Jurisdiction and Artificial Intelligence: Reflections and some Applications in Brazilian Courts

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ABSTRACT

The general objective of the article is to articulate the role of jurisdiction within a contemporary transforming circumstance: artificial intelligence in the field of law, especially in the Brazilian reality. The method used is predominantly inductive, starting from specifics for general formulations. After contextualizing the quantitative crisis in legal systems, the article turns to the study of artificial intelligence, providing important ideas for a preliminary contact with the subject, such as conceptual notes, some applications in Brazilian Courts, other possibilities of its use in the legal sphere and reflections on certain difficulties that it brings to jurisdiction. The conclusions reveal the multiple potentialities of artificial intelligence and the new challenges for legal science.

Keywords: jurisdiction; artificial intelligence; technology; applications.

Jurisdicción e inteligencia artificial: reflexiones y algunas aplicaciones en los tribunales brasileños

RESUMEN

El objetivo general del artículo es articular el papel de la jurisdicción dentro de una circunstancia transformadora contemporánea: la inteligencia artificial en el ámbito del derecho, especialmente en la realidad brasileña. El método utilizado es predominantemente inductivo, partiendo de lo específico para las formulaciones generales. Después de contextualizar la crisis cuantitativa de los sistemas jurídicos, el artículo se dirige al estudio de la inteligencia artificial, aportando ideas importantes para un contacto preliminar con el tema, como apuntes conceptuales, algunas aplicaciones en los tribunales brasileños, otras posibilidades de su uso en el ámbito jurídico y reflexiones sobre ciertas dificultades que trae a la jurisdicción. Las conclusiones revelan las múltiples potencialidades de la inteligencia artificial y los nuevos desafíos para la ciencia jurídica.

P*alabras clave*: jurisdicción; inteligencia artificial; tecnología; aplicaciones.

Jurisdição e inteligência artificial: reflexões e algumas aplicações nos tribunais brasileiros

RESUMO

O objetivo principal desse artigo é articular o papel da jurisdição dentro de uma circunstância transformadora contemporânea: a inteligência artificial no âmbito do direito, especialmente na realidade brasileira. A metodologia utilizada é predominantemente indutiva, partindo do específico para as formulações gerais. Depois de contextualizar a crise quantitativa dos sistemas jurídicos, o artigo dirige-se ao estudo da inteligência artificial, trazendo ideias importantes para um contato preliminar como o tema, como anotações pontuais conceituais, algumas aplicações nos tribunais brasileiros, outras possibilidades de uso no âmbito jurídico e reflexões sobre determinados problemas que traz à jurisdição. As conclusões demonstram as múltiplas potencialidades da inteligência artificial e os novos desafios para a ciência jurídica.

P*alavras-chave*: jurisdição; inteligência artificial; tecnologia; aplicações.

Introduction

This article is the result of research at the University of Vale do Itajaí – Univali, Brazil, center that has been dedicated to the subject of artificial intelligence[1]. It aims to articulate various aspects of the jurisdiction within this transformative circumstance consistent with the growth of artificial intelligence in the field of law. The issue gains strength in a context of a quantitative Justice crisis.

After contextualizing the quantitative crisis of legal systems, the article turns to a more specific study of artificial intelligence, providing important ideas for a preliminary contact with the subject, such as the very idea that informs it, some applications in Brazilian Courts, other possibilities of its use in the legal sphere and reflections on certain difficulties that have already emerged.

Concerning the methodology, it is worth noting that, in the investigation phase, the inductive method was used. In the data processing phase, the Cartesian method was used. Finally, the text was written using inductive reasoning. The various stages of the research were assisted using the techniques of referent, category, operational concept, and bibliographic research (Pasold, 2015, p. 27-66).

1. Jurisdiction and Quantitative Crisis

Currently, based on the ideas of Brazilian and foreign authors (Medina, 2010, pp. 8-9; Chiovenda, 2009, p. 534-535; Carnelutti, 2004, p. 373), jurisdiction can be defined as the State's activity through which legal norms, intertwined by rules or principles, are applied by judges[2] for the definitive resolution of subjective or normative conflicts, comprising the diction of the law and, eventually, its execution (Salles, 2021, p. 126-127).

However, the role of jurisdiction has been impacted, in essence, by the phenomenon of the massive judicialization of macro and micro lawsuits, which immerses the judiciary in an unprecedented quantitative crisis, attracting new components and techniques to the context of jurisdiction.

This part of the history shows that there is, especially in Western society, a kind of widespread judicialization that encompasses everything, from life-or-death issues

[1] This is a new version, in English, of a previous study (Salles & Cruz, 2021, pp. 122-145).

[2] There are theoretical proposals that consider it anachronistic to ally the idea of jurisdiction to the legal monopoly of the distribution of justice. However, such a perspective is not adopted in this article. In this article, the importance and need are recognized for the expansion of other forms of conflict resolution in the field of Access to Justice (*lato sensu*), in particular access to rights. But this does not imply any change in the meaning of jurisdiction. On the one hand, the jurisdiction is the diction of the law by the judge and takes place in the access to the judiciary, resulting in a legal provision characterized by the *res iudicata*. On the other hand, access to justice can also occur in other decision-making institutions, besides the judiciary, and outside the context of jurisdiction, without the definitiveness that constitutes an attribute of legal provisions.

to everyday trivia. Judicialization can be defined as the multicausal phenomenon present in countless countries and manifested in them with its characteristics, which are linked to the peculiar interactions between law and politics. Through this phenomenon, the Judiciary has been increasingly used to decide on macro and micro lawsuits and, by providing creative answers not given by other agents, thus expanding both (i) the scope of legal decisions, and (ii) the legal methods of decision-making to the political sphere, classically reserved to other Powers (Tate, 1995, p. 28).

This situation creates a scenario that is common in legal systems, a retrofeeding cycle between access to justice, judicialization, and legal activism. This cycle comes from "(...) *accentuato garantismo al quale si è pervenutti attraverso un'interpretazione talvolta esasperata dei precetti constituzionali* (...)", including the access to courts, "(...) *che ha inciso sensibilmente sull'aumento della litigiosità, soprattutto nelle fasi di impugnazione, e quindi sull'allungamento dei tempi della giustizia*" (Denti & Taruffo, 1986, p. 290)[3].

The circular movement attracts, among other problems, a quantitative issue[4] tied to the explosion of litigation. This problem is evident in the avalanche of ongoing lawsuits in the various legal systems, which causes delays and insecurity, demanding answers from the State as the one responsible for legal protection, and from society, like the one interested in such guardianship. The excess of lawsuits being processed is a common problem for the Civil and Common Law systems.

It is important to note that judicialization and intense litigation concern not only the control of constitutionality and collective actions of wide repercussion, but also to a variety of individual issues, both in public or private law, relevant or not, and to micro-issues that are mass deducted and enhanced by repetition, and end up impacting political activities (Shapiro, 1995, p. 57). It should be remembered that the challenges of the jurisdiction do not lie exclusively in hard cases, subject to public discussion (Allard & Garapon, 2005, p. 24) or that offer difficulty in their technical-legal resolution, although these cases take greater notoriety and attention. They also lie in a larger and silent number of everyday situations, whose decisions are taken urgently, in an improvised, automated way, and without luxuries or theoretical concerns (Garapon, 1998, p. 172), causing the congestion of the system.

It is assumed that the quantitative challenge is almost self-evident in the present times. There have been several studies verifying it and anyone who works in the daily forensic routine perceives it pragmatically. Even those who do not experience the day-to-day of the courts can see it. As a result, it is unnecessary to show statistical

[3] Free translation: "(...) marked guaranteeism reached through an interpretation of constitutional precepts that are sometimes aggravated", and "(...) which has significantly affected the rate of litigation, especially in the appealing phase, and therefore the lengthening of the times of justice."

[4] There are also qualitative problems, which will be not studied in this article. These problems come from the challenges that constitutional and ordinary jurisdictions face, in the Democratic States of Law, in their tensions with the representative system.

data, which can be easily found elsewhere (Brazil, CNJ; European Commission for the Efficiency of Justice; United States Courts). The important point here is the widespread idea that "[L]itigation has gone totally out of *control* (...)", and it sometimes looks like an epidemic (Friedman, 1994, p. 9), causing delays and uncertainties that make the legal process "backlogged" (Hazard Jr., 1986, p. 271).

It is even stated that "A *explosão dos contenciosos transformou silenciosamente o acto de julgar, a tal ponto que já não se sabe muito bem qual foi o mais determinante, se o desafio quantitativo ou o desafio qualitativo*" (Garapon, 1998, p. 255)[5].

On the matter, the doctrine notes that:

> Overload is less a real defect in the judicial system than a powerful motivation for a change of some kind. True, the effects can be extraordinarily unfortunate; with more disputes to resolve than resources to dispose of them, a backlog soon builds up and long delays become inevitable. Moreover, the pressures to expedite decision-making often led to the cursory treatment of each dispute, and thus to the appearance and reality of 'mass-production justice'. (Johnson Jr., 1978-1979, p. 872)

In response to the problems that arise from the numerical crisis, in an attempt to overcome or mitigate them, in addition to some types of reforms to legal systems[6], solutions have been proposed, such as the adoption of management models and the promotion of in-court self-compositions. Such methods for unclogging legal systems are important and contribute to their efficiency. However, it is not feasible to neglect some of their questionable impacts on the exercise of jurisdiction, to strengthen the maxim that almost everything in life has two or more facets, as already highlighted in a previous study (Salles, 2019, p. 129-154).

Within this context of a quantitative crisis, in the paroxysm of legal systems and under similar considerations, artificial intelligence emerges. There is a new ingredient in the legal daily routine, which, although positive from many perspectives, as a path with no return, presents itself as a problem in certain points, as it is exposed in the next section.

2. Artificial Intelligence: a New Answer

Parallel to the management and self-composition models, which have not proved sufficient face-to-face with the quantitative crisis, a new and complementary trend emerges in the daily routine of the jurisdiction: the incorporation of artificial intelligence focused on, among other things, speediness, efficiency, and legal certainty.

[5] Free translation: "The explosion of litigation has silently transformed the act of judging, to the point that it is no longer known what was the most decisive, whether the quantitative challenge or the qualitative challenge".

[6] Examples are the (i) increased resources for judges and the structure and creation of courts, the (ii) modification of legal work and proceedings, the (iii) attempt to reduce the number of claims that enter the system, or even (iv) a combination of these elements.

Present in several day-to-day domains, artificial intelligence has a high application potential. As an example, it is worth mentioning the cellphones pair, the customer service centers (chatbots), autonomous vehicles, the health diagnostic area and medical surgeries, the concept of smart cities, among others (Cheliga, 2020, pp. 20-23). Intelligent objects that connect to the internet via sensors are also common, such as telephones, watches, refrigerators, etc., containing software that sends personal information to the worldwide network (Cheliga, 2020, pp. 80-81), which also opens wide avenues for discussions on privacy protection[7].

In a preliminary approach, it is possible to translate artificial intelligence as a computational system created to simulate the decision-making of human beings, translating into algorithms the functioning of the human brain (Cheliga, 2020, pp. 16-17). It is said that a machine is intelligent when it is able to mimic or imitate human behavior in a given task, and the difference between man and machine is not noticeable by an inadvertent spectator (Turing, 1950, pp. 433-460). It is, then, a multidisciplinary technology designed to make human interference dispensable in certain activities.

In the field of jurisdiction, it is essential, among other things, that a machine gathers the capacity to understand a language pattern, process knowledge and data entered or stored in it, employ automated reasoning, and learn from success and failure to adjust the results of its operations (Cheliga, 2020, pp. 24-27).

When talking about artificial intelligence, it is necessary to keep in mind a distinction between the strong AI or general artificial general intelligence and the weak sense (weak AI or narrow artificial intelligence) of the term. Briefly, the former pursues a global substitute for the human mind, attributing to computers the ability to think, create, process, learn autonomously, plan, and communicate, i.e., perform the same tasks performed by the brain. The machine here is not limited to simulating intelligence but is capable of reasoning and is self-aware. On the other hand, the latter develops intelligence with the less ambitious goal of using it in specific applications, for specialized tasks, in order to assist, optimize or complement human performance, artificially imitating the brain from algorithms, but without the intent of developing all its potential. It is the latter, today, the form of artificial intelligence applied in the field of law, including because the decision factors are not fully absorbed by the machines (Rosa, 2019, p. 8).

In other words, while the goal of the first (strong) is to build a machine that responds to general human intelligence, the second (weak) seeks to emulate the performance of specific tasks, through the expansion of the information horizon, the management of data, the execution of certain tasks and the suggestion or production of decisions in line with normativity (Rosa, 2019, p. 8). Artificial intelligence in the legal universe, then,

[7] The theme is the subject of global concerns. In Europe, the General Data Protection Regulation in the European Union - GDPR was issued. Brazil follows a similar path with the General Data Protection Law (LGPD).

is guided by programming, rules, and logical procedures through which data are processed and answers are provided, or activities are performed, remarkably, those more specific than the ones which the human being is capable of (Cheliga, 2020, pp. 18-19).

Artificial intelligence operates through algorithms. These translate routines, steps, and instructions for the machine to perform, scripting a logical sequence of procedures to solve a problem or deliver a response. There is a formula that divides a complex task into smaller ones (Ferrari & Becker, 2020, p. 203) through the computer or, also, a set of rules from a logical understanding, aiming at transforming the information entered in the electronic device into data that will produce answers (Paolinelli & Aziz Antônio, 2020, p. 292). After receiving the data (input), the machine processes them, identifies patterns, performs inferences, and delivers the results (output), using algorithms that can be classified into programmed or non-programmed (Ferrari & Becker, 2020, p. 203).

Programmed algorithms are those that are active in all phases, following the itinerary established by the program. The non-programmed algorithms, of greater interest in the field of law, work differently. By receiving the data to be processed (input), they have greater freedom in the route taken to result (output), without tethering to previous and express programming (Wolkart & Becker, 2020, p. 658), writing the route themselves, and improving it according to the answers delivered. For this reason, non-programmed algorithms are called learners (Ferrari & Becker, 2020, p. 203).

Understanding concepts such as machine learning and deep learning is fundamental in the field of artificial intelligence. Machine learning is a branch of artificial intelligence based on "the idea that systems can learn from data, identify patterns, and make decisions with minimal human intervention" (Rosa & Guasque, 2020, p. 66). Deep learning is a sub-area of machine learning that uses artificial neural networks, which imitate the processing of the human brain (Rosa & Guasque, 2020, p. 66). Such networks are organized in layers, connected, in charge of specific activities, and capable of receiving, processing, and passing on information, enabling the establishment of connections, generalizations, and learning. In both cases (machine learning and deep learning), machines are created to perform tasks or provide answers, learning alone and delivering increasingly accurate results, gaining accuracy through experience (Paolinelli & Aziz Antônio, 2020, p. 292).

Learner algorithms can be divided into supervised and unsupervised. In the case of supervised learners, the data entered are previously processed by humans (input) in order to deliver an expected output as the correct answer (Paolinelli & Aziz Antônio, 2020, p. 293). With unsupervised learners, the data entered (input) are not previously categorized, making it more complex to deliver the results (output). Here, a greater ability to identify patterns in the inputs is required, for later grouping of the data Wolkart & Becker, 2020, p. 659). By providing the correct answer, these learner algorithms

receive a reinforcement command, which attaches greater weight to the path traveled, a practice that promotes a gradual improvement (Wolkart & Becker, 2020, p. 659). A kind of progressive calibration is performed for future operations.

The study of artificial intelligence also involves concepts such as big data, analytics, and jurimetrics (Rosa, 2019, pp. 2-3), which are directly connected to the application of said intelligence. Big data represent the immensity of data circulating in the virtual world, whether structured or not, captured from browsers, social networks, applications, shopping websites, and other loci of the virtual world. The big data concept is based on volume, variety, velocity, veracity, and value (5 V´s). In the legal environment, examples of such data are sources of law, such as constitutions, treaties, international standards, laws, decrees, and other internal regulatory acts, precedents of the various national and international courts, doctrinal production, etc. (Rosa, 2019, p. 4). With a variety of contents, these data, after being accessed by an intelligent computer that processes them in velocities and quantities greater than human capacity, are used to assist the response and decision-making, whether related to jurisdiction, legal or managerial policy.

Analytics, a branch of business intelligence (BI), is a set of techniques with a more specific scope than that of big data. It deals with a multidimensional field that uses mathematical techniques, statistics, predictive modeling, and machine learning to find patterns and knowledge in data (Rosa & Guasque, 2020, p. 66). Through analytics, data are submitted to systematic analyses, whether statistical, predictive, strategic, or other, after which information is provided that gathers elements for a more efficient decision-making process.

Jurimetrics is, briefly, a reunion of the areas of law and statistics. It operates through the collection, organization, and interpretation of legal data, with multiple potentials. It can be used for descriptive purposes, such as the simple exposure of statistical reality. Other forms of employment are an aid for the management of legal services or the basis of decision-making measures, including policies for a legal organization. It can also be used for predictive purposes, which is carried out with the help of artificial intelligence, through algorithms able to gather the claims judged on a given subject to predict the tendency of decisions and the chances of success of a given claim.

Jurimetrics, in its predictive form, is a disputed matter, and it recently remained outlawed in France (Wolkart & Becker, 2020, pp. 655-670). The reason is that one should avoid it to prevent the data collected from being used to pressure the judges to go in one or another direction or to support stratagems harmful to the judiciary or other litigants. On the other hand, there are highlights, elsewhere, for positive aspects of practice, which, by allowing a preview of the outcome of the conflict, has legal adventures and provides more concrete bases to guide the parties and lawyers in

negotiations, including in virtual extrajudicial spaces, fostering alternative techniques for resolving conflicts and unclogging the judiciary (Nunes & Duarte, 2020, pp. 381-421).

3. Applications of Artificial Intelligence in Law

In Estonia, the first country to have cataloged internet access as a human right, a pioneer in the field of government robotics, the introduction of a robot to judge conflicts of less than €7,000.00 (seven thousand euros) is being assessed. Initially, it would be used in small claims of a contractual nature. As the system starts to be seen as trustworthy, there is the possibility of further expansion of values and matters submitted to the robots. By judging simple claims, robots will open time for legal actors to solve more complex legal problems. The decisions of the robot judge can be appealed to a human judge (Cowan, 2020).

In China, alongside the growth of online dispute resolution platforms, the existence of a virtual litigation model has been observed, in which a holographic judge, with a voice and three-dimensional image is responsible for decisions on conflicts (Nunes & Marques, 2020, p. 554). In addition, it is also worth mentioning the role of robots that provide information and legal clarifications to citizens, and the role of software that, in criminal hearings, reproduce judge commands to display certain evidence, identify speakers and convert oral statements into written characters (Amaral, 2020).

In the United Kingdom and the United States of America, an increasing number of law firms have been adopting technological advances to the detriment of human resources, whether in the research of precedents, the forecast of the result of claims, or the manufacture of legal texts and the procedural monitoring. Lawtechs and legaltechs assist in the analysis of jurimetric data, in the prognosis of the chances when proposing or not a lawsuit, in the resolution of online conflicts, and in the management of attorneys' offices, among other activities. In England, robot Hart helps the police identify areas with the highest risk of crime. In the U.S., the Judiciary of the State of Wisconsin uses software called COMPAS, a risk assessment tool that helps judges to decide whether or not to grant provisional freedom to prisoners by examining their data and personal history, and analyzing the correlation with data of other lawsuits and the indication of a high or low risk of relapse (Ferrari & Becker, 2020, p. 199). This software is controversial, and there are suspicions that the machine may reproduce a possible discriminatory trend underlying the data.

In Brazil, the Supreme Federal Court (STF) developed the Victor platform, which has been used with the initial objective of identifying, with a significant gain in time, the appeals associated with the legal themes affected for a general repercussion (Supremo Tribunal Federal, 2018). The Superior Court of Justice (STJ) adopted the system Socrates (STJ, 2020), which is able to automate the initial stages of the processing of the appeals that ascend to the Court by reading lawsuits, detecting the subject,

promoting the classification of lawsuits, and facilitating the categorization in the list of repetitive demands, even before distribution (Rosa & Guasque, 2020, p. 75-76).

The Court of Justice of the State of Rio de Janeiro (TJRJ) uses the system Victoria (Brasil - TJRJ, 2018), which automates the procedures of tax executions, which works with citations, updating of debt, as well as issuing of orders for blocking and unblocking of money. This software also prepares minutes of judicial decisions, in case of successful blocking to cover the whole debt, or continues the search in other systems, if the blocking was not successful (Rosa & Guasque, 2020, p. 70). Robots are also used by the Court of Justice of the State of São Paulo (TJSP) for the automation of procedures in tax enforcement proceedings (TJSP, 2019).

The Court of Justice of the State of Rio Grande do Norte (TJRN), among its technological innovation projects, presented the platforms Poti, Clara, and Jerimum (Pacheco, 2019, p. 33). The first platform, Poti, carries out debt updates, operationalizes blocks on bank accounts, and reschedules orders for blocking goods within certain periods if previous blockings were unsuccessful. The second one, Clara, reads procedural documents and recommends decisions, such as the extinction of a lawsuit by its payment. The third platform, Jerimum, reads, classifies, and labels lawsuits, separating them according to predominant topics in tax executions, compensation for moral damages, bank demands, and others, carrying out an efficient screening. For these activities, Clara and Jerimum use deep learning (Rosa & Guasque, 2020, p. 70).

The Court of Justice of the State of Pernambuco (TJPE) uses the robot Elis. The proposal is to increase the productivity and efficiency of legal units and optimize the classification of cases and the quality of data for information management (Pacheco, 2019, p. 32). The robot is also capable of deep learning, performing accurate screening of thousands of tax enforcement lawsuits of the city of Recife, classifying them, identifying errors in the Certificates of Active Debt, creating and entering in the system minutes for judicial decisions, and even signing them, if authorized by the judge (Rosa & Guasque, 2020, p. 72).

The Court of Justice of the State of Minas Gerais (TJMG) developed the tool Radar (TJMG, 2018), which is dedicated to separating and accelerating the judgment of repetitive cases in the first and second degrees of jurisdiction, by reading pieces, searching for keywords, screening, and gathering for joint judgment particularly in matters that have been previously decided by the Superior Courts or in Repetitive Claims Resolution Incident in the court itself (Rosa & Guasque, 2020, p. 73).

The Court of Justice of the State of Rondônia (TJRO) has been using the platform Synapse, which is the result of a cooperation agreement with the National Council of Justice (CNJ), to be made available to the other Courts of Brazil (TJRO, 2018). Using deep learning, the tool performs a scan on the court's decision basis, saving research

time and presenting certain suggestions for texts or trends from the information obtained. In addition, the platform classifies mass lawsuits in banking matters, DPVAT (Personal Injuries Caused by Land-based Automotive Vehicles) insurance, telecommunications, and other repetitive topics (Rosa & Guasque, 2020, p. 74-75) for mass judgment, and it also enables the identification of possible cases of prevention and produces personalized summaries of legal texts.

The Court of Justice of the State of Roraima (TJRR) launched the Justice 4.0 program, which aims to provide speed and efficiency to legal services, in addition to ensuring a better quality of life for judges and civil servants (TJRR, 2019). Within the scope of this project, artificial intelligence systems and technological solutions such as Mandamus, Scriba, SIJA, and Chatbot were created. Mandamus is geared toward the automation in the issuance, distribution, and management of warrants, drafting them and assigning them using zone and location criteria. The tool also assists in the updating of addresses of the parties, and makes procedural communications in real-time in a fully electronic way. It can be used on *tablets* or mobile phones, accompanied by a mini portable printer, and the result of the diligence can be immediately entered into the system (TJRR, 2020). In the second phase of the introduction, M*andamus* also brings the proposal of classifying the risk in the execution of warrants due to the location of the due diligence, the matter, and other aspects (Pacheco, 2019, p. 36). S*criba* promotes the automated transcription of hearings and sessions, while SIJA assists in the proposition of lawsuits of the special civil court using a cellphone device application. A *chatbot* is a kind of assistant robot that communicates with people by messaging, serving users in bureaucratic activities, and freeing servers for other tasks (TJRR, 2019).

In similar areas, the Federal Court of Accounts (TCU) uses the robots Alice, Sofia, and Monica to review high amounts of tender notices, in order to catch possible fraud, monitor public acquisitions, and suggest improvements in internal reports (Ferrari & Becker, 2020, pp. 201-202). The Attorney General's Office (AGU) adopted the system S*apiens*, aimed at simplifying, automating, and facilitating the production of legal pieces, including suggestions for applicable legal theses (Nunes & Marques, 2020, pp. 554-555). It is a document manager with advanced features to support content production and control of administrative flows.

As can be seen from the examples, the possibilities of the use of artificial intelligence are broad and multi-sectoral. Applied to the Judiciary Power, artificial intelligence assumes numerous functionalities (Porto, 2019, p. 180-181).

From a general perspective, it can be seen that technological revolution and artificial intelligence systems have the potential to significantly transform activities such as (i) the search, location, and selection of relevant documents in lawsuits, (ii) the reading, sorting, and classification of legal pieces for the planning of work, the identification of causes of extinction of lawsuits and/ or the mass judgment of repetitive

topics, (iii) legal scholarship and legislation search in general, including the various national and international sources of law, (iv) the creation of documents, (v) the production of reports and postulations or decisions, and (vii) the prediction of the results of judgments (Nunes & Rodrigues, 2020, p. 227-259), influencing, in this case, the decision of solving a claim in court or out of court, with more concrete standards of results for negotiation.

The technology will also impact: (viii) on promotion of legal certainty and reduction of judicial discretion, by enabling a more faithful portrayal of the law; (ix) in the effectiveness of enforceable activities, such as the search for financial assets, goods for pledging and addresses; (x) on process management, automating certain parts of procedural stages; (xi) on the design of organizational policies at micro and macro levels, including the detection of hypotheses of frivolous, habitual or predatory litigation, to assist in the definition of legal coping strategies; (xii) on the easier provision of legal information, inside and outside the courts, introducing to stakeholders informal and faster ways to solve everyday problems, raising awareness of rights and dissuading false expectations; (xiii) on the opening of new forums, whether institutionalized or not, more or less formal, for the online resolution of conflicts; (xiv) in the introduction of chats for customer service; (vx) in the growth of the so-called visual law for reducing formality in legal communications through the use of graphic illustrations, QR Codes and other resources that make petitions more didactic and creative (Nunes & Marques, 2020, p. 556); (xvi) in the use of blockchain[8] technology for filing documents and evidence; (xvii) in the consolidation of fully virtual trial sessions and court hearings and trial sessions by videoconference, which has intensified with significant results since the covid-19 pandemic period; (xviii) in the control of users with access to sensitive data or activities; (xiv) among other possibilities.

In short, from automated routine tasks to sophisticated research to support the making of complex decisions, mass production, and predictive analysis, through to the most varied activities, technology and in particular artificial intelligence systems rationalize legal activity and tend to reduce the time and cost of lawsuits, also increasing efficiency and enabling legal certainty (Rosa & Guasque, 2020, p. 78).

It is necessary to emphasize that the reflexes of these transformations go beyond the sphere of jurisdiction. They have repercussions on extrajudicial arenas and may favor a dejudicialization movement, through which disputes are diverted from judicial assessment to be delivered, first and even compulsorily (D*ecreto legislativo* n. 69,

[8] Blockchain technology, a trust protocol, allows the recording of documents and transactions securely, using encryption and encrypting the contents in indecipherable codes. The content of the documents is shared with a chronological chain of users, serving decentralization as a measure of security and veracity, and not allowing any changes after sharing.

2013)[9], to private bodies such as mediation, conciliation (Alternative Dispute Resolution –ADR), and arbitration, especially online (Online Dispute Resolution –ODR). Free legal sites increasingly provide relevant and didactic information, as well as enable the resolution of public and private conflicts using internet platforms (Rhode, 2004, p. 82). The Online Dispute Resolution (ODR) services allow the resolution of controversies coming from the computer network and e-commerce (Werneck, 2020, p. 113), resolving on the internet itself the conflicts that arose in it. Cyberspace, computers, and telematics are used to overcome spatial difficulties, in opposition to other resolution methods, minimizing costs and shortening explanations (Troisi, 2013, p. 75-76).

4. Artificial Intelligence and Jurisdiction

The various application facets of artificial intelligence form a promising field in terms of efficiency, standardization, predictability, strengthening of legality by the application of laws and jurisprudential standards (Fiss, 2003)[10], reasonable process duration, effectiveness in the execution of the activity, and cost reduction.

With the help of algorithms in a myriad of routine tasks and standardized situations, the judges and their teams have more time to focus on complex issues and relevant topics, with quality and proper reflection. It should be noted, in quote translated from french to english, that "to evoke justice is to evoke the time of the judge" (Trébulle, 2016, p. 367), so that, in overcrowded courts, magistrates presiding over minor misfits are those without time to decide the fate of an abused or neglected child (Rhode, 2004, p. 16).

Despite these positive features, critical aspects makeup counterpoints and recommend caution. In certain situations, for example, artificial intelligence can produce decisions that are in large-scale incorrect, unfair or activist and, most of the time, lacking the proper accountability. Decision-making biases are enhanced by large-scale automated production. In addition, machine decisions empty important features of the act of judging (Zuluaga Vanegas, 2021, p. 373-393). They also bring difficulties in evaluating precedents consistently. The reissue of such precedents potentially hinders the legitimate mission of modernizing the content of law and the search for justice.

It should be noted that if the database (data sets) that feeds the algorithms is of dubious quality, or if it inherits cognitive biases from programmers, the decisions produced tend to expose these distortions, moving away from the belief of neutrality and

[9] In Italy, by welcoming the Community lines drawn upon Directive #52 of May 21, 2008 of the European Union, out-of-court procedures of mandatory mediation were established as a condition for the possibility of proceeding with legal lawsuits in the civil and commercial fields. In Brazil, similar conditioning institutions do not have clear legal provisions and find resistance in the jurisprudence and thought of legal authors, bound by the traditional conceptions of Access to Justice (*lato sensu*) and the idea of litigation in court.

[10] A criticism made to self-compositions, inapplicable to artificial intelligence, is that the application of the rules is replaced by bargaining practices, weakening normativity.

scientificity of the machine to carry ideologies, preferences, and prejudice. Similarly, as the algorithms learn and are calibrated with the reinforcement commands received after the hits, errors, and adjustments, the inclination is that they will increasingly reproduce these feedbacks, and if these are based on questionable understandings of the society or law, they will gain undue expression in decisions produced in the future (Ferrari & Becker, 2020, p. 206-209).

On the other hand, the fact that the algorithms that adopt machine learning are non-programmed, modifying and rewriting their structure while they are performing, makes it a problem to unravel the internal flows between input and output (Ferrari & Becker, 2020, p. 210), attracting to the decision-making process a black hole. This circumstance reveals the problem of opacity and subjects people to the mysteries of algorithms, finding it difficult to obtain precise explanations, to know the logical steps that guided the decision, and exercise the right of influence or appeal on a complete basis. Artificial intelligence, thus, can assume a turbulent conviviality with procedural guarantees, being necessary to seek harmonization.

The careful and consistent assessment of the precedents that will serve as the basis for the decision of the machine is another issue to reflect upon. Strictly speaking, in an authentic system of precedents, such as that of common law, the rule expressed in the legal decision (holding) and its central motivation (*ratio decidenci*) have a binding nature and can be applied to future cases (*stare decisis*), excluded from it the incidental and accessory notes registered in the statement of reasons (*opinion*) (Radbruch, 1962, p. 34). The precedent is not formed properly by the result of the demand, but by the legal reasons reflected in propositions of law, legal scolarship applied to facts, and even abstract doctrines launched in the foundation (Mattei, 1996, p. 155). This system of precedents has been incorporated with adaptations by the civil law family (Mello & Barroso, 2016), with some differences preserved: in common law, precedents are produced case-by-case from the facts, while in civil law they are based on general theses built with a prospective look (Theodoro Júnior, 2016, p. 6). In any case, in both situations, the concern is legitimate around the ability of the algorithm to perceive facts and reason properly by analogy, as required in cases of precedents, or to differentiate what is the central motivation that can serve as a precedent of the merely incidental reasons launched in the decision.

The automation of decisions can still approximate the law to outdated doctrines such as conventionalism (Nunes & Duarte, 2020, p. 382), by assigning to machines the function of looking excessively at the past, discovering the law established in past legal or jurisprudential conventions and only considering as a right, for the purpose of decision-making, what has already been previously decided (Dworkin, 2007, p. 119). It also tends to attribute excessive weight to syntax or semantic theories, such as positivism, clinging excessively to linguistic patterns to assess legal propositions.

These factors can hinder the operationalization of law using more contemporary bases, such as the argumentative (Dworkin, 2007, p. 57-58)[11] and discursive (Alexy, 2015, p. 9)[12] concepts, the use of principles, and weighting techniques. Moreover, the focus on the past, on what is already established and is extracted from the vastness of scanned data, is also able to weaken pragmatic decision-making components, understood here in a legal sense[13], which translates an essential look at the future, the results, and the consequences (Posner, 2010, p. 10). Thus, a robotic law is, to some extent, a law that is data-rich and poor in meaning, the application of which, for such reasons, should be restricted to certain species of cases or certain assistance roles, particularly repetitive and standardized demands with serious limitations, and it should only be used in hard cases in non-essential ways.

It is important to consider, as general guidelines, that artificial intelligence in the legal arena must observe, according to studies by the European Commission (European Comission, 2019), legality, ethics, and soundness compliance with the applicable legislation and regulations, observing ethical values in its coexistence with human beings, without replacing them, exposing them to risks or discriminating against them, and it has to be safe from a technical point of view (Faria & Pedron, 2020, p. 140). These are also challenges imposed on artificial intelligence.

Conclusions

Jurisdiction is an activity that belongs to the State, through which legal norms, based on rules or principles, are applied by the judges, for the definitive composition of subjective or normative conflicts, comprising the diction of the law and possibly its execution.

The quantitative crisis of the systems of justice, however, pressured the legal systems to a reformulation, causing the jurisdiction to adopt and promote the use of management models involving self-compositional techniques, in a movement aimed at ensuring the speed, effectiveness and reasonable duration of lawsuits.

[11] According to Ronald Dworkin, this definition requires an interpretative attitude in order to identify rules, patterns, purposes, justifications, principles, and moral values underlying the institutions, to allow them to be understood and applied dynamically. They can even be adapted, expanded, or modified in the light of new circumstances, in a way connected to the paradigms in force in the community (DWORKIN, 2007, p. 57-58).

[12] For Robert Alexy, the discourse theory operates as a method of founding norms, which must have a claim to correction and whose criteria must necessarily include fundamental rights, the principles of democracy, and the technique of weighting. The application of the norms is only legitimate if based on a compelling rational argument (Alexy, 2015, p. 09).

[13] Legal pragmatism can be defined as the post-positivist theory, according to which legal decisions must be oriented towards obtaining the best results, prioritizing efficiency, utility, justice, well-being, or other contemporary virtue of these decisions. Pragmatic jurists dispense with strict links to past legislative or judicial decisions, or moral anchors, principles, or legal slogans, giving prevalence to rational and empiric airs and considering laws and precedents as potential sources of valuable information, yet not very limiting to judgments (Salles, 2021, p. 74-87).

On this horizon, a new possibility has arisen: artificial intelligence. From automated routine tasks to sophisticated research, decision-making support, mass production, executive acts, and predictive analytics, through to the most varied activities, artificial intelligence systems rationalize legal activity, promoting efficiency and saving time.

Among other aspects, technology has contributed to standardization, predictability, strengthening of legality by the application of laws and jurisprudential standards, reasonable duration of lawsuit procedures, the effectiveness of the executive activity, and cost reduction. With the help of algorithms, judges and their teams also have more time to focus on complex issues and relevant topics, deciding about those actions that require an individualized human response, which reinforces the idea of the jurisdiction in a classical sense.

However, critical aspects makeup counterpoints and recommend caution. In certain situations, for example, artificial intelligence can produce large-scale incorrect decisions, and most of the time, be resentful of adequate accountability. Furthermore, difficulties arise in the evaluation of precedents by the machine, with due legal consistency, and in the very thoughtless re-edition of such precedents, which hinders the legitimate mission of modernization of the content of law and the search for justice. As a result, artificial intelligence must be improved to deal with procedural guarantees and, at least at this moment, be used in typologies of demands compatible with its nature.

Finally, it is important to consider, as general guidelines, that artificial intelligence in the legal arena must observe legality, ethics, and soundness, complying with applicable legislation and regulations, observing ethical values in its coexistence with human beings, without replacing them, exposing them to risks or discretion, and proving itself safe from a technical point of view. Thus, it is a question of using it as an instrument of assistance in the decision-making of the legal decision, automating certain actions, but without replacing the human activity inherent to jurisdiction or implying any form of contempt for the human judgment.

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