

THE JUDGE OF THE FUTURE: THE ALGORITHM-JUDGE?

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Abstract: In this paper the complex relationship between law and information technologies is explored, focusing on the challenges posed by the widespread use of technology and the electronic processing of data. Jurists are confronted with the need to re-examine traditional legal concepts in various domains due to the transformative impact of information technologies. Lawyers and judges must also grapple with the implications of utilizing sophisticated tools, including artificial intelligence and autonomous systems, which require careful consideration of their effects on the evolution of the law. Of particular concern is the potential for algorithms to function as judges, making legal decisions based on autonomous algorithmic systems, albeit under human supervision. This study examines this possibility in light of three key functions: information collection and processing, risk assessment, and decision-making in legally relevant cases. The analysis aims to shed light on the (im)possibility of algorithmic judging while considering the broader implications of these technological advancements.

Keywords: law; information Technologies; artificial intelligence; autonomous systems; algorithmic judging.

INTRODUCTION

The relationship between law and information technologies is an old relationship. The generalized use of the information technologies and the consequent electronic processing of data pose numerous dogmatic problems to which jurists should find a solution.

On the one hand, information technologies have set new challenges, implying the re-understanding of traditional dogmatic categories in the most diverse domains.

On the other hand, lawyers and judges, in the performance of their functions, deal with multiple tools that require a reflection on the effects that they can have on the evolution of the law itself¹. The need of further reflection becomes more necessary as computers get more sophisticated, due to the

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¹ See LUHMANN, *Recht und Automation in der öffentlichen Verwaltung*, 1966; Jochen SCHNEIDER, “Processamento electrónico de dados – informática jurídica”, *Introdução à filosofia do direito e à teoria do direito contemporâneas* (Kaufman/Hassemer org.), FCG, Lisboa, 2002, 548.

introduction of artificial intelligence, and as the enthusiasm around autonomous systems grows.

On a legal level, such enthusiasm is not only related to the necessary reflection that jurists are invited to on a dogmatic and philosophical level regarding the challenges that autonomous systems pose, but also with the possibility of using them as auxiliaries' tools in the performance of legal tasks. In this context, artificial intelligence is called on – in theory or practice, depending on the hypotheses – to play an important role at three levels: a) collection and processing of information; b) risk assessment; c) decision of legally relevant cases.

Taking into consideration these three functions, the possibility of configuring an algorithm as a judge, that is, the possibility of issuing judicial decisions based on the functioning of an autonomous algorithmic system, even if supervised by humans, is a cause of particular concern.

In this paper, we will try to reflect on this (im)possibility, not without firstly considerate – necessarily briefly – the other mentioned functions or goals.

I. DATA COLLECTION AND PROCESSING

Software is capable of handling large amounts of data, distinguishing between those that are relevant and those that are not. At this level, artificial intelligence can thus play an important role as a legal research assistant².

AI systems not only ensure the storage of data, but can also be equipped with mechanisms that allow a quick access to the information already worked on. This quick access is guaranteed by the construction of databases and indexing systems that work simply or through the association of terms that, in a statistically relevant way, appear close in the documents³.

In other words, AI systems offer the possibility of accessing a list of cases analogous to the one the jurist has to decide or on the basis of which he has to decide and could list them according to the degree of similarity they present. At the same time, some autonomous systems can explain the terms of similarity and differences that are detectable, allowing, *a priori*, to outline arguments and counter-arguments in the sense of applying or not applying the solution designed for the cases already decided⁴.

² In this sense, see Cass R. SUNSTEIN, "Of artificial intelligence and legal reasoning", *Chicago Public Law and Legal Theory*, working Paper n.18, 2001 (https://chicagounbound.uchicago.edu/journal_articles)

³ Take in consideration the difference between *legal retrieval systems* and *association-factor retrieval systems*. For further developments, see Bruce G. BUCHANAN/Thomas HEADRICK, "Some speculation about artificial intelligence and legal reasoning", *Stanford Law Review*, 23, 1979, 40 s.

⁴ Think on the HYPO system, to which Cass R. Sunstein refers.

As such, these systems bring countless advantages with regard to jurisprudential and doctrinal research. All these advantages – associated with the speed and convenience in carrying out tasks – would lead to a better justice, because better information would guarantee better decisions⁵. Some of the advantages are: efficiency gain, safeguard of legal certainty and safeguard of equality before the law⁶.

However, such systems are not immune to problems, which, having a technical focus, have also an important legal impact.

Firstly, these advantages can only be achieved if the system is integral or, when not being, if the jurist is aware of this detail, mobilizing the system only as a mere research assistant, without absolutizing it. Otherwise, if the jurist stays limited to the results of the research carried out by the autonomous system, replacing *in totu* the traditional tools of presupposing the legal system, there would be a risk of being enclosed in a sounding board of crystallized solutions, without any openness to a critical-reflexive dimension, in what some authors call monoculture⁷.

Secondly, the system must be precise. But, in many cases, it is not possible to achieve the required accuracy, due to the different linguistic uses according to the historical-social periods and according to the doctrinal influences that each author and each judge evidences: idiosyncratic uses of language can determine inaccuracies in the results of the algorithm. Furthermore, as the machine's operation is based on the establishment of statistical correlations, without the possibility of accessing a semantic dimension⁸, the inaccuracy can be aggravated in the results that are offered.

II. COUNSELING AND PREDICTION SYSTEMS

Autonomous systems play an important role in risk prediction. Taking into consideration their characteristics, AI systems can thus act as precious assistants in a counseling phase. In this regard, we abandon the point of view of the judge in order to guide ourselves according to the perspective of the lawyer, who assumes the defence of his constituent. Both concerning contract negotiation and the predicting the eventual success or failure of a lawsuit, the use of artificial intelligence systems can be decisive in weighing the decision-making risk.

Regarding the negotiation of contracts, especially when due diligences are carried out in areas of particular complexity, autonomous systems can

⁵ Jochen SCHNEIDER, “Processamento electrónico de dados – informática jurídica”, 551.

⁶ Jochen SCHNEIDER, “Processamento electrónico de dados – informática jurídica”, 551

⁷ Jochen SCHNEIDER, “Processamento electrónico de dados – informática jurídica”, 557

⁸ Bruce G. BUCHANAN/Thomas HEADRICK, “Some speculation about artificial intelligence and legal reasoning”, 44

help the lawyer in discovering impairments or other relevant aspects to the parties.

With regard to the possibility of predicting the decision, the jurist is guided, at this level, by a theoretical reasoning, looking at law as an object of knowledge⁹. Both jusrationalism and positivism, agreeing in the logicism of their methods, shared this point of view, which is also common to legal realism (sociological realism, Scandinavian realism and American realism). For the latter, law would be considered as a social fact and court decisions would be the result of a set of factors of a psychological, ideological, cultural, economic, political nature that influenced the judge. Thus, as Castanheira Neves explains, the science of law would be responsible for “not exclusively [...] the study of legal norms (legislative and judicial) or any other allegedly autonomous normative criteria, but [...] for] the empirical-scientific investigation of those behaviours-decisions, as explainable by those factors and in order to predict, in any perspective of probability, those same behaviours in the future”¹⁰.

This explanatory reasoning cannot be assumed as the specifically legal reasoning. In a normative perspective, for each judicial decision, what matters is to ground the decision in normative terms; on the contrary, for legal realism, what is sought is an empirical explanation for a decision-making, which may offer a horizon of prediction of future decisions, but will hardly offer the criterion for the decision itself. Legal realism truly does not consider and much less solve the methodological-legal problem¹¹, because this thought does not guide itself by the presupposition of the normative duty and, consequently, is unable to understand law as a validity.

Despite all the limitations inherent to it and although it does not serve to specifically guide a judge, the perspective can be particularly relevant for a lawyer¹². Furthermore, as long as predictive models are used, the theoretical-explanatory reasoning can play an important role when it comes to the association between law and artificial intelligence¹³.

Strictly, this predictive ability can also be very useful at other levels, namely in the context of the investment markets. The figure of the so-called third-party funding, that is the one who, being unrelated to the litigation, finances, in whole or in part, the costs of an action, becomes more popular. The third-party finances one of the parties of the process, bearing the costs

⁹ For further developments, see A. Castanheira NEVES, *Metodologia Jurídica. Problemas Fundamentais*, Coimbra Editora, Coimbra, 1993, 50 s.

¹⁰ A. Castanheira NEVES, *Metodologia Jurídica. Problemas Fundamentais*, 51.

¹¹ A. Castanheira NEVES, *Metodologia Jurídica. Problemas Fundamentais*, 54

¹² A. Castanheira NEVES, *Metodologia Jurídica. Problemas Fundamentais*, 54

¹³ Nikolaos ALETRAS/Vasileios LAMPOS/Dimitrios TSARAPATANIS/Daniel PREOTIUC-Pietro, “Predicting judicial decisions of the European Court of Human Rights: a natural language processing perspective”, *PeerJ Computer Science*, 293, 2016

involved (fees, court costs, or, in the case of an arbitration, arbitrators' fees, costs with opinions, etc.), and, in return, will receive a percentage of the amount to be obtained in case of action gain.

This means that the procedural risk is borne by the third party, guaranteeing access to justice by small litigants (who would otherwise be unable to resort to it due to the high costs involved that they cannot cover immediately) and the day-to-day management by large litigants (who can thus allocate their capital to the development of their business activity, clearing impairment records from their balance sheets and releasing equity capital, which, in certain sectors of activity, depending on regulatory requirements, may be particularly important).

The investor will assume the litigation risk. As such, the investment depends on a rigorous weighing of that risk, which implies a prior and profound analysis of the cases. In a macroscopic scale, of multiple simultaneous investments, the speed and (alleged) effectiveness of predictive models based on artificial intelligence cannot be ignored. At this level, the dimension of advice and investment can discover in the AI systems an important tool, as much as it is possible to put into operation the predictive models mentioned¹⁴.

¹⁴ The conclusions reached in the studies conducted for this purpose are not secure. See, in this regard, in addition to the study cited above – Nikolaos ALETRAS/Vasileios LAMPOS/Dimitrios TSARAPATANIS/Daniel PREOTIUC-Pietro, “Predicting judicial decisions of the European Court of Human Rights: a natural language processing perspective” –, Conor O’SULLIVAN/Joeran BEEL, “Predicting the outcome of judicial decisions made by the European Court of Human Rights”, *arXiv*:1912.10819. In the last study cited, an attempt is made to determine how accurately the decisions of the European Court of Human Rights can be predicted, using final judgment documents as inputs. From there, based on natural language processing techniques, textual resources are obtained, which serve to train machine learning models, seeking to know to what extent each case resulted or not in the violation of a human right. The objective would be to build a predictive model capable of deciding concrete cases and, thus, to function as an important instrument in the sense of solving the problem of pending issues in the ECHR. There would also be the possibility that the model could be used as a model for prioritizing cases, so that cases for which the probability of a violation of human rights was greater could have priority in the trial. But with the results obtained from the model, the conclusion of the authors was the improbability of the model being used to carry out judgments, as more than 30% of the decisions would be incorrect. The only option left is to use the model for prioritizing processes, but that can jeopardize relevant procedural principles.

More optimistic seem to be the conclusions reached in the first cited study. Building a predictive model from a binary classification in which the input is the textual content extracted from a set of cases and the output is the real judgment about whether there was a violation of an ECHR precept, the authors arrived at the conclusion that such a model can predict court decisions with a high degree of accuracy in about 79% of cases, assuming as primordial predictive elements the facts and circumstances of the case, which, according to the authors of the study, would be consonant with the theory of legal realists, in the sense that judges consider circumstantial issues more than legal arguments when deciding complex

However, this does not allow us to reach other types of conclusions, especially with regard to the possibility of using algorithms to pronounce automatic decisions.

III. AUTONOMOUS DECISION-MAKING AND THE ALGORITHM JUDGE

Despite the limits of the predictive models, the growing sophistication of artificial intelligence systems leads many authors to suggest the possibility that, soon, it will be possible to replace the judge-person by the judge-algorithm. Such a possibility collides with insurmountable obstacles of different kinds.

A. Procedural objections/obstacles

Under the terms of Article 203º CRP, courts are independent and subject only to the law. This independence is itself a guarantee of impartiality.

In this context, many authors stress that the software's algorithmic performance offers increased guarantees of independence, objectivity and impartiality, due to the lack of emotional constraints and the lack of connection to the interests by the part of the computational system. However, we cannot forget that the software is not neutral, being conditioned by the biases introduced by the programmer.

This means that the problem of impartiality and independence moves towards a shift from the central figure of the judge to the figure of the programmer who allows the algorithm to work. Such modification entails an increased difficulty.

The judge's impartiality is guaranteed by a series of binding rules. For example, under the terms of article 216 of the CRP, a system of incompatibilities is foreseen. Judges cannot carry out any other public or private function, with the exception of non-remunerated teaching or scientific research functions; and they cannot be appointed to service commissions outside the scope of the courts without authorization from the competent superior council. In addition, the law may establish other incompatibilities.

The Code of Civil Procedure also provides particularly relevant guarantees of impartiality. Those provisions are all the more important as the procedure civil code is of subsidiary application to other domains of adjective law.

Firstly, the law foresees hypotheses of impediment. Under the article 115/1 CPC,

[...] no judge can exercise his functions, in litigious or voluntary

cases.

jurisdiction: a) when he is a party in the litigation, on his own or as a representative of another person, or when he has an interest in it that would allow him to be a main party; b) when he is a party in the litigation, by himself or as a representative of another person, his spouse or a relative or affine, or in a direct line or in the 2nd degree of the collateral line, or when any of these persons has an interest in the litigation that allow him to figure in it as a main party; c) when he has intervened in the case as a representative or expert or when there is a need to decide on an issue on which he has given an opinion or has pronounced himself, even if orally; d) when his spouse or a relative or affine in the direct line or in the 2nd degree of the collateral line has intervened in the case as legal representative; e) in the case of an appeal filed in a case in which he has intervened as a judge of another court, either by issuing the contested decision or by taking a position on issues raised in the appeal; f) in the case of an appeal against a decision rendered by a relative or affine, in a direct line or in the 2nd degree of the collateral line, or a decision that has been pronounced on the one rendered by a relative or affine under these conditions; g) when the person who entered in a civil litigation against him for damages or who charged him criminally, as a result of acts committed in the exercise of his duties or because of them, is a party in the litigation, or when the spouse of that person or a relative of her, in a straight line or in the 2nd degree of the collateral line, is a party as long as that the action or accusation has already been admitted; h) when he has deposed or has to depose as a witness.

With analogous problematic and evaluative intent, article 120 CPC provides that

the parties may object to the judge when there is a serious reason, adequate to generate distrust about his impartiality, namely: a) if there is kinship or affinity, not included in article 115, in a straight line or up to the 4th degree of collateral line, between the judge or his spouse and any of the parties or person who has, in relation to the object of the cause, an interest that would allow him to be a main party in it; b) if there is a case in which the judge or his or her spouse or the person who lives with him as a spouse or any relative or affine of any of them in a straight line is a party and one of the parties is a judge in that case; c) if there is, or has been in the previous three years, any cause, not included in paragraph g) of paragraph 1 of article 115, between any of the parties or their spouse and the judge or their spouse or any relative or similar from any of them in a straight line; d) if the judge or his spouse, or any relative or close relative of any of them in a straight line, is a creditor or debtor of one of the parties, or has a legal interest in the decision of the lawsuit being

favourable to one of the parties; e) if the judge is the guardian, presumptive legal successor, acquirer or employer of any of the parties, or member of the management or administration of any legal person party in the litigation; f) if the judge has received donations before or after the initiation of the proceedings and because of them, or if he has provided means for the expenses of the proceedings; g) if there is serious enmity or great intimacy between the judge and any of the parties or their representatives.

The same reasons can be used by the judge, who cannot voluntarily declare himself suspect, to request dismissal from the case, when he believes that his impartiality may be suspected.

Furthermore, the judge has, under the terms of article 154 of the CPC, the duty to justify all the decisions rendered on any controversial request or on any doubt raised in the process, which guarantees not only the reappointment of the necessary decision to the required foundation, but also the accountability of the sentences.

These incidents are not foreseen by reference to the programmers. Moreover, the software's decision, not being argumentatively constructed, does not offer a secure point of support for the control of the impartiality that must prevail. Firstly, the type of reasoning that the artificial intelligence system mobilizes is completely different from the specifically legal reasoning. Secondly, the opacity characteristic of autonomous systems can determine the impossibility of reconstituting the *iter* that the software went through to arrive at the final decision. Thus, control over the reasoning, the mirror of impartiality, is lost.

Moreover, the aforementioned opacity is analysed by the authors in a triple way: *corporate opacity*, deliberately generated as a way of protecting the business secrets of the companies that develop the algorithms; *cognitive opacity*, resulting from the inability of people in general to understand how the algorithm works and to understand the language it uses; and *technical opacity*, inherent to the use of deep learning, which makes it impossible for the software's decision-making path to be made explicit, even by its programmers.

This shows us that, in addition to the lack of control over the grounds (and the impartiality that is required) and beyond any negligible intention on the part of the programmer, the accountability of the judicial result becomes problematic.

Along with the concern with the proscription of discriminatory behaviour, this seems to be one of the reasons that are behind of the prohibition of fully automated decisions, when they involve personal data and produce effects in the legal sphere of a person or significantly affect him/her in a similar way, in accordance with Article 22 GDPR. The solution can be explained by the

fact that the integrity of the rights of the holders of personal data cannot be guaranteed with the mere fulfilment of duties of information provided by the person responsible for the treatment, as a result of algorithmic opacity.

Thus, although the decision of the software will be controlled by the appointed human judge, problems may arise as the person is not able to reconstitute the reasoning *iter* of the machine.

B. Methodological objections/obstacles

Artificial intelligence is far from configuring a uniform magma. In very broad (and perhaps imprecise) terms, it can be defined as the attempt to replicate the cognitive and decision-making capacity of human beings through a synthetic (computational) model. This large definition hides several perspectives of understanding the phenomenon, among which the Symbolists, Connectionists, Evolutionists, Bayesians and Analogists stand out.

The first (symbolists) focus on understanding the symbolic logic transposed to the computational level, since learning stems from the extraction of ideas from philosophy and logic; connectionists emphasize the autopoietic potential of the algorithmic system, seeking to reverse-engineer the brain, connecting with physics and neuroscience; evolutionists turn to genetics and evolutionary biology; the Bayesians, preferentially emphasizing the statistical standardization capacity operated by the algorithm, from which deductions are operated, seem to be at the base of the triumph of machine learning; and, finally, analogists consider that learning is done through judgments of similarity, with technological advances due to psychology and mathematical optimization¹⁵.

Thus, machine learning emerges as a field of computer science that studies computer programs capable of learning based on experience and, consequently, capable of developing their own potential over time¹⁶. As the authors emphasize, the machine learning emerges as functional terms learning: the modification of the behaviour of the algorithm takes place as a way of developing its performance in carrying out a certain task and operates through experience¹⁷. The algorithm analyses large amounts of data (which can be provided in a structured or in a non-structured way, thus allowing the distinction between unsupervised and supervised machine learning) and,

¹⁵ Pedro DOMINGOS, *A revolução do algoritmo mestre. Como a aprendizagem automática está a mudar o mundo*, Manuscrito Editora, 2017. See, also, Matilde LAVOURAS, “O algoritmo mestre: um bem público global?”, *Boletim de Ciências Económicas*, 2021.

¹⁶ Harry SURDEN, “Machine Learning and Law”, *Washington Law Review*, 89, 2014, 89.

¹⁷ Harry SURDEN, “Machine Learning and Law”, 89.

based on them, establishes patterns or performs tasks more or less complex¹⁸.

In other words, the algorithm is programmed to, for example, detect spam in the various emails received, functioning as a filter. It analyses the email considered by the person as spam and try to recognize, in other electronic correspondence, the characteristics that, based on the established pattern, indicate that a certain email is more likely to be spam. Basically, the algorithm analyses each new example that appears and compares it with previously aggregated ones in order to discover common elements that can be generalized¹⁹. To a certain extent, the algorithm programs itself with rules that formulates when carrying out the task for which it was ordained. Such rules are inferred from analysed data, and models are built as data is analysed²⁰.

The first computing systems that reproduced the ability to make decisions of a human being, known as *expert systems* and designed to solve more or less complex problems, through pre-acquired knowledge, according to the if/then rule (if/then)²¹, were based on two subsystems: an inferential engine and a knowledge base. This knowledge base consisted in a base of facts and rules. Then the inferential engine applied the rules to known facts to deduce new facts. Adopted in numerous domains, the expert systems would face limitations due to the use of traditional methods, related to probabilistic theory and statistical patterns²². It was precisely these limitations that made specialists to look for new types of approaches that proved to be more efficient and flexible, in order to simulate the human decision-making process.

Access to big data would facilitate this evolution²³. The widespread availability of data provided from the internet has enabled the development of research centred on algorithms that have access to a large amount of data, learn based on examples and generate their own knowledge, which is represented through rules (inductive learning). The machine ceases to act in merely deductive terms, to guarantee the deduction from the induction that it itself performs²⁴.

Likewise, scientists developed algorithms that, accessing a vast amount of available data, accumulate experience regarding the contribution of the

¹⁸ Harry SURDEN, "Machine Learning and Law", 89.

¹⁹ Harry SURDEN, "Machine Learning and Law", 91.

²⁰ Harry SURDEN, "Machine Learning and Law", 93.

²¹ Peter JACKSON, *Introduction to Expert Systems*, Addison Wesley, Portland, 1998, 2 s.

²² Pamela K. COATS, "Why expert systems fail", *Financial Management*, 17-3, 1988, 77s.

²³ Ning SHAN/ Wojciech ZIARKO, "Data-based acquisition and incremental modification of classification rules", *Computational Intelligence*, 11-2, 1995, 357 s.

²⁴ Kailash JOSHI, "Expert Systems and Applied Artificial Intelligence", <https://www.umsl.edu/~joshik/msis480/chapt11.htm>

rules for a correct advice that is formulated (problem solving learning) or that collect cases in an open and processed in high-speed networks database, in order to solve problems based on the search for a similar case, inferring in favour of the best experience, in an abductive logic (case-based learning)²⁵. Whatever is the type of algorithm that is processed, machine learning emerges as the result of a statistical technique.

The predominance of statistical standardization allows the authors to conclude that certain tasks usually associated with human intelligence, as they involve understanding, reason, a contextual perception and abstract concepts, cannot be carried out automatically through non-cognitive computational systems that employ statistical correlations to produce intelligent results²⁶. The intelligence associated with computing is understood in the light of the result and not in the light of the way in which the process is carried out. Because of that, the algorithm does not have to understand abstract concepts with which it deals with. Instead, the AI systems are only able to decide through the statistical correlations that are generated.

However, there have been significant developments in the area of artificial intelligence, with many scholars seeking to replicate the human cognitive process in computational versions²⁷. This evolution can already be detected in various forms of machine learning and it becomes more evident with the development of deep learning, which involves the mobilization of enormous amounts of data through multiple layers of algorithms. As the scholars explain, each layer is programmed to filter a specific piece of data from the general data set and, after each layer detects a specific piece of data, the system will merge all these layers to obtain a micro and macro understanding of the available data²⁸. With these huge amounts of data, the system can learn from examples, whether they are provided in a structured way, in the case of supervised learning, or they are not provided in a structured way. That is, based on large amounts of data that are run, the artificial intelligence system detects trends and resources from which it extracts its own rules²⁹.

However, such developments are not sufficient to abandon the typical standardization of the results offered by artificial intelligence systems. The type of reasoning of algorithms continues to be based on numerical axioms, not abandoning the induction, deduction and abduction trilogy.

²⁵ Kailash JOSHI, "Expert Systems and Applied Artificial Intelligence".

²⁶ Harry SURDEN, "Machine Learning and Law", 95.

²⁷ Harry SURDEN, "Machine Learning and Law", 98.

²⁸ Irene NG, "The Art of Contract Drafting in the Age of Artificial Intelligence: A Comparative Study Based on US, UK and Austrian Law", *Stanford – Vienna Transatlantic Technology Law Forum*, 26, 2017, <http://ttlf.stanford.edu>, 25

²⁹ Irene NG, "The Art of Contract Drafting in the Age of Artificial Intelligence: A Comparative Study Based on US, UK and Austrian Law", 27

It is precisely the imprisonment of this type of reasoning that makes the emergence of judge software very problematic.

Judicial decisions must be seen as a judicative decisions, in which two distinct moments converge: “one required by the capital principles (...) of objectivity, reasoning and the possibility of controlling legal decisions”; and another that “results from the own nature of the mediating act”³⁰. The decision-making judgment, in its dialectical unity, is made up of two dimensions that articulate with each other: the judgment and the decision.

The first (*judgment*) is defined by Castanheira Neves as “the resolution of a practical controversy through a rationally oriented argumentative weighting that leads to a communicatively grounded solution”; the second (*decision*) is seen as “a resolute option that asserts itself or imposes itself”, manifesting an authoritarian or imposing will³¹.

The dimension of decision will always be present. However, it will have to be brought back to a foundation that separates us from any discretion and guarantees its own syndication. Then, the legal judgment plays its role. It “has the function of bringing the necessary decision (...) to the required grounds”, reverting “the decision-making *voluntas* to the normative *ratio*”, “which removes the apodictic character” of the judgment and “the possibility of reasoning as a simple demonstration”³². The judgment establishes the concrete and constitutive (creative) mediation between the *lex* and the decision³³.

There is a distance that separates this judgment from the positivist legal method of judgment. In fact, we are far from a logical-deductive type of reasoning that invokes premises instead of arguments.

Under the positivistic understanding of law, law realizes through a purely logical judgment, according to the method that was prescribed to the jurist. Resulting from the contributions from the School of Exegesis and the Jurisprudence of Concepts, a degeneration of the Historical School of Law, we can distinguish three moments in that method: the hermeneutic moment (in which the norm was interpreted in philological-grammatical terms); the moment of conceptualization (based on the content of the interpreted norm, jurist would construct concepts, which would be self-productive of new

³⁰ A. Castanheira NEVES, *Metodologia Jurídica. Problemas fundamentais*, 30

³¹ A. Castanheira NEVES, *Metodologia Jurídica*, 31- 32

³² A. Castanheira NEVES, *Metodologia Jurídica*, 32

³³ A. Castanheira NEVES, “Escola da Exegese”, *Digesta – Escritos acerca do direito, do pensamento jurídico, da sua metodologia e outros*, II, Coimbra Editora, Coimbra, 1995, 181 a 191; ID., “Escola Histórica do Direito”, *Digesta – Escritos acerca do direito, do pensamento jurídico, da sua metodologia e outros*, vol. II, Coimbra Editora, Coimbra, 1995, 203 a 214.

concepts, thus contributing to the completeness of the system); and the logical moment (the outcome of the subsumption of the minor premise – the concrete case – to the major premise – the already interpreted rule). For the judicial syllogism operate, it was necessary to look at the case as a mere logical correlate of the normative hypothesis. The ceases to be looked at in its individuality, to be considered in its typical elements, with what the particularities of the case were truly disregarded³⁴.

The type of reasoning invoked by the Legal Method could, somehow, be compatible with the type of results obtained through the operability of artificial intelligence systems. However, we cannot forget that positivism was mortally wounded by methodological movements of practical orientation and, more sustainably, by jurisprudentialist thought, among us led by Castanheira Neves.

Legal positivism and the legal method it advocated, imbued with a logical-formal reasoning, proved to be useless in capturing the legal phenomenon.

Law cannot be reduced to a set of norms predisposed by the legislator, nor can be captured through abstract concepts, stripped of all materiality; instead, law appeals to an ethically-axiologically densified material sense. On the other hand, the legislator is unable to provide for all the law. The norms in their self-(in)subsistence convey nothing to us, and cannot be seen as mere linguistic statements or we could misunderstand their normative meaning.

On the contrary, when interpreting the norm, we have to refer it to the normative principles that support the system and to the concrete case that, with its particularities, claim for the application of the norm. Therefore, what is asked is whether or not the solution conceived in the abstract for a given case configured by the legislator is adequate to resolve the specific and concrete case.

Reality is complex and that case does not appear as a logical correlate of the normative hypothesis. Consequently, we can only conclude about the effective “application” of the norm to the problem *decidendum* if, confronting areas of relevance and assuming either the teleology of the norm and the normative principles in which it is founded, we conclude that, behind all the differences, the similarities outweigh them.

In order to draw such a conclusion, because the rule is general and abstract and the case is concrete, it is necessary to claim for a *tertium datum* that appeals to the ultimate axiological sense of the system and to the teleology of the norm. The formal logic leading to a syllogism based on mere deductions is unable to be used as the specific legal reasoning³⁵. Moreover, from the moment the case emerges as the *prius* and the perspective that

³⁴ A. Castanheira NEVES, *Metodologia Jurídica*, 33

³⁵ A. Castanheira NEVES, *Metodologia Jurídica*, 80 s. e 130 s.

conditions everything³⁶, the interpretative activity can only be concluded at the moment of the *application*, because only at that moment the judge can conclude if the solution previewed in the norm fits with the particularities of the case.

Furthermore, law, in its concrete application, involves factors of emotional nature, which, being denied by the syllogism, are ineradicable. In other words, the judge's decision shows an inexorable dimension of volition that is self-imposed and that escapes arbitrariness by bringing it back to a sufficient justification, which operates through the judgment.

The constitutive mediation of the judge will always be present. Without it, law loses what radically characterizes it as a human cultural expression. As Castanheira Neves explains, without the constitutive mediation of the judge who appeals to a specific axiology, the law degrades into a mere theoretical instrument, in the entire and exclusive availability of a legislator, being able to legitimize the most ignoble ends³⁷.

In fact, the positivism involved an axiological agnosticism, a deliberate refusal of an axiological intention, leading the juridical to detach itself from human ethics to become a datum which could alienate man, to the point that legal thought became or could become a collaborator of possible despotisms³⁸.

Other problems of modernity would accompany the insufficiencies of positivism taught: dissolution of the organic and community structures of the family, the village, the ancient city itself; massification, with the consequent impersonality and obscuring of responsible autonomy; functionalization of the man, who starts to be understood as holder of a function in the social whole; possibility of oppressive and tendentially totalitarian domination of the political, in such a way that it is up to law to assert itself as a specifically human alternative³⁹.

In fact, as Castanheira Neves explains, “out of his mind, man no longer finds natural support and clearly feels emptiness or oppression. He then turns to himself. And he finds that dimension of transcendence that, opening him to Being and value, opens him to communication with the other, enabling ethical coexistence. Man comes to understand himself as a person. And this presupposes a world in which the axiological is a constitutive moment – a community of people. Recognizing myself as a person, I address ethical demands to others and this is possible because others participate in the same

³⁶ A. Castanheira NEVES, *Metodologia Jurídica*, 80 s. e 130 s.

³⁷ A. Castanheira NEVES, “O papel do jurista nos nossos tempos”, *Digesta – Ensaios acerca do Direito, do Pensamento Jurídico, da sua Metodologia e outros*, I, Coimbra Editora, Coimbra, 1995, 9 a 50

³⁸ A. Castanheira NEVES, “O papel do jurista nos nossos tempos”, 46 s.

³⁹ A. Castanheira NEVES, “O papel do jurista nos nossos tempos”, 47

ethical community and are accountable to me (and I to them)”⁴⁰.

This community intention of people is nothing other than the very idea of law. “And this is how law (juridicity, idea of law) is differentiated from positive law (historically realized law), without ceasing to subsist in positive law and as positive law: only in positive law does the idea of law realize law; only through the idea of law does positive law come about as law”. Consequently, the jurist has an axiological function, as a mediator in the community of the Idea of Law⁴¹. That is, the law is not to be confused with the positive law system, being doubly transcended by the community axiological project and by the concrete reality of its application, assuming the problem of the realization of the law as a normative problem and not merely a theoretical one.

It is precisely this predicative intentionality of law, associated with its reasoning based on the symbiotic combination of an axiological dimension and an analogical dimension, which makes it impossible to replace the judge by the software judge. As Cass Sunstein puts it, “computers cannot reason by analogy because they are unable to carry out the primary task of identifying the normative principles that link or separate cases”⁴².

As the authors explain, machine learning and deep learning do not translate to true human learning: what the algorithm learns in a given context is not transferable to other contexts⁴³. Artificial intelligence faces obvious limitations that result from the statistical and standardized way through which the software works. In this context, we are far from the typical human way of thinking. The idea that the computer can, through data processing, reproduce the characteristics of human intelligence is based on the idea that the human mind is a kind of computer, which stores information and processes it, in such a way that the human body does not play any role except at the level of perceptions (taken as inputs) and subsequent behaviour (taken as output)⁴⁴.

⁴⁰ A. Castanheira NEVES, “O papel do jurista nos nossos tempos”, 48

⁴¹ A. Castanheira NEVES, “O papel do jurista nos nossos tempos”, 48

⁴² Cass R. SUNSTEIN, “Of artificial intelligence and legal reasoning”, 3

⁴³ Melanie MITCHELL, “Why AI is Harder Than We Think”, *Computer Science. Artificial Intelligence*, arXiv:2104.12871, 2021, 5 s. ([2104.12871v2] Why AI is Harder Than We Think (arxiv.org))

⁴⁴ Melanie MITCHELL, “Why AI is Harder Than We Think”, 6. The extreme corollary of this perspective is to consider that, in the future, it will be possible to upload the human brain (its cognition and consciousness) onto a computer. About this perspective, cf., cf. Ray KURZWEIL, *Singularity is near*, Viking, 2005. Veja-se, ainda, Nick BOSTROM, “A history of transhumanist thought”, *Journal of Evolution and Technology*, vol. 14, issue 1, 2005 (<https://nickbostrom.com/papers/history.pdf>), 10 s.

If this perspective was originally linked to the symbolic current, it did not change significantly with the advent of the statistical current, nor with the development of further currents and the development of deep learning. On the contrary, it is understood that, by reproducing the trillions of connections present in the human brain in a computational

However, this is a fallacy. Human intelligence is not only dependent on the corporeity of the human being, but is also deeply connected with non-rational elements, such as emotion and intuition, fundamental for the adequate perception of reality, that does not exhaust itself in a set of positive data, but rather transcends it.

This means that, neither in the present nor in the future, against all the optimistic expectations of scholars in the field, will it be possible to find software capable of carrying out a radically human task, insofar that human task involves a volitional, intuitive or an emotional component. Likewise, speculative tasks, tasks involving creativity, contextualized interpretation and ethical-axiological valuation cannot be carried out by an artificially intelligent entity, even if such intelligence is exponentially enhanced by advances at the computing level.

Even the famous and recent ChatGPT, trained to be able to generate texts written autonomously, as if it were the work of a human⁴⁵, does not seem able to fulfil a specifically human task. The system has been trained, through the analysis of billions of words, to predict the next word, based on the understanding of sentences, in order to answer questions or create stories. The generative algorithm creates automatically a text (output) from the initial input (the words of the question posed), based on the probabilities of the connection between words.

The individual links between the linguistic signs can make sense. Nevertheless, that individual link can be false, which means that the system does not guarantee the correctness of the answer, much less the correctness of a decision. The contextual understanding of the generative algorithm remains very far from semantic compression. Furthermore, the AI system is unable to mobilize principles.

As scholars explain, “the reason why we cannot use a simple feed-forward neural network to capture a text (or any connected system) has a simple but profound theoretical reason: we cannot construct a probability space from of tangled objects. To construct such a probability space, we need the objects to be independent. This is why our brains are not born with the ability to read and write and we need to spend years in school learning to understand the connections between words”⁴⁶. Additionally, apprehending the connections is not enough to solve the background problem, since, after

network, an improvement of artificial intelligence would be achieved, bringing it closer to the human way of thinking. However, this is an overly optimistic claim, as long as human intelligence is not reduced to the processing of information contained within the brain.

⁴⁵ ChatGPT was created by OpenAI, which in turn was created in 2015 by a group of investors in the field, including Elon Musk, Sam Altman, Greg Brockman, Ilya Sutskever and Wojciech Zaremba. It is a chatbot that uses transfer learning and the large language models to function.

⁴⁶ João Pires da CRUZ, *Comentário ao funcionamento do ChatGPT*.

a point identified by singularity, they are no longer statistically independent and the base problem is reproduced in subsequent connections⁴⁷.

This means that, contrary to the enthusiasm generated around the new software, it is very far from being able to reproduce the analogical reasoning mode that predicts the decision maker's performance. Luciano Floridi clearly denounces it⁴⁸. According to his study, these large language models can process text with enormous success and often in a way that is indistinguishable from human production. However, they lack intelligence, understanding and cognitive ability: they do not think and do not understand; act statistically (based on formal structures), while humans do it semantically⁴⁹.

Therefore, it will not be possible to use the system to carry out complex reasoning or to process information considered crucial.

The artificial intelligence system will not be able, due to its limited characteristics, to access legal reasoning which, marked by analogy, involves the assumption and consideration of an evaluative dimension that goes beyond mere abstract conceptualization. Therefore, there are two aspects that make the replacement of a judge by a software impracticable. On the one hand, as long as the legal analogy is not a mathematical analogy, that is, as long as legal analogy does not presuppose a true identity, but the overestimation of the similarities behind the differences, it involves the consideration of nuances that are not within the reach of artificial intelligence; on the other hand, to the extent that the exercise presupposes the mobilization of an immanent or transcendent evaluative referent, it is beyond the scope of deduction based on the statistical standardization typical of intelligent software, even if it is a statistical standardization with the ability to predict connections between linguistic signs. The impossibility seems to be all the more evident the greater is the use of indeterminate concepts and

⁴⁷ João Pires da CRUZ, *Comentário ao funcionamento do ChatGPT*

⁴⁸ Luciano FLORIDI, "AI as agency without intelligence: on ChatGPT, large language models and other generative models", *Philosophy and Technology*, 2023, 1 s. (<https://ssrn.com/abstract=4358789>)

⁴⁹ The author explains, in a very simple way, what is behind the functioning of the models in question. To do so, it brings up four old ideas (1st - all texts are present in the dictionary. The difference is in the syntax, that is, in the way the words in the dictionary are structured in sentences; 2nd - all the words in the dictionary are present in the alphabet. The difference is in the way the letters of the alphabet are structured in words; 3rd - all the letters of the alphabet are present in the digital code. The difference is in the way the sequence of zeros and ones of the code is structured in letters; 4th - All zeros and ones are present in two electromagnetic properties [high/low current; present/absent magnetization]. The difference is in the way such properties can be treated by electronic systems through computational devices) and one revolutionary idea (today, AI develops the properties of electromagnetism to process text with extraordinary success). Such ideas allow us to realize that the large-scale language artificial intelligence model acts statistically, while we do it semantically.

general clauses. As the authors explain, legal rules cannot be understood as theorems, and their meaning is often undetermined⁵⁰.

In other words, as long as that the judgment that integrates the judicial decision does not materialize in a pure logical-subsumptive judgment, the computer is no longer able to fulfil the function.

To sum up, the judge cannot be converted into an automaton of subsumptions⁵¹, except if we admit the return to the most radical forms of positivism. Then we can easily conclude that it is not possible to conceive of a judgmental algorithm⁵².

⁵⁰ Cf. Edwina L. RISSLAND, "Anne von der Lieth Gardner, An artificial intelligence approach to legal reasoning, Cambridge, MIT Press, 1987 reviewed by", *Harvard Journal of Law and Technology*, I, 1988, 223 s.

⁵¹ The expression is from Jochen SCHNEIDER, "Electronic data processing – legal informatics", 576. See also regarding this possibility of transforming a software into a judge, Walter POPP/ Dieter SUHR, *Computer als juristischer Gesprächspartner: ein Arbeitspapier zu programmierten dialogischen Denkhilfen für die Jurisprudenz*, J. Schweitzer, Berlin, 1970

⁵² Even by reference to other forms of reasoning, it would not be feasible to defend the scenario of replacing a judge-person by a judge-algorithm. For example, the possibility fails also taking into consideration a practical-procedural reasoning, such as the topical-rhetorical and the argumentative reasoning. Beyond a mere formal logic, those reasonings mobilize the referential cultural structures shared by the most enlightened members of a community as relevant criteria for the solution of the concrete problems, "in order to operate with these criteria according to a dialectical argumentation situationally pragmatic *inventiendi* in which those interested in the problem participate and with the objective of a *consensus* that this dialectic makes possible" – cf. Castanheira NEVES, *Metodologia Jurídica. Problemas fundamentais*, 72. On the other hand, the argumentative perspective – "based either on the theory of argumentation, recovered by Perelman [...], or on the theory of practical discourse (worked on in a special way by Habermas) [...] or even on the last pragmatic linguistic philosophy of Wittgenstein – particularly emphasizes the discursive structure, conditions, principles and rules of argumentation" (cf. Castanheira NEVES, *Metodologia Jurídica. Problemas fundamentais*, 72). Both converge by the consensus they seek to obtain and by the fact that the topic implies an argumentation and by the fact that the argumentation needs a topic in the construction of their arguments (cf. Castanheira NEVES, *Metodologia Jurídica. Problemas fundamentais*, 72). Both imply the mobilization of a referent and, above all, the construction of arguments. Thus, the specific reasoning they presuppose cannot be captured according to a merely algorithmic model that does not meet the conditions of the audience to which it is addressed.

In the same way, the understanding of law according to a hermeneutic reasoning, which conceive the legal thought as an interpretive thought, could not be fully fulfilled through an algorithmic mathematical dimension, precisely because of the insusceptibility of the machine to access a semantic dimension of the symbols it mobilizes. Concluding, also taking into consideration alternative reasonings (although to be rejected if the problem of law is properly understood), we must stand that it is not possible to idealize automated judicial decisions rendered by intelligent algorithms.

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