parties could start working on agreements on the topics that occur in every separation – such as future communication channels, children’s matters, housing, property issues (money and debts) and maintenance. The dispute resolution model was that of integrative (principled) negotiation. The process was based on interests rather than rights, but the parties were told of rules such as those for dividing property, child support and standard arrangements for visiting rights so that they could agree on the basis of informed consent. Acceptable agreements were reviewed by a neutral lawyer. The platform used algorithms to find points of agreement, and then proposed solutions similar to Family-Winner. If the proposed solutions were not accepted, then couples could employ the system to request a mediator for an additional €360, or a binding decision by an adjudicator. Rechtwijzer is voluntary and non-binding up until the point where the parties seek adjudication. Rechtwijzer had aimed to be self-financing through user contributions. This has not occurred.

III.3. THE BRITISH COLUMBIA CIVIL RESOLUTION TRIBUNAL

The British Columbia Civil Resoution Tribunal¹⁰¹ is currently the most significant current widely available ODR system that comes closest to providing a full suite of dispute resolution services. The process commences with Solution Explorer. It diagnoses the dispute and provides legal information and tools such as customized letter templates. The template is essentially a formal, legal looking, letter of demand.

If this action does not resolve the dispute, one can then apply to the Civil Resolution Tribunal for dispute resolution. The system then directs the user to the appropriate application forms. Once the application is accepted, the user enters a secure and confidential negotiation platform, where the disputants can attempt to (by themselves) to resolve their dispute.

If the parties cannot resolve the dispute, a facilitator will assist. Agreements can be turned into enforceable orders. If negotiation or facilitation does not lead to a resolution, an independent member will make a determination about the dispute.

101. Shanon Salter and Darin Thompson, “Public-Centred Civil Justice Redesign: A Case Study of the British Columbia Civil Resolution Tribunal”, (2016–2017) Vol. 3, *McGill Journal of Dispute Resolution*, 113.

Currently, the Civil Resolution Tribunal deals with the following categories of cases:

- a. **Motor vehicle injury** disputes up to \$C50,000
- b. **Small claims** disputes up to \$C5,000
- c. **Strata property** (condominium or owners corporation) disputes of any amount
- d. **Societies and cooperative associations** disputes of any amount
- e. **Shared accommodation and some housing** disputes up to \$C5,000

For some of these domains potential litigants can only use the Civil Resolution Tribunal.¹⁰²

To ensure that the web-based platform is used, no paper-based solutions are available. To assist digitally disadvantaged litigants, technical support is provided in accessing the Internet. One of the major reasons that the Civil Resolution Tribunal has been so successful, is that British Columbia residents are mandated to use the system when dealing with issues listed in sections a-e. above. Whilst such an approach may be seen novel and discriminatory, it does ensure that the system is used, with relative ease, quickly and at minimal cost. In most cases parties are to represent themselves, even if representation and legal assistance is allowed.¹⁰³

III.4. THE INTERNET COURTS IN CHINA

Between 2017 and 2018 China created three new Courts: the Hangzhou Internet Court, the Beijing Internet Court and the Guangzhou Internet Court. These courts only have material jurisdiction over internet-related cases. The Court's artificial intelligence system can make an assessment of potential litigation outcomes prior to the filing of the lawsuit. The

102. According to Part 10 of the CRT Act, each area of jurisdiction sets out whether or not it is exclusive. The jurisdiction of the CRT is exclusive only for two types of accident claims (see s.133 (2) of the CRTA: https://www.bclaws.ca/civix/document/id/complete/statreg/12025_01#section133 For matters that are not within the CRT's exclusive jurisdiction, most are within the tribunal's "specialized expertise". This means that the court should not hear them, unless the court determines it is not in the interests of justice and fairness for the CRT to hear the claim – see ss. 16.1-16.3 of the CRTA https://www.bclaws.ca/civix/document/id/complete/statreg/12025_01#section16.1, last viewed 7 September 2021.

103. https://www.bclaws.ca/civix/document/id/complete/statreg/12025_01#section20, last viewed 7 September 2021.

online platform makes an intelligent litigation risk assessment system available to the user, and can provide a report synthesising the litigants' case and the corresponding risk based on the analysis of court data and similar cases. Litigation risk assessment aims to help the party without legal knowledge to identify and exclude common litigation risks, thereby reducing unnecessary losses. Meanwhile, the assessment can make the party aware that litigation is risky and costly and guide the parties to choose alternative dispute resolution or diversified dispute resolution.

If the user has not previously sent a complaint letter, he/she can use the intelligent complaint system to solve the problem. The software can automatically generate a complaint letter by simply selecting the suitable response options. The list of available answers with a series of questions has been automatically generated by the system based on big data technology using artificial intelligence. The party can use the complaint letter to file the claim once it has been able to preview this letter and has confirmed the information.¹⁰⁴

III.5. THE ESTONIAN PROJECT

In Estonia the Ministry of Justice launched, in July 2019, a project to develop artificial intelligence software to hear and resolve small economic disputes by eliminating human intervention.¹⁰⁵ According to the scarce information available,¹⁰⁶ the “robot judge” is configured to decide disputes of up to 7,000 euros. In the design of this project, the two parties to the dispute upload their documents and relevant information to a judicial platform. The AI machine renders a decision that can be appealed to a human judge. The project limits its scope to contractual disputes. The creators indicate that the system might have to be adjusted after feedback from lawyers and judges.¹⁰⁷

104. See Xuhui Fang, “Recent Development of Internet Courts in China”, *International Journal on Online Dispute Resolution*, 2018 (5), 1-2, pp. 49-55. Xuhui Fang, “Recent ODR Developments in China”, *International Journal on Online Dispute Resolution*, 2017 (4), 2, pp. 32-37.

105. Eric Niler, (2019) Can AI be a Fair Judge in Court? Estonia Thinks So. <https://www.wired.com/story/can-ai-be-fair-judge-court-estonia-thinks-so/>, last viewed September 7, 2021.

106. See Dymitruk, Maria. “The Right to a Fair Trial in Automated Civil Proceedings.” *Masaryk University Journal of Law and Technology* 13.1 (2019): 27-44.

107. See the following link <https://www.thelawyersdaily.ca/articles/11582/estonia-set-to-introduce-ai-judge-in-small-claims-court-to-clear-court-backlog>, last viewed September 7, 2021.

IV. USES AND GOVERNANCE OF ARTIFICIAL INTELLIGENCE IN THE FIELD OF THE JUDICIAL SYSTEM: AN EUROPEAN PERSPECTIVE

For fifty years, the legal community has avoided investigating the impact that AI might have on the law. Then suddenly it has become petrified that robo-justice might become the norm. Tania Sourdin (2018) has suggested that there are three primary ways in which technology has already restructured the justice system.¹⁰⁸ First, and at the most rudimentary level, are “supportive” technologies – these technologies aim to inform, support and advise individuals involved in the justice system and include, for example, online legal applications (apps). At the second level are “replacement” technologies – these technologies replace the roles and activities traditionally conducted by humans and include, inter alia, e-filing processes and online mediation services.¹⁰⁹ Finally, and at the most advanced level, are “disruptive” technologies – these technologies fundamentally alter the way in which legal professionals work and include, for example, AI judges or other algorithm-based decision-making programs that may reshape the judicial role. Zeleznikow¹¹⁰ argues that while robots are unlikely to replace judges, automated tools (at least in Australia) are being developed to support legal decision making. Whilst AI can provide useful and innovative solutions to complex problems, check lists and templates can be very useful to support decision-making, rather than make decisions.¹¹¹

The concern on the use of AI tools has been heightened as AI tools are increasingly being combined with ODR in the field of the online Courts. Concern is also heightened, to some extent, by the fact that the AI machines of this second wave of AI are ready to be fed and learn from data, thus escaping direct coding by humans which occurred in the first wave of AI characterised by the so called Expert Systems.

Although the European Union has not addressed this issue, concern about how the technology might be developed can be detected in some

108. Tania Sourdin, “Judge v Robot: Artificial Intelligence and Judicial Decision-Making” (2018) 41(4) *UNSW Law Journal* 1114, 1118.

109. Sourdin, Tania, Bin Li, and Tony Burke. “Just, Quick and Cheap: Civil Dispute Resolution and Technology” (2019) 19, *Macquarie LJ* 17.

110. See John Zeleznikow, “Can Artificial Intelligence and Online Dispute Resolution Enhance Efficiency and Effectiveness in Courts”, (2017) Vol 8, N 2 p.30, *International Journal for Court Administration*.

111. The Sixth Judicial Circuit of Florida provides a useful checklist for Representing Yourself in Court <http://www.jud6.org/generalpublic/representingyourselfincourt.html> last viewed August 13 2020.

recent documents. The European e-Justice Strategy 2019-2023 of 13 March 2019 goes so far as to indicate that “in particular, artificial intelligence and blockchain technology could have a positive effect on e-Justice, for example by increasing efficiency and reliability.¹¹² The risks and challenges posed by future changes and the use of these technologies, in particular with regard to data protection and ethics, must be taken into account’. Similarly, in its report entitled ‘The digital revolution taking account of citizens’ needs and rights’, the Economic and Social Committee goes a step further by stating that “automated systems, regardless of their complexity, must operate in accordance with the principle of human control. Only human beings make the final decision and take responsibility for it”.

Concerns about the way in which the technology may be developed can be detected in some recent documents. The document Strategy on e-Justice (2019/C 96/04) COUNCIL 2019-2023 says that:

30. Legal tech domains such as Artificial Intelligence (AI), blockchain technology, e-Translation or virtual reality, for example, should be closely monitored, in order to identify and seize opportunities with a potential positive impact on e-Justice.

31. In particular, Artificial Intelligence (AI) and blockchain technology could have a positive impact on e-Justice, for example by increasing efficiency and trust. Any future development and deployment of such technologies must take risks and challenges into account, in particular in relation to data protection and ethics.

The Opinion of the European Social Committee (EESC), maintains that “the EESC has a clear view on the question of the extent to which it is ethically acceptable to delegate making choices (with moral implications) to systems based on AI: automated systems, regardless of how complex they are, have to operate according to the human-in-command principle. Only humans make the final decision and take responsibility for it” (point 1.4).¹¹³

The European Parliament resolution of 20 October 2020 made recommendations to the Commission on a framework of ethical aspects of artificial intelligence, robotics and related technologies (2020/2012(INL)) considered that technologies which can produce automated decisions, thus replacing decisions taken by public authorities, should be treated with

112. [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XG0313\(01\)&rid=7](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019XG0313(01)&rid=7) last viewed & September 2021.

113. The digital revolution in view of citizens’ needs and rights. OPINION, European Economic and Social Committee.

the utmost precaution, notably in the area of justice and law enforcement (section 67).¹¹⁴

This cautious position is also shown by the report that accompanies the European ethical Charter on the use of AI in judicial Systems and their environment adopted on the 4th of December 2018 by the European Commission for the Efficiency of Justice of the Council of Europe.

Neither the recent official documents of the European Union determining how AI should be used in the field of the administration of justice¹¹⁵ nor the European Ethical Charter (EEC) on the use of AI in judicial Systems and their environment adopted in 2018 by the European Commission for the Efficiency of Justice of the Council of Europe deal directly with the admission of AI tools aimed at enabling the parties to assess their legal position. Because SRLs generally lack legal skills and in view of the objective to encourage negotiation we submit that this use of technology for these purposes should be considered high-risk.

The EEC points out the inherent risks in these technologies may even transcend the act of judging and affect essential functioning elements of the rule of law and judicial systems. These include principles such as the primacy of law. These tools could create a new form of normativity, which could supplement the law by regulating the sovereign discretion of the judge, and potentially leading, in the long term, to a standardisation of judicial decision based no longer on case-by-case reasoning by the courts, but on a pure statistical calculation linked to the average compensation previously awarded by other courts. That is why the report submits a need to consider whether these solutions are compatible with the individual rights enshrined in the European Convention on Human Rights (ECHR). These would include the rights to a fair trial (particularly

114. Document P9_TA (2020) 0275, available in the following link: https://www.europarl.europa.eu/doceo/document/TA-9-2020-0275_EN.pdf, last viewed September 7 2021.

115. Among the last official documents are the Proposal for a Regulation Laying down Harmonised Rules on Artificial Intelligence (Artificial Intelligence Act) and Amending Certain Union Legislative Act of 21.4.2021 COM (2021) 206 final; the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the regions called "Digitalisation of justice in the European Union. A toolbox of opportunities", COM (2020) 710 final, of 2.12.2020; the European Parliament Resolution of 20 October 2020 with recommendations to the Commission on a framework of ethical aspects of artificial intelligence, robotics and related technologies (2020/2012 (INL)); White Paper on Artificial Intelligence - A European approach to excellence and trust, COM(2020) 65 final of Brussels, 19.2.2020; the European e-Justice Strategy 2019-2023 of 13 March 2019 (2019/C 96/04) Council 2019-2023; the Digital Revolution in view of Citizens' Needs and Rights. Opinion of the European Economic and Social Committee of 20.02.2019.

the right to a natural judge established by law, the right to an independent and impartial tribunal and equality of arms in judicial proceedings) and, where insufficient care has been taken to protect data communicated in open data, the right to respect for private and family life.¹¹⁶ Thus the EEC considers that applications of predictive justice should be assigned to the field of research and further development in order to ensure that they fully tie in with actual needs before contemplating use on a significant scale in the public sphere.

The European Commission (EC) recognises that the use of AI applications can bring many benefits, such as making use of information in new and highly efficient ways, and improve access to justice, including by reducing the duration of judicial proceedings. At the same time it is aware that the opacity or biases embedded in certain AI applications can also lead to risks and challenges for the respect of and effective enforcement of fundamental rights, including in particular the right to an effective remedy and a fair trial. The EC recognises as a possible high-risk a use case using the technology as part of decision-making processes with significant effects on the rights of people. However, it also considers that the proposed requirements in the White Paper on increased transparency, human oversight, accuracy and robustness of these systems aim to facilitate their beneficial use, while ensuring that fundamental rights including non-discrimination based on sex, racial or ethnic origin, religion or belief, disability, age or sexual orientation) are respected and rule of law and due process principles upheld.

In order to understand the European position it is also relevant to know the criterion followed by the just mentioned new proposal for the Regulation of April 2021.¹¹⁷ AI systems intended for the administration of justice are not listed among the prohibited practices (art. 5) but among the high-risk AI systems (point 40 of the preamble). The new proposal for a Regulation separates two kinds of judicial activities: it is considered as high-risk the systems intended to assist judicial authorities in researching and interpreting facts and the law and in applying the law to a concrete set of facts. Such a qualification is not extended to AI systems intended for purely ancillary administrative activities that do not affect the actual administration of justice in individual cases. The proposed Regulation does not establish the definitive answer as any use of AI must continue to occur solely in accordance with the applicable requirements resulting

116. Appendix I, 15.

117. Available in <https://op.europa.eu/en/publication-detail/-/publication/e0649735-a372-11eb-9585-01aa75ed71a1/language-en/format-PDF/source-search>.

from the European Charter of Fundamental Rights, the rest of European Law and the relevant national law.

We submit that in view of the beneficial impact it may have on the functioning of the judicial system, it is necessary to identify the real possibilities, technical limits and safeguards to be met by the machines offered by public justice systems to SRLs.

For specific areas of administrative law it is possible to develop legal rules as code providing useful information and support for SRLs. The use of code as rules in combination with User Centric ODR Tools using decision trees, may have success in promoting access to justice for SRLs. The CRT in the British Columbia is an example of such success. The design of AI rule-based systems does not exhibit the difficulties arising from the lack of transparency and the creation of biases that may arise employing ML induction algorithms. Deductive AI tools (the so called Experts Systems) allow transparency and the monitoring of the machine output is facilitated to be able to rectify what is necessary in case any errors in the programming are discovered. Programming is, however, a delicate process and if not done well can lead to unfair treatment when the algorithm doesn't match reality.

Rules as codes requires alterations to be introduced in case of legislative changes. Although it will not be possible to attain the quality of advice offered by a legal expert, we submit that the information provided to SRLs through software makes a contribution to improving access to justice for those who cannot afford legal assistance. Regarding the quality of advice provided by such software, it seems reasonable that the proposals of the European Commission about requirements concerning possible testing of applications and the need to provide relevant documentation on their purposes and functionalities is followed. It also seems reasonable to require maintaining the possibility to correct errors, to avoid biases against minorities, and avoid deepening the divide between those who can afford quality legal assistance and those who cannot.¹¹⁸ Algorithms will continue to perform existing biases against vulnerable groups because the algorithms are largely copying and amplifying the decision-making trends embedded in the legal system. There is already a class divide in legal access – those who can afford high quality legal professionals will always have an advantage. The development of intelligent support systems can partially redress this power imbalance by providing users with important legal information that was previously unavailable to them. Difficulties

118. Peter K. Yu, *The Algorithmic Divide and Equality in the Age of Artificial Intelligence*, 72 FLA. L. REV. 331 (2020).

may stem from biases. The example of COMPAS previously mentioned clearly illustrates this point.

What can be done is to ensure the traceability and cleanliness of the data with which the machine operates, and to introduce elements of weighting. But as Richard Susskind illustrates, ethical programming is not feasible.¹¹⁹ It is not at all clear, either technically or philosophically, what is meant when it is proposed that ethics should be embedded in Machine Learning. Nor it is clear what is meant when it is demanded that software engineers program Machine Learning systems to provide intelligent explanations. To think so is to misunderstand the difference between the inductive processes inherent in Machine Learning and the kind of argument we expect when we ask for an explanation.

A different issue is the use of AI tools by judges to decide a case. In the current state of the art, machines can neither motivate nor explain the decisions and predictions they make. Machines work differently and cannot be programmed to explain their results.¹²⁰ Arguing in legal matters is not so simple because it requires an important task of persuasion that does not depend on predictable variables. AI may help the jurist in his argumentation, but it can hardly completely replace him.¹²¹ Machines, however, may be used to make predictions. The question is what to do in the judicial field with a robot making a prediction? In China's Internet Courts, parties are being given the possibility to have an assessment of the success rate of their case. The key issue is to decide how useful the predictions are expected to be, a question which is beyond the technological possibilities of today and which is related to the understanding of justice. Professor Richard Susskind submits that the robot judge should be admitted in those cases in which it can be a step forward in improving access to justice, especially in developing countries that do not have developed judicial systems, and automated advice can fulfil the same function that judicial decisions have today. The debate is open as to whether this kind of robot judge could also be admitted in simple small claims litigation, cases in which access to justice could be improved, as is being planned in Estonia.

It is clear that experience with the use of artificial intelligence is needed to assess its real impact on the justice system and to see to what extent it can make a difference in improving access to justice. In these experiences, it is absolutely necessary to emphasise to the user that an AI system is

119. Richard E. Susskind. 2019. *Online courts and the future of justice*. Oxford University Press.

120. Richard Susskind, *Online Tribunals and the Future of Justice* (OUP 2019).

121. See Jordi Nieva Fenoll, *Inteligencia Artificial y Proceso Judicial* (Marcial Pons, 2018).

involved in the process. Implementing pilot projects could be a good step forward.

We share the European Commission's view that it is important that judgments are delivered by judges who fully understand the AI applications and all information taken into account therein that they might use in their work (AI not to replace human decision making but as Augmented Intelligence), on the understanding that the use of AI applications must not prevent any public body from providing explanations for its decisions. As for the system being able to decide the case on its own, as the Estonian project poses, this should not be completely ruled out. However, we are not at that stage yet! In the current state of the art, systems can neither motivate nor explain the decisions and predictions they make.¹²² Legal arguments require persuasion that does not depend on predictable variables.

V. CONCLUSION

Richard Susskind (2019) argues that *'Online courts use technology to enable courts to deliver more than judicial decisions. They provide tools to help users understand relevant law and available options, and to formulate arguments and assemble evidence. They offer non-judicial support not as an alternative to the public court system but as part of it'*.

The use of information technology to support courts was initially confined to the use of case management and electronic discovery. Although researchers have discussed the benefits of Artificial Intelligence for the legal system for over fifty years, only recently has Artificial Intelligence been used by courts in any practical way.

This use of AI in the court system should not be confused with the concept of robots making judicial decisions. As Zeleznikow (2017) says *'While robots are unlikely to replace judges, automated tools are being developed to support legal decision making. In fact, they could help support access to justice in areas such as divorce, owners' corporation disputes and small value contracts. In cases where litigants cannot afford the assistance of lawyers or choose to appear in court unrepresented, systems have been developed that can advise about the potential outcome of their dispute. This helps them have reasonable expectations and make acceptable arguments.'* It is such tools that we have discussed in this paper.

Given the recent COVID-19 pandemic, we focus upon the use of ODR in courts. Only over the past decade has ODR moved beyond its original use for

122. Richard E. Susskind. *Online courts and the future of justice*. Oxford University Press. 2019.

e-commerce disputes. The rise of ODR has meant the incorporation of a wide range of technological tools into the field of dispute resolution. Among them is the use of the Artificial Intelligence – whether it be via rule-based reasoning, case-based reasoning, machine learning or a hybrid of these techniques.

Dealing with technical issues is the easier part of using AI in the court system. Issues such as potential use in specific domains, how to deal with discretion and biases perpetuated by AI algorithms are complex and draw our attention. Plus, the vexed question of whether any legal field is suitable for having automated decisions (for example traffic fines) is considered. We also note that intelligent decision support systems can be very useful for Self-Represented Litigants. Such litigants are becoming a significant burden in common law jurisdictions such as USA and Australia.

No paper on the use of AI in the court system would be complete without a description of some significant examples. Thus, we considered the Dutch platform Rechtwijzer, the British Columbia Civil Resolution Tribunal and the Chinese Internet Courts.

The European approach to the governance of the use of artificial intelligence in the field of the administration of justice is set to form part of the discussions necessary for artificial intelligence to find its place in judicial systems.

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