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The Rule of Law and Justice in a digital age

'The use of Artificial Intelligence in the justice system, with emphasis on judicial decision-making'

Speech by Peggy Valcke¹,

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"We tend to overestimate the effect of a technology in the short run and underestimate the effect in the long run." (Roy Amara, Institute for the Future)

President, Ladies and Gentlemen

It is a great honour for me to address such a distinguished gathering and I would like to thank the organisers of this seminar for giving me this opportunity. Artificial intelligence (AI for short²) is now all around us. It is not a sort of nebulous omniscient creature, but a set of computer technologies used to create machines capable of reproducing the cognitive capacities of the human being. Many of these technologies, such as automatic learning, are already used in many sectors of our society – commerce and marketing, communications and media (for example in your smartphone, to recommend films, etc.), the financial sector, transport, agriculture, education, health, public administration and, yes, also the judicial system.

The number of *legal tech*³ companies in Europe is increasing, as is the use of algorithmic systems by the legal professions⁴. It is not only the lawyers and insurance brokers, but also the judicial authorities, who are increasingly relying with some enthusiasm on AI in general, and on automated decision-making systems, in particular. That is what is shown by the latest report of the NGO Algorithm Watch, *Automating Society*, which describes a number of systems that the police and justice system, in France, Germany, Italy, Spain, Switzerland, the Netherlands and Estonia, have incorporated into their activities, or are in the process of testing. These systems, such as PreCobs⁵, DyRiAS⁶ or ROS-FaST⁷, are used to predict burglaries or recidivism, but also to facilitate decision-making in a litigation context.

¹ The author wishes to thank Yannick Meneceur, Geneviève Vanderstichele and Martin Sas for their comments on a preliminary version of this text and all those who took part in the discussion for their precious comments and pertinent questions.

² To date, there is no single definition of artificial intelligence in the scientific community. The term, which has become part of our daily lives, covers a broad set of scientific methods, theories and techniques whose aim is to reproduce, by a machine, the cognitive abilities of human beings. It can therefore encompass any automation resulting from this technology, as well as specific technologies such as machine learning or deep learning based on neural networks. See the glossary in Annex III to the European Ethical Charter on the use of Artificial Intelligence in judicial systems and their environment (CEPEJ, 2018), and Y. LeCun, 2016.

³ Start-up businesses specialising in the design of new services and legal applications. For an overview of the types of services and applications, see CEPEJ, 2018, Annex I.

⁴ Even though, for the time being, applications are mainly developed in the English-speaking world.

⁵ Used in Germany and Switzerland; see Algorithm Watch, 2020, pp. 114 and 262.

⁶ Dynamic Risk Assessment Systems, used in Germany and Switzerland; see Algorithm Watch, 2020, pp. 116 and 257.

⁷ Risk-Oriented Sanctioning Case Screening Tool, used in Switzerland; see Algorithm Watch, 2020, p. 261.

It is above all these “predictive”⁸ applications which have attracted public attention, and the terms sometimes used by the press or even literature, such as “algorithmic justice” or “robot-judge”, have raised the hopes of some people with the promise of more efficient justice, but have also given a good many nightmares to others, particularly with regard to respect for judicial procedures and the principles of a fair trial.

Indeed, the detrimental effects that such applications may have on the fundamental rights of individuals, such as the protection of private life and personal data, respect for the principle of non-discrimination or the right to a fair trial, have been widely debated and documented in reports by the press, scientific researchers or digital rights advocates.

These reports have highlighted the potential for bias and discrimination arising from the use of machine learning and AI applications. To put it simply, *algorithms are neither “neutral” nor “objective”*. Cathy O’Neil, a US data scientist⁹, calls them a new “weapon of mass destruction”, suitable for those who have to make difficult decisions – “computer says no”, ah, too bad, but it’s not my fault, the machine is always right (“the algorithm made me do it” – this phenomenon is known as “math-washing”).

But the truth is that the machine is simply reproducing the biases and beliefs of those who program and operate it. Such ‘biases’ can also be inherent in the data sets used to train the system, especially when historical data are used. Very often, these historical data contain discriminations, which learning models can potentially reproduce and even aggravate. This was the case with the COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) software, which has been used in some US states to assess the risk of re-offending when a judge is sentencing an individual. As you may have read or heard¹⁰, a study by the NGO ProPublica in 2016 revealed the discriminatory effects of this algorithm and found that African-Americans were attributed a higher risk of reoffending than white populations.

Even more seriously, the result of such systems is difficult for their “victims” to challenge – first because the systems have often been developed by private companies which claim intellectual property rights, but also more generally because of the opaque nature of some of the machine learning approaches. Analyses produced automatically from unsupervised learning and deep learning methods risk incorporating undetected illegitimate determinants. Without any explanation or transparency as to what criteria may have influenced the outcome, this is tantamount to allowing a “black box”¹¹ to influence the outcome of a case in a completely discretionary way and is capable of reproducing inequalities.

In relation to this aspect of the explanation, one must be aware of the mathematical and statistical formalism of these algorithmic systems, especially those used for *Legal Judgment Prediction (LJP)*¹².

How exactly do these systems work?

Without going into technical detail, these systems build models, typically mathematical or statistical models, by trying to reveal **hidden correlations** in a large amount of data. The construction of these models will therefore rely on raw material, in this case a large corpus of judicial decisions already rendered in a certain type of litigation, and machine

⁸ According to CEPEJ, the term “predictive justice” should be dismissed because it is ambiguous and misleading. These tools are based on methods of analysis of case-law using statistical methods that do not in any way reproduce legal reasoning but may attempt to describe it (CEPEJ, 2018, at p.61). While the term “predictive justice” is frequently used for the technologies in question, a more precise term would be “judicial decision modelling technologies” because it is more accurate in terms of how they function (by the construction of outcome models), their aim not being confined to mere “predictions” (see below).

⁹ O’Neil, 2016.

¹⁰ For further details see Meneceur and Barbaro, 2019. The authors note that “to reduce an individual’s destiny to that of the statistical group of which he or she is a member seems like a determinist approach that would be hard to reconcile with the demands of the right to a fair trial in Europe” (translation from French).

¹¹ Expression used by Frank Pasquale, Professor at Brooklyn Law School, who noted in 2015 that an interconnected society based on opaque algorithmic systems was a sort of black box. The metaphor remains valid today (see Algorithm Watch, 2020).

¹² There are already a number of examples of uses for these technologies and a wide range of stakeholders interested in their use (or non-use), including parties to proceedings, judges adjudicating, analysts of the historical performance of judicial systems, or policy makers seeking to ensure the fair and efficient functioning of the judicial system.

learning, to discover **correlations** between lexical groups¹³ (these models do not therefore attempt to imitate a judge's reasoning – I will come back to this later). More concretely (and to simplify): when the system recognises certain words or groups of words, or links between them, it classifies the text in the category "violation" or "non-violation", with a probability score. These models are then used to assess the **probability** of an outcome in potential or ongoing proceedings.

But is the statistical correlation between two events (or lexical groups) sufficient in itself to explain the actual causal relationships? No, of course not¹⁴. And a court's decision is often binary – violation or non-violation, allow or refuse, guilty or not guilty, uphold or overturn – but not always, thus complicating the modelling.

In conclusion, while mathematical and statistical formalism performs well in closed, quantifiable environments, it is far less suited to open environments such as justice¹⁵. As Einstein is supposed to have said: "Not everything that can be counted counts, and not everything that counts can be counted".

Should we thus abandon this idea of "predictive justice"? Not necessarily. Because these technologies are highly **promising**: they can offer more informed approaches to litigation for litigants, to the organisation of the court's work and the prioritisation of cases and, indeed, can also improve the efficiency, consistency and fairness of judicial decisions.

However, they also carry a number of **risks**, including the reinforcement and perpetuation of existing biases in previous decision-making, the imposition of limitations on the right of access to a court, and the weakening of the fundamental principles of judicial independence and the rule of law¹⁶.

How should these challenges be addressed?

In the first place, technological progress will undoubtedly remedy some of the problems identified. Algorithmic systems are becoming increasingly transparent, more efficient and more sophisticated. Specifically in the area of LJP, researchers – often Chinese¹⁷ – are becoming better at combining different types of data to produce more accurate predictions: facts, legal rules, annotations, historical information, external factors correlated with the decisions made by a court (such as the court's workload, the time of day a hearing is held, etc.¹⁸). Through research in the field called XAI (Explainable AI), many methods have been developed to make new models more explainable and interpretable. There is a growing community of researchers and practitioners interested in fairness, accountability and transparency in machine learning¹⁹.

Organisations such as the IEEE (Institute of Electrical and Electronics Engineers) have initiated efforts to develop technical standards that incorporate ethical principles into AI design. Some of these standardisation projects, particularly those dealing with issues of transparency (P7001™) and algorithmic biases (P7003™) are highly relevant to the judicial domain²⁰.

However, even though technology is advancing, one must be careful not to fall into the *techno-solutionist trap*: technology will not provide all the answers. The *paradigm shift from print to digital* raises **fundamental questions** –

¹³ In practical terms, the machine will search in various parameters identified by the designers (such as length of marriage, professional situation, disparity of property situations, age and state of health of the parties in the case of compensation) for possible links with the results arrived at by the court (the amount of the compensation awarded according to these criteria).

¹⁴ As somewhat amusingly illustrated by BuzzFeed's "10 Most Bizarre Correlations" – <https://www.buzzfeednews.com/article/kjh2110/the-10-most-bizarre-correlations>.

¹⁵ This explains why the development of *legaltechs* has focussed on disputes with quantifiable decisions, leaving the judge a fairly moderate margin of appreciation, such as in matters of personal injury compensation, employment law or divorce.

¹⁶ Among other things, this can be explained by the effect of "automation bias", i.e. the propensity of humans to favour the suggestions of automated decision systems and to ignore contradictory information made without automation, even if it is correct.

¹⁷ See for example Zhong et al., 2018, and Zhu et al., 2020.

¹⁸ The effect of such external factors on judicial decision-making is nevertheless undisputed – see Jean, 2021.

¹⁹ See <https://www.fatml.org/>.

²⁰ See <https://ethicsinaction.ieee.org/>.

about the role of the law, as well as judges, in our society – and they call for a human response, or more specifically a response from us, in the legal professions, not from engineers. In addition, there are challenges which require a **legal framework** to guide technological innovation in the right direction.

Let us start with these fundamental questions. One of them is the question of the **normative value to be attributed to the result of an algorithmic system**: is it desirable to produce a “norm from a number”? According to one of my colleagues, Geneviève Vanderstichele, a researcher at Oxford University and a judge at the Court of Appeal in Ghent, Belgium, this result cannot currently be characterised as a precedent, as a fact, as expert evidence, or as a secondary source of law²¹. Rather, it should be approached as a *sui generis* concept in dispute resolution, a stand-alone concept, allowing a **quantitative legal argument** to be incorporated into the open texture of law. Another colleague, Mireille Hildebrandt, professor in Brussels and Nijmegen, is also studying the implications of a new method of quantitative interpretation.

Another question concerns **the identification of cases where the use of algorithmic automated decision-making systems is less, or not at all, appropriate**. As already observed, LJP technologies do not seek to model the reasoning that leads to a judge’s decision, “the outcome” of the proceedings. LJP focuses only on that outcome, not on the path leading to it²². And the path followed by LJP is fundamentally different from that followed by a human judge. Of course, this does not detract from the “success” of the technology, when it leads to the “right” outcome.

But how does one define “success”? Or the “right outcome”? These are two crucial aspects ...

Let us start with “success”: what is the success rate we expect from these systems? 50%? In that case, we might as well toss a coin in the air, heads or tails. 100%? That would imply a foolproof system. Somewhere in the middle? A frequently cited (and criticised²³) study of the effectiveness of LJP in predicting the outcome of proceedings before the European Court of Human Rights²⁴ reflects, in its conclusions, the levels of accuracy achieved by the technology: on average, it was able to give an accurate prediction of the outcome of proceedings²⁵ in about 79% of cases. Other evaluations of the effectiveness of LJP technologies have arrived at similar results²⁶.

These results, although a few years old now, are revealing. Are tools that get the “correct” result only about four times out of five good enough to apply in a court system? And even assuming that the success rate improves in the future, do these tools achieve the “right outcome”? Would this be equivalent to the outcome that a human judge would have obtained in the same proceedings by following conventional legal reasoning? Is the outcome the only relevant element, or also the path leading to it? As legal theory has highlighted, judicial reasoning is above all a matter of assessment and interpretation, both of the proven and relevant facts of the case and of the applicable legal rules (legislative or jurisprudential), but also involves the judges’ subjective interpretation of the concept of fairness.

There are several other issues to be addressed, such as public access to justice and the online publication of court decisions, as *these data provide the fuel*, or “black gold”, for AI systems. In several European countries there is an interesting debate on “open data” and anonymisation of court decisions, as well as on the profiling of judges²⁷.

²¹ Categories used in current legal practice.

²² It should, however, be noted that to arrive at a given outcome, technology can, especially if it is designed with explanatory capabilities, identify the factors that led it to that outcome (and these factors may also be among those that would influence a human decision-maker (judge) dealing with the same legal issue).

²³ *Inter alia*, by Meneceur and Barbaro, 2019.

²⁴ Aletras et al., 2016.

²⁵ When the outcome was either the finding of a violation of the ECHR or a finding of no violation.

²⁶ The LJP technology evaluated by Katz et al., 2014, for example, achieved 69.7% accuracy. The tools studied by Chen et al, 2017, achieved 82% accuracy. The accuracy of the approaches studied by Grabmair, 2017, ranged from 69.4% to 84.3%. The LJP approach studied by Westermann et al., 2019, achieved an accuracy of 70.8%.

²⁷ See, for example, in the case of France, the “open data” project of the Court of Cassation (<https://www.courdecassation.fr/acces-rapide-judilibre/open-data-et-api>) and the discussion surrounding Article L111-13 of the Code of Judicial Organisation, as amended by Law no. 2019-222 of 23 March 2019 on programming for 2018-2022 and the reform of the justice system.

The time available today is too limited for me to explore all these pressing issues in depth. It should be noted, however, that in its European Ethical Charter on the use of artificial intelligence in judicial systems and their environment, adopted in 2018, CEPEJ (European Commission for the Efficiency of Justice) suggested that, in their current state, AI technologies should not be used in *criminal* proceedings and, even in other types of proceedings (civil, commercial, administrative), they should only be used as a decision-making *aid*, and not as the sole determinant of the outcome of proceedings. The second guideline given by CEPEJ says that LJP technologies should only be used within a **normative framework** that offers effective protection against misuse or uninformed use. This brings me to the last point of my presentation: **the need for a legal framework**.

Even in those situations where the deployment of AI is deemed appropriate, its design, development and operation **must be governed by clear and precise norms, which require upholding the principles, values and fundamental rights in our society**.

Thus, in December 2018, in its above-mentioned Ethical Charter CEPEJ set out a working basis by defining five fundamental principles to be adhered to in any AI systems used by courts:

- (1) **firstly**, these systems must be **compatible with human rights** (obviously);
- (2) **secondly**, they must abide by the principle of non-discrimination (thus **preventing** the creation or strengthening of **discrimination** between individuals or groups of individuals);
- (3) **thirdly**, they must respect the principle of **quality and certainty** (with regard to the processing of court decisions and court data used to train, test and validate the models);
- (4) **fourthly, transparency, impartiality and fairness** (which means making data-processing methodologies accessible and understandable, and allowing external audits);
- (5) **fifthly, the principle of user control** (thus ruling out a prescriptive approach and enabling the user to be an informed stakeholder and master of his/her choices).

What are the practical implications of these principles? CEPEJ is currently working on defining more specific guidelines for the implementation of these principles in the context of LJP technologies. It is also looking into whether a certification or labelling framework for AI products used in judicial systems would be appropriate and feasible.

In other sectors as well, a number of stakeholders – governmental and non-governmental organisations, but also industry itself – have been produced a raft of **ethical principles, guidelines and other soft law instruments** for the responsible use of AI²⁸. While these documents are certainly useful as a moral compass for AI actors, their non-binding nature limits their effectiveness in ensuring proper compliance with the principles they seek to secure. In practice, their implementation depends on the goodwill of those concerned.

There is therefore a **growing consensus that the use of AI needs to be regulated by law**, given the significant impact that these technologies can have, not only on the fundamental rights of citizens, but also on the functioning of democratic institutions and processes, and on the rule of law. To be sure, for the time being, the use of AI is not totally outside the law, as several existing rules do apply, such as in the fields of unfair competition, civil liability or personal data protection, where GDPR secures our right not to be subject (with some exceptions) to a decision based exclusively on automated processing, including profiling, if that decision produces legal effects or has a similar significant impact.

However, this is unlikely to be sufficient. There are gaps in the currently applicable legal instruments. This is one of the conclusions of **CAHAI**, the Ad Hoc Committee on Artificial Intelligence, which the Council of Europe Committee of Ministers set up in 2019 for a period of two years and which I have the honour to chair together with my Slovenian colleague, Gregor Strojijin. CAHAI's mission is to examine the feasibility and potential elements of a legal framework

²⁸ In particular the Ethics Guidelines for Trustworthy Artificial Intelligence (AI) prepared by the High-Level Expert Group on Artificial Intelligence of the European Commission, adopted in April 2019 – <https://ec.europa.eu/futurium/en/ai-alliance-consultation.1.html>. For a comparison between these non-binding instruments see Ienca and Vayena, 2020.

for the development, design and application of AI, based on Council of Europe standards in the fields of human rights, democracy and the rule of law.

In its work, CAHAI has concluded that an appropriate legal framework for AI systems would probably consist of a combination of binding instruments – including a new convention – and cross-disciplinary or specific non-binding instruments, which would complement each other²⁹. This approach was endorsed by the Committee of Ministers at its 131st Session on 21 May 2021; the intention is to start negotiations on a transversal instrument in early 2022³⁰.

In addition, the **European Union** is in the process of developing a specific binding legal instrument on AI systems. On 21 April the European Commission published a proposal for a regulation³¹. This regulation will primarily be an internal market instrument, based on Article 114 of the Treaty on the Functioning of the European Union, focusing on AI system conformity, standardisation, and market surveillance. While it seeks to ensure that the fundamental rights of individuals are properly upheld, its aim is above all to harmonise the national laws of the Member States so that AI systems can circulate freely within the Union.

These two initiatives – that of the Council of Europe and that of the EU – will therefore be perfectly **complementary** (as are Convention 108 and the GDPR).

They also share a **common approach**, consisting in establishing a differentiated regulatory framework **according to the risks presented** by the uses of AI. Thus a distinction will be made between, on the one hand, **uses that are prohibited** because they present unacceptable risks (such as the use of AI systems by public authorities for social scoring purposes or remote and “real-time” biometric identification systems in publicly accessible areas for law enforcement), and, on the other hand, **uses that are regulated** because they present high risks to health, security or fundamental rights.

Will these texts be relevant to the judicial sector?

The answer is yes, as these texts will be able to transform the ethical principles identified by CEPEJ into binding legal obligations. Both CAHAI and the European Commission consider that AI systems used by the police and the judiciary, especially those designed to assist judicial authorities in researching and interpreting facts and the law, and in applying the law to a concrete set of facts, are high-risk applications, remaining subject to requirements related to risk assessment, technical documentation, data quality, human supervision, etc.

However, we are still at the **beginning of the legislative process**; the road to the adoption of final texts will be a long one. In the meantime, Ladies and Gentlemen, I am counting on you. As representatives of the superior courts of the Council of Europe member States, you are the custodians of our fundamental rights. Like, for example, your colleagues in the Netherlands, in the *AERIUS and Others* cases³², you have the power to uphold the principles of transparency, non-discrimination, equality of arms and good governance; to condemn “black box” systems deployed by public authorities in violation of these principles; and to protect citizens from what the Council of Europe Parliamentary Assembly called (in its October 2020 resolution³³) *digital authoritarianism*. We should all be vigilant in ensuring that the predictive does not become the prescriptive ...

Thank you for your kind attention

²⁹ CAHAI, 2020, p. 63.

³⁰ [CM/Del/Dec\(2021\)131/2b](#), 21 May 2021.

³¹ Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) and amending certain Union Legislative Acts, 21 April 2021, COM(2021) 206 final.

³² ABRvS, 17 May 2017, [ECLI:NL:RVS:2017:1259](#); ABRvS, 18 July 2018, [ECLI:NL:RVS:2018:2454](#); Hoge Raad, 17 August 2018, [ECLI:NL:HR:2018:1316](#).

³³ Resolution 2341 (2020) of the Parliamentary Assembly, Need for democratic governance of artificial intelligence, 22 October 2020 – <https://pace.coe.int/fr/files/28803>.

References (complétant la liste contenue dans le [Document de travail préparé par le greffe de la CEDH pour le séminaire judiciaire](#))

- Aletras, N., Tsarapatsanis, D., Preoțiu-Pietro, D., & Lampos, V. (2016). Predicting judicial decisions of the European Court of Human Rights: A natural language processing perspective. *PeerJ Computer Science*, 2, 93, <https://peerj.com/articles/cs-93/>
- Algorithm Watch & Bertelsmann Stiftung (2020). *Automating Society Report 2020*, <https://automatingsociety.algorithmwatch.org/>
- Artificial Lawyer (2017). French Magistrates See 'No Additional Value' in Predictive Legal AI, <https://www.artificiallawyer.com/2017/10/13/french-justice-ministry-sees-no-additional-value-in-predictive-legal-ai/>
- Ashley, K. D. (2017). *Artificial intelligence and legal analytics: new tools for law practice in the digital age*. Cambridge University Press.
- CAHAI (2020). Étude de faisabilité relative aux normes juridiques en matière d'IA, 17 décembre 2020, CAHAI(2020)23, <https://www.coe.int/en/web/artificial-intelligence/cahai>
- CEPEJ (2018). Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement, 3-4 décembre 2018, <https://rm.coe.int/charte-ethique-fr-pour-publication-4-decembre-2018/16808f699b>
- CEPEJ (Groupe de travail sur la qualité de la justice) (2020a). Lignes directrices pour la mise en œuvre de la Charte de l'IA appliquée aux technologies de modélisation des décisions judiciaires (préparées conjointement par le secrétariat de la CEPEJ et l'IEEE), 15 juin 2020, CEPEJ-GT-QUAL(2020)4, <https://rm.coe.int/cepej-gt-qual-oj-2020-1/16809c78b3>
- CEPEJ (2020b). Mise en place éventuelle d'un mécanisme de certification des outils et services d'intelligence artificielle dans le domaine juridique et judiciaire : Étude de faisabilité, 8 décembre 2020, CEPEJ(2020)15Rev, <https://rm.coe.int/etude-faisabilite-fr-cepej-2020-15/1680a0adf3>
- Chalkidis I., Androutsopoulos I., & Aletras, N. (2019). Neural legal judgment prediction in English, Proceedings of the 57th Annual Meeting of the Association for Computational Linguistics. 4317 (2019), <https://www.aclweb.org/anthology/P19-1424.pdf>
- Chen, D. L., & Egel, J. (juin 2017). Can machine learning help predict the outcome of asylum adjudications? In Proceedings of the 16th edition of the International Conference on Artificial Intelligence and Law (pp. 237-240). ACM.
- de la Fortelle, A. (éd.) (2020). *Intelligences artificielles et humaines, quelles interactions ? Enjeux Numériques*, n° 12, décembre 2020.
- Grabmair, M. (juin 2017). Predicting trade secret case outcomes using argument schemes and learned quantitative value effect tradeoffs. In Proceedings of the 16th edition of the International Conference on Artificial Intelligence and Law (pp. 89-98). ACM.
- Hildebrandt, M. et al. (2021). COHUBICOL Working paper I on Text-driven Normativity, <https://publications.cohubicol.com/working-papers/text-driven-normativity/>
- Ienca, M. & Vayena, E. (2020). AI Ethics Guidelines: European and Global Perspectives. In CAHAI, Towards Regulation of AI Systems: Global perspectives on the development of a legal framework on Artificial Intelligence (AI) systems based on the Council of Europe's standards on human rights, democracy and the rule of law, DGI(2020)16, <https://www.coe.int/en/web/artificial-intelligence/cahai>.
- Jean, J.-P. (2021). Les juges sont-ils plus sévères quand ils ont faim ? Dalloz Actualité, 26 janvier 2021, <https://www.dalloz-actualite.fr/node/juges-sont-ils-plus-severes-quand-ils-ont-faim>
- Katz, D. M., Bommarito, I. I., Michael, J., & Blackman, J. (2014). Predicting the behavior of the supreme court of the United States: A general approach. arXiv preprint arXiv:1407.6333.
- Katz, D. M. (2013). Quantitative Legal Prediction – or – How I Learned to Stop Worrying and Start Preparing for the Data Driven Future of the Legal Services Industry. *Emory Law Journal*, Vol. 62, 2013, accessible sur le site du SSRN à l'adresse suivante : <https://ssrn.com/abstract=2187752>
- LeCun, Y. (2016). Qu'est-ce que l'intelligence artificielle ? Chaire de recherches sur l'intelligence artificielle, l'informatique et les sciences numériques (2015-2016), Collège de France, https://www.college-de-france.fr/media/yann-lecun/UPL4485925235409209505_Intelligence_Artificielle_Y._LeCun.pdf.
- Medvedeva, M., Vols M., & Wieling, M. (2019). Using Machine Learning to Predict Decisions of the European Court of Human Rights, 28 *Artificial Intelligence Law*, <https://link.springer.com/article/10.1007/s10506-019-09255-y>
- Meneceur, Y., & Barbaro, C. (2019). Intelligence artificielle et mémoire de la justice : le grand malentendu. *Les Cahiers de la Justice*, (2), 277-289.
- Nemitz, P. (2018). Constitutional democracy and technology in the age of artificial intelligence, *Phil. Trans. R. Soc.*, <http://dx.doi.org/10.2139/ssrn.3234336>
- O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*, Crown Books
- Pedreschi, D., Giannotti, F., Guidotti, R., Monreale, A., Ruggieri, S., & Turini, F. (juillet 2019). Meaningful explanations of black box AI decision systems. Proceedings of the AAAI Conference on Artificial Intelligence (Vol. 33, pp. 9780-9784).
- Plesničar, M. M., & Stubbs, K. Š. (2017). Subjectivity, algorithms and the courtroom. *Big Data, Crime and Social Control* (pp. 154-176). Routledge.
- Ronsin, X., Lampos, V., & Maitrepierre, A. (2018). Étude approfondie sur l'utilisation de l'IA dans les systèmes judiciaires, notamment les applications d'IA assurant le traitement des décisions et des données judiciaires. Annexe I de la Charte éthique européenne d'utilisation de l'intelligence artificielle dans les systèmes judiciaires et leur environnement (CEPEJ, 2018).
- Schuilenburg, M., & Peeters, R. (éd.) (2021). *The Algorithmic Society: Technology, Power, and Knowledge*, Routledge.

- Steponenaite, V.K., & Valcke, P. (2020), Judicial analytics on trial: An assessment of legal analytics in judicial systems in light of the right to a fair trial. *Maastricht Journal of European and Comparative Law*, Vol. 27(6) 759–773, DOI: 10.1177/1023263X20981472
- Trassoudaine, F. & Dardayrol, J.-P. (éd.) (2018). Les métiers du droit au défi du numérique, *Enjeux Numériques*, n° 3, septembre 2018
- Vanderstichele, G. (2019). The Normative Value of Legal Analytics. Is There a Case for Statistical Precedent? (thèse présentée pour le master de philosophie du droit, université d'Oxford, 30 août 2019). Accessible sur le site du SSRN à l'adresse suivante : <https://ssrn.com/abstract=3474878> or <http://dx.doi.org/10.2139/ssrn.3474878>
- Vanderstichele, G. (2020). Artificiële intelligentie ter ondersteuning van menselijke rechtspraak. De sui-generismethode voor het gebruik van legal analytics in de rechtspraak, *Nieuw Juridisch Weekblad*, n° 427, 610-623.
- Wachter, S., Mittelstadt, B., & Russell, C. (2017). Counterfactual explanations without opening the black box: Automated decisions and the GDPR. *Harv. JL & Tech.*, 31, 841.
- Wachter, S., Mittelstadt, B., & Russell, C. (2020). Why fairness cannot be automated: Bridging the gap between EU non-discrimination law and AI. Accessible sur le site du SSRN.
- Westermann, H., Walker, V. R., Ashley, K. D., & Benyekhlef, K. (juin 2019). Using Factors to Predict and Analyze Landlord-Tenant Decisions to Increase Access to Justice. In *Proceedings of the Seventeenth International Conference on Artificial Intelligence and Law* (pp. 133-142). ACM.
- Zhong, H., Guo Z., Tu, C., Xiao, C., Liuy, Z., Sun, M. (2018). Legal Judgment Prediction via Topological Learning, *Proceedings of the 2018 Conference on Empirical Methods in Natural Language Processing*, p.3540–3549.
- Zhu, K., Guo, R., Hu, W., Li, Z., Li, Y. (2020). Legal Judgment Prediction Based on Multiclass Information Fusion, *Complexity*, vol. 2020, Article ID 3089189, <https://doi.org/10.1155/2020/3089189>