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Algorithms, efficiency and the two faces of courts – a case study of the Brazilian Superior Court of Justice (STJ)

Abstract: The implementation of algorithms in Courts promises to bring an increase in efficiency to a legal system which is seen as slow and overburdened, but both the literature and governments are aware that there are potential risks of unwanted consequences to the functioning of the legal system. This paper is a case study of how the Brazilian Superior Tribunal of Justice (STJ) justifies the introduction of algorithms into their case management operations, articulating different notions of efficiency as they do so. Analyzing accounts in multiple sources, it is observed how the STJ self-describes these multiple roles, both as part of the legal system and its role as an organization which is part of the public administration – especially when trying to justify these changes to other government agencies, the legal community and society in general. The article shows that the STJ emphasizes its role in the legal system as an initial justification in official accounts, but largely emphasizes managerial gains internally, avoiding engaging with potential risks by preserving the moment of decision-making as exclusive of the judge.

1 Introduction

"We hope that, when fully implemented, [the algorithm] Socrates will increase the number of judged cases by 10% in relation to the incoming cases in the same period. Combatting the slowness of Justice will demand the use of Artificial Intelligence more and more, and the Superior Tribunal of Justice marks its 30th anniversary with a strong commitment to this future" (Noronha 2019). In

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the words of Justice João Otávio de Noronha, then President of the Brazilian Superior Court of Justice (STJ), the advantages of introducing algorithms to Courts are described both in terms of reaching goals for a better functioning of the legal system, as well as from a management perspective, where judged cases are observed as a measurable output of an organization. Through the common thread of enhanced speed, the use of artificial intelligence within the structure of a Court is justified with a multiplicity of references.

The incorporation of Algorithms into the legal system – in case management, decision-making support or outright automation of some legal tasks – is already underway in many courts across different parts of the world, jurisdictions and legal traditions. The justification of the implementation of these innovations is accompanied by the promise of an increase in efficiency, harnessing computing power to speed up otherwise time-consuming tasks. This link between the digitalization of Courts and efficiency is not incidental – the Council of Europe has an entire commission dedicated to the efficiency in justice (CEPEJ), which heavily features the development of digital technologies and artificial intelligence as a major potential of meeting rising expectations on the quality and efficiency of Justice, as exemplified by their latest Conference of Ministers of Justice (held in October of 2021) on the subject (Council of Europe 2021).

While the imposed necessity of efficiency in public administration is not a new phenomenon (Supiot 2017), there is an added layer of complexity to the meaning of efficiency in a legal context. Concepts such as 'efficiency', 'reasonable duration of the process' or 'efficacy of Justice' already balance temporal, economic and teleological dimensions to law, but added to this already complex inclusion is the dimension of Courts self-describing not only as a subsystem of the legal system(Luhmann 1993, 299), but incorporating concepts and modes of operation typical of organizations (Andersen 2020),[1] especially when it comes to describing their modes of operation as parts of public management.

[1] Organizations, according to Niklas Luhmann (2018) are a type of social system that can be differentiated from the environment through selectiveness of membership, and communicates through decisions. When comparing organizations to social function systems, such as law, economics, politics, etc, Andersen (2020, 5-6) delineates that, while social function systems are closed on the object dimension (as law only communicates legally, and politics only communicates politically…), they are open on the social dimension. The opposite is true for organizations, which have a limited number of members, but can make their decisions while communicating through different systems.

The objective of the present paper is to analyze how arguments of rationalization of the introduction of algorithms to Courts incorporate different notions of efficiency, and especially to deal with how they relate to the multi-referential character of Courts as both part of the legal system, and an organization within public management. This will be done through a case study of the Brazilian Superior Court of Justice (STJ), a national pioneer in the digitalization of Courts, who has been developing their own algorithms since 2018, and extensively justifying this development to government agencies, the legal community and society in general.

This case is particularly interesting because it does not need to account for external modes of operation in the development of algorithms. While there is an abundance of private companies, 'legal tech' firms that offer 'legal solutions' to Courts, law firms and other organizations that engage with the legal system, this particular Court has chosen to develop its own 'solution' fully in-house, with their own database and hired IT-personnel. For this reason, the justifications offer an interesting insight on of how 'algorithmic solutions' are conceptualized when the introduction of new technology is described as an internal decision, and how they self-describe their own operations as part of the legal system and as part of public management, and the relationship between these spheres.

This paper contributes to the debate on digitalization and organization – more specifically, on how the introduction of new technologies uncovers and produces tensions, escalations and contradiction within an organization's different modes of operation. Confluent with Büchner and Dosdall's understanding of algorithms as digital forms of observation which gain relevance by how they are incorporated into the decision-making structure of an organization (2021), I pinpoint how the STJ articulates the justification of algorithms through different angles, self-describing the relationship between their role as part of the legal system, but also part of a highly innovative, almost entrepreneurial part of public management.

The focus on justifications draws on the sociology of accounts (Orbuch 1997; Scott/Lyman 1968), which focuses on explanations of unexpected behavior as a way to gain insight on how they assign order and meaning to their surroundings, and enable insights into the identity of the account-giver, the background information and expectations under which the account is given, and other aspects. In this particular case, however, instead of the focus being on accounts as an expression of an

individual justifying unexpected behavior, I have instead used accounts from a variety of sources, many of them not easily attributable to a single individual. In this sense, these 'organizational accounts' are observed as self-descriptions[2] inasmuch as they selectively communicate about what the STJ is when justifying the development and introduction of algorithms.

The material analyzed includes internal regiments of the Court, management reports, news articles written on the institutional website, interviews given by the President of the Court and a keynote speech in an event in order to observe how this account is constructed and communicated in the organization. Focusing on justifications allows an insight into how the limits and possibilities of the system are observed. Through those justifications it is possible to construct what is observed as threatening and what is observed as normal functioning of the organization; what is observed as possible, desirable, and allow for the possibility of identifying where potential risks and changes might be incorporated without oversight. The methodology of case studies allows for the examination of the connections between different sources of data (Roller 2019, 1), which was then analyzed through qualitative content analysis – that is, by separating and comparing relevant passages in the data by the use of coding (Schreier 2012).

The paper will begin, in section 2, by describing the Brazilian Superior Tribunal of Justice. After a brief explanation of the competencies of the Court, I will focus on important contextual elements that made the introduction of algorithms seem desirable, or even necessary in the eyes of the Court – the 'numerical crisis of the judiciary', as well as the non-algorithmic measures that have already been deployed in order to address it. This will be followed by a description of the two main algorithms that were implemented by the Court – Athos and Sócrates. Section 3 will turn to the conceptual framework of algorithms to clarify the choice of concepts, as well as to delineate a few potential risks that the Court could potentially be defending themselves against in their justifications. This will be followed by exploring the role of Courts as institutions and part of the legal system, and the developments in public sector management that shift the focus of the Court from a hierarchical institution to acting more and more as an organization. The fourth part, then,

[2] Baraldi, Corsi and Esposito (2021, 209) define self-description as "a particular type of self-observation which is produced as a description of a social system within the system itself through the communicative production of texts. Self-description is a simplified construction of the unity of the system that makes it possible to communicate in the system about the system; therefore, the system becomes its own theme. Thus, self-description generates the system's identity as a selective observation of the unity of the system."

will tackle the multiple meanings of efficiency (as well as co-related terms such as effectiveness and efficacy), analyzing their particularities in the Brazilian law and legal literature, and teasing out the complexity of interpretations. The fifth section will be dedicated to analyzing the different accounts of the STJ regarding the introduction of algorithms, and how the different meanings of efficiency are used to self-describe the Court, its challenges and potential solutions.

2 The Superior Tribunal of Justice

The Brazilian Superior Tribunal of Justice (STJ) was instituted by the 1988 Constitution of the Federal Republic of Brazil.[3] It is the final instance in all infra-constitutional, non-specialized matters[4], and was created with the primary goal of standardizing the interpretation of federal law in Brazil (Superior Tribunal de Justiça 2019). While it has original jurisdiction in a few special cases, the bulk of the STJ's caseload are special appeals of last instance decisions of Federal and State Courts.[5] All cases are initially distributed to one of the 33 Justices, which acts as a Justice Rapporteur, who is responsible for assessing the admissibility of each case, and, in special cases, individually judging it[6], although most final decisions are made in a collegiate form. Taking the self-proclaimed title of "The Citizen Tribunal", as it was created by a democratic constitution that followed decades of military dictatorship, the STJ operates in a legal system which is notable for its broad enunciation of possibilities of appeal, in a constitutional framework where it is forbidden by law to limit the judiciary review of any harm or threat to rights (CF art 5, XXXV).

Exercising the highest infra-constitutional jurisdictional power for a country of continental proportions, the judges face an enormous caseload, the proportions of which are almost Sisyphean in nature, and are carefully documented and monitored by their internal statistics. According to their statistic bulletin of September 2021 (Superior Tribunal de Justiça 2021), in that month alone the Court received 33.451 cases, joining the 317.781 cases received that year. On the other hand,

[3] The specific attributions of the STJ are described in articles 104 and 105 of the Brazilian Federal Constitution.
[4] While constitutional matters have the Supreme Federal Court as their final instance, and there are specialized courts for labor, electoral and military matters, the STJ deals with federal law in civil, criminal and administrative matters.
[5] According to art. 105, III of the Constitution of Brazil, a special appeal to the Superior Tribunal of Justice is possible when the decision appealed: "a) is contrary to a treaty or a federal law, or denies its effectiveness; b) considers valid an act of a local government challenged in the light of a federal law; c) confers upon a federal law an interpretation different from that which has been conferred upon it by another court."
[6] According to article 34 of the STJ Bylaws.

in the same month the STJ has judged a total of 52.633 cases, and a total of 423.794 decisions have been reached so far in 2021.

When considering the total pending caseload of the Court, and using the year of 2019 as a basis to exclude the impact of the exceptional circumstances of 2020, the 2019 Management Report (Superior Tribunal de Justiça 2020) shows the Court has received 384.900 cases, judged 543.381 cases, but still has a bulk of 269.261 legal conflicts awaiting a resolution. The staggering number of pending cases, however, is already a marked improvement from the situation; in 2015, for example, there were nearly 400 thousand cases waiting for judgment (Superior Tribunal de Justiça 2015).

These numbers present both a managerial challenge and an excess of complexity for the legal system: on the one hand, the 33 judges and the administrative staff need to deal with an ever-growing input of processes within the budgetary limits of the State, while on the legal side, notions of 'reasonable duration of the process', especially for the appeal cases that have already gone through one or two instances, stretches into a humanly absurd amount of time to solve conflicts that ultimately involve the temporal rhythm of human lives. Moreover, the uncontrollable amount of cases can often contain similar legal issues, which, if distributed to different Justices, might produce contradictory decisions, adding the risk of inconsistency to the uncertainty brought by the long waiting time.

Far from being a new development, or an anomaly constrained to this particular instance of the Judiciary, the insurmountable caseload is well-known problem, and widely present in almost all instances of the Brazilian Judiciary (Conselho Nacional de Justiça 2021).[7] It is commonly referred to in the literature as the 'numeric problem' of the Judiciary (Hamdar Ribeiro 2009; Lopes Saldanha 2010; Mancuso 2019; Roque 2011), and it accompanies a narrative that describes the judging institutions as 'sluggish, expensive and full of obstacles for the effective deliverance of Justice" (Galilheti 2012, 1125). While attempting to pinpoint the origins of this phenomenon are beyond the scope of this paper, it is important to note that the creation of the STJ was already part

[7] According to the National Council of Justice's (CNJ) report named "Justice in Numbers" (2021), the enormous numbers of the STJ are but a small part of the pending cases across the country, since the majority is still concentrated in the first instance.

of a measure to address the slowness and excess of cases present in the other third-instance court of the country, the Supreme Federal Tribunal (STF) (Sadek 2004).

The Brazilian constitutional and procedural law literature considers several factors as potential contributors to the situation. As already mentioned, the Constitution of 1988 is blamed not only for the strong procedural guarantees and expansive rights to appeal, but also for the extensive and detailed enumeration of rights, as well as the absence of clear legal pathways to protect many of them (Sadek 2004). Moreover, the re-democratization of the country is also held as responsible for the growing gap between the citizens' understanding of their rights (especially when it comes to welfare matters) and the ability of the State to safeguard them (Leonel 2007). Additionally, the transition of power after the military dictatorship (1964-1985) did not include a thorough reform of the Judiciary and their internal practices (Congresso Nacional 1992), and conversely did not prepare or modify Courts in order to prepare for the increase in demand that was to follow.

Aside from these more historical explanations, there are a few additional allusions to particularities in Brazilian legal culture. First, the reference to Brazil's Civil Law regime, where precedents are not as strongly respected as in Common Law regimes (Marinoni 2019), enables decisions in the first instance that do not follow the understanding of higher courts. Added to this is the mistrust or lack of knowledge of alternative forms of conflict resolution to the point of describing Brazilian society as legally belligerent (Mancuso 2019), with an excess of law schools and dropping quality of lawyers (Congresso Nacional 1992). Finally, the lack of resources – money, judges, access to remote parts of the country – is also mentioned as a factor that contributes to the numerical crisis (Bianchi de Oliveira 2019).

In face of this complex scenario, there have been several attempts at alleviating the situation through normative means, the most substantive of which was the Constitutional Amendment EC n.45/2004 (henceforth EC 45), entitled the "Reform of the Judiciary" (Brasil 2004), and all the infra-constitutional legislation that further detailed, expanded and adapted the Brazilian legal reality to the reform. These changes, which were facilitated by a formal pact between Legislative, Executive and Judiciary after the EC 45 passed, are still ongoing, and include the implementation of a new Code of Civil Procedure[8] in 2015. Most notably in the Constitutional Amendment, for

[8] Law n. 13.105/2015.

the purposes of addressing the 'numerical problem', are the inclusion of the principle of 'reasonable duration of the process' as a fundamental guarantee in the administrative and judicial spheres[9]; the creation of the National Council of Justice to gather statistical data about the Judicary and supervise their administrative and financial activities[10]; and, more concretely, the creation of 'binding legal precedents' for certain matters in the Superior Federal Tribunal (STF).

The latter measure was only the first of many other attempts at alleviating the numerical crisis by new laws which limit the right to appeal, and confer more binding effects to decisions of the higher Courts. For example, law n. 11.276/06 creates an additional admissibility requirement for appeals, that must not be contrary to any higher court rulings, while law n. 11.277/06 creates the repetitive appeal procedure, where cases with a similar legal controversy that reach the STJ can be grouped together and judged through a paradigm-case. These measures are, of course, directed at decreasing the caseload of the higher courts, but do not attempt to address the excessively number of lawsuits filed on the first instance.

To this effect, there has been an attempt to incentivize judicial mediation as an alternative form of conflict resolution, present in the new Civil Procedural Code, and regulated through law n. 13.140/2015. According to the new Civil Procedural Code, mediation would be made mandatory for a few cases, such as family law. The process would still be done within the structure of the Judiciary, but would involve less formalities, and be presided over by a mediator instead of a judge.

The most recent strategy adopted by the STJ to tackle this situation was the in-house development of algorithms. The STJ was already a pioneer in terms of digitalization and technological development in Courts, being the first Brazilian Court to digitalize 100% of its caseload (Superior Tribunal de Justiça 2013). With a clear and explicit goal of making their work processes more speedy and efficient, the Court is developing a series of what they refer to as "Artificial Intelligence Systems" (STJ 2018).

In 2018, making use of the work-force of their own IT division, the STJ instituted a pilot project to develop "artificial intelligence solutions in the case flux of the Superior Tribunal of Justice"

[9] Art 5, LXXVIII.
[10] Art. 103-B.

(STJ 2018), the main legal basis for the innovation being the principle of efficiency of public management (art. 37 of the Federal Constitution). The commission responsible for development and implementation was entirely composed of Court employees, and inquired about the possibility of producing tools capable of automatically classifying appeals into the relevant legal topics, as well as automatically extracting the legal dispositive that was claimed to be violated in the appeal. In this sense, it would allow for the decision-making to become more consistent, with less risk of contradictory decisions. The initial project was a success, and, three years later, two different main projects have been developed and are in use, which went beyond the scope that was initially imagined: the Athos system and the Socrates project.

The Athos system, originally developed from a basis of open-source machine-learning programs, was the first to be developed and is thusly described by the Getúlio Vargas Foundation national report on Artificial Intelligence use in Brazilian Courts:

> The STJ has an artificial intelligence platform, Athos, which was trained to read approximately 329 thousand STJ judgments between 2015 and 2017 and indexed more than 2 million cases with 8 million pieces, enabling automatic grouping by similars, searching for similar ones, monitoring groups and textual research. The Athos system also acts in the routine of identifying judgments similar to those already included in the case law database, in order to be grouped, thus avoiding base pollution. At the Precedent Management Center (NUGEP), the AI tool works to identify processes that have the same legal controversy with a view to fixing binding theses. The system also acts in the identification of material of notorious relevance; convergent and/or divergent understandings between agencies of the STJ; possible distinctions or overruns of qualified precedents (Bragança/Coelho et al. 2021, 27).

This system, which has been in use since 2019, is made to serve the procedural rite of repetitive appeals – that is, a special procedure in which a huge number of cases with the same legal controversy are selected and judged collectively through the selection of a small number of paradigm cases, whose judgment 'cascades down' to apply to all cases which had the same relevant controversy. All the other cases affected by the same legal controversy are frozen, and once the matter in the paradigm case is settled, all the other suspended cases are also solved in the same matter, settling the legal dispute in more general terms and building jurisprudence on the matter.

The Athos system serves as a tool for the intensification of a previous normative solution. While the decision of whether to include a singular case in a repetitive appeal regime is always made by a judge, the act of identifying controversies – which previously was made in dialogue between government agencies, administrative staff of the Court and even larger law firms – is substituted by this automatic identification. It becomes visible to the public in the aforementioned decisions

that determine that a case will be frozen, where the sentences indicate that the Athos system was used to identify the individual cases.

The second tool developed by the Superior Tribunal of Justice, dubbed 'Sócrates' on the other hand, performs administrative tasks that are less visible, as it is intended to assist the Justice in decision-making. It is meant to be a more complete source of information that reads and sorts information about appeals even before they are distributed to the rapporteur. It speeds up the information gathering, linking every incoming appeal with every incoming case with the relevant court jurisprudence, and suggesting which solution would be more attuned to the jurisprudence of the Court so far.

The first iteration of the program, called Sócrates 1.0., is already being used in the offices of the Justices as of 2019, but is limited to linking every incoming case with past decisions made by every individual judge (Superior Tribunal de Justiça 2020). The project is being further developed, and the current project, Sócrates 2.0. aims to identify four different aspects of all incoming appeals:

1. The constitutional admissibility of the special appeal,
2. The legal violations alleged by the appeal,
3. Jurisprudential precedents on the same matter,
4. The legal controversies present. (Veiga Chaves/Veiga 2021)

According to the latest management report, the 2.0. version of the project is in its final stages of development, and in addition to serving the needs of the Court itself, it will also be used as a subsidy to the STJ's Corporate School, to identify which matters pending judgment are the most relevant to teach about (Bragança/Coelho et al. 2021, 29). In its updated version, before a judge (or other workers of the Court) had the chance to read any new case that reaches the STJ, they could see machine-generated summary in the format of a 'word cloud' with the 30 most relevant terms, as well as a summary that selects the main thesis, legal grounds and solutions (Veiga Chaves/Veiga 2021). The most recent development for Sócrates is increasing the complexity of its analysis of admissibility of appeals. As of 2022, Sócrates is already able to automatically assess

some of the grounds for admission of appeals that reach the STJ[11] (Superior Tribunal de Justiça 2022).

The STJ is not alone in their move to digitalization: according to a report of the Getúlio Vargas Foundation, since 2018 all superior courts, most of the regional federal courts and a growing number of state courts are using, or are in the process of developing, their own AI projects, with a national total of 63 initiatives. The majority of them (47) are developed in-house by the courts' own Information Technology (IT) division, while the others were either developed in collaboration of legal tech companies (13) or universities (3) (Bragança/Coelho et al. 2021, 65-69).

When considering the very tangible and measurable 'numerical problem' that the STJ deals with, as well as the normative solutions that have been attempted so far, it is not hard to understand the scope of the problem that the introduction of algorithms is set to solve. This does not mean, however, that the use of algorithms is either necessary or the only way to address the situation, which prompts much of the need for justification. It is, after all, the introduction of something different that, even though it does not have as a function the total substitution of a judge, impacts both the inner workings of the Court and the interactions that Justices, lawyers and other members of the public might have with the STJ. But before I proceed with the analysis of the justifications, it is important to clarify and conceptualize what algorithms are, as well as introducing the literature of risks and doubts that the STJ is, even in indirect ways, reacting to while describing themselves and the algorithms.

3 Conceptual Framework – Algorithms, Courts and Organizations

Aside from their anthropomorphized names "Athos" and "Sócrates", there is a multiplicity of ways that both the STJ, news sources and academic articles refer to them: projects, systems, algorithms, Artificial Intelligence tools, platforms… With each term loaded with a multiplicity of potential meanings and associations, at first it might seem difficult to find the most appropriate. The STJ, in their reports, speaks more generally in terms of "AI solutions", but it is still too large a field. Since

[11] Currently, Sócrates 2.0. is able to identify, in a specific form of appeal called "special appeal" (REsp), the following grounds for inadmissibility of appeal: 1. Absence of Constitutional provision for appeal; 2. Absence of indication of which law was infringed upon; 3. Allegation of offense to constitutional norms, non-federal norms or infra-legal norms; 4. Violated law is not associated to legal controversy; 5. Absence of divergent interpretation; 6. Absence of paradigm. 7. Indication of a paradigm that is not tied to the divergence in interpretation; 8. Indication of paradigm that comes from the same tribunal as the appeal; 9. Divergent interpretation is not connected to the controversy, 10. Lack of association of paradigm to the controversy, among others (Veiga Chaves/Veiga 2021).

merely describing the functions Athos and Sócrates perform would, on the other hand, narrow down the discussion too much in order to make a dialogue with literature possible, I define them as a type of decision-making assisting algorithm. In this section, I will explore the meaning of this concept, as well as the implications for the literature that engages with the introduction of algorithms into the legal system.

As Nick Seaver points out, the concept of 'algorithm' became contentious the moment it started being used beyond the domain of computer science[12] to become relevant in popular and academic spheres (2017, 1). Algorithms can be very broadly defined as a "finite set of rules that gives a sequence of operations for solving a specific type of problem" (Hill 2016, 39), but the real point of interest is not precisely on which type of computer program classifies as an algorithm, but rather its use as a sociotechnical artifact that can only be understood in the context it operates under (Araujo/Helberger et al. 2020) – or, in more specific terms for the current work, on how the organization incorporates algorithms into their decision-making processes (Büchner/Dosdall 2021). Esposito (2017) focuses on algorithms as capable of producing artificial communication – that is, through the processing of data, participating in communications which do not originate from human intelligence.

This notion is directly applicable to the operations of the algorithms in question. Athos is capable of communicating that a case has a legal controversy similar enough to be included in the collective judgment of a repetitive appeal, and even communicate when a previously unclassified legal controversy passes a threshold after which it could be considered a candidate to the repetitive appeal procedure. When it comes to Sócrates, there are even more types of communication that it creates: to start with the creation of a "word-cloud" display with the most relevant words of the petition even before the Justice has the chance to read the case; the display and ranking of relevant jurisprudence on the same legal matter, and, finally, the suggested solution that would be most in accordance with the jurisprudence of the STJ.

The types of automated communication make it clear that the legally relevant moment of decision-making – that is, the operation of the legal system where a legal/illegal distinction is made – is not substituted by the algorithm. They are not, then, decision-making substitutive algorithms, like one

[12] Where, upon closer inquiry, he found that even with the possibility of a strictly technical definition, there was still copious room for differing interpretations on where 'the algorithm' was situated in a given computer scientists' work (Seaver 2017).

would find in the automatic exclusion of content in social media websites, but rather decision-making assisting tools, since they provide information that judges would then use to make their decisions. However, the artificial communication produced by these algorithms affect the operations that precede the moment of decision-making, or, in the specific case of Athos, eliminate other decision-making moments that precede the legal judgment.

Athos, for example, substitutes a task that would otherwise be performed by the legal team of a Justice's office, public institutions interested in a certain matter (Tax authority lawyers in tax cases, for example) and even large law firms that have a significant amount of cases before the STJ. All these different points of observation of the operations of the Court would have the chance to choose a strategic moment to bring up the issue of repetitiveness, and even engage in strategic considerations of timing, political moment and even reputation of the Justice that the suggestion of repetitive appeal thesis could be brought to.

When it comes to the effect that Sócrates has on decision-making, the operation that is substituted is the pre-decision research work that would be performed either by Court workers (who would potentially use databases and search engines that would make their own priority of relevance for jurisprudence) or the Justice. It would substitute some decisions regarding how to present the information, but the degree to which this presentation would define the content of the decision is unclear. In some ways, the intensity with which Sócrates would influence decision-making depends on *how* the information given by Sócrates is trusted, valued or checked. How much weight does the judge give to the suggestion of decision? How carefully is the model of decision read before the judge signs it? These matters, however, were not discussed at all in the justificatory accounts analyzed in this paper.

It is understandable that considerations about potential risks (or dangers)[13] of Athos and Sócrates were not brought to the forefront in accounts justifying their use, but it is fruitful to explore them nonetheless. When it comes to the specific literature about the introduction of algorithms to the legal system – as well as the nascent regulation and legislation on the subject - the enthusiasm with the potential gains are tempered with warnings about a plethora of potential risks. The main

[13] Luhmann (1991) observes 'risk' and 'danger' as the binary of dealing with the possibility of something negative happening in the future. While 'danger' is the prospect of something happening that is completely out of control (such as a meteor falling, or bad weather for a picnic), when something is observed as a risk, it can be understood as a consequence of a decision.

concern becomes about whether the introduction of algorithms could affect the parameters through which decisions are made (Esposito 2013; Susser 2019).

The first, and perhaps more intuitive potential risk lies on the inability of algorithms to capture the totality of skills and capabilities that a given task might require, where substituting parts of parts of an operation by an algorithm would only account for a partial substitution of many non-explicit functions. Pasquale summarizes this argument by positing that "legal automation can also elide or exclude important human values, necessary improvisations, and irreducibly deliberative governance" (Pasquale 2018, 1). Gowder also emphasizes the "non-legal-cognitive function served by lawyers" (2018, 6), that is, the functions that go beyond finding the correct legal reasoning that applies to individual facts, and their role in actualizing access to justice.

Second, another specific human-attributed component that can potentially suffer with the introduction of new technology is the capacity to explain its own decisions. Mittelstadt, Russel and Wachter (2019, 280) explore this issue in two terms. First, transparency addresses the internal functioning of an algorithm (that is, the impossibility of knowing how a decision was made because of the black-box like structure of the algorithm itself). Added to this is the element of post-hoc interpretation – that is, the ability to understand how the model behaved and why. This is usually accomplished through an interface generated by the program to make it accessible to users. Issues with transparency and explainability become especially relevant in a context where there is a lack of legal redress or clear target for responsibility, when a formerly human decision, from which rational explanations can be demanded, now gets referred to the black-box like operations of the algorithm (Kemper/Kolkman 2018).

Finally, in a less philosophical and more pragmatic sense, there is a concern about a potential negligence of legal guarantees which might stem not from a fundamental characteristic of algorithms, but from the acceptance of sub-par results because of economic advantage they might provide. Alain Supiot, in his work "Governance by Numbers", does use the preference for processing quantitative data as a basis for decision-making as a factor that might fully supplant laws as the ultimate normative reference, supplanting notions of 'justice' by economic efficiency (Supiot 2017, 29), but Gowder (2018) puts it more simply by questioning the quality of types of legal automation that limit themselves in 'cheaper lawyers', often at the expense of quality of service.

This is by no means an exhaustive list of risks identified by the literature or even attempts at regulating the use of AI in Courts[14], and while there are important discussions about epistemological assumptions used in data processing, or the potential of discriminatory outcomes of decisions mediated by algorithms (Mittelstadt/Allo et al. 2016), the specific context of the case did not immediately relate to these discussions. After reflecting on the new technology, its risks and characteristics, I will now focus on the conceptual framework of the institution developing and implementing the algorithms – the STJ in its role as a court and as an organization.

Courts, in a system theoretical perspective, are considered subsystems of the legal system, a function system that operates the distinction between legal/illegal – in the case of Courts, specifically by their duty of deciding which laws applies to the concrete case (Luhmann, 2020). When it comes to the operations other than decision-making, they are considered to be part of the public administration, an institution that is created, and regulated by law. Organizations, on the other hand, are defined by Luhmann as a type of system that defines itself through membership, by being closed in the social dimension, but open in the view of the objects of communications – that is, able to communicate in different societal function systems (Luhmann 2018). When talking about Court management, then – communications other than the moment of legal decision-making by a judge, can a Court be observed as an organization with the potential of multireferentiality?

Andersen (2020) points out, in his analysis of the relation between public organization and societal function systems, that the original concept of formal bureaucracy of the State (of which Courts are part of, when it comes to their management) initially rejects the possibility of multireferentiality: "Public administration is after all not constituted as a set of singular independent organizations but rather as institutions in a hierarchy while being a pure medium of law and politics. Multi-referentiality is not given to them" (2020, 8). He argues that, especially after the 1980s and with notions of 'New Public Management', public administration begins absorbing requirements of multireferentiality, becoming 'heterophonic' and shifting away from legal requirements to set their own goals, and balancing the different pressures of multireferentiality.

[14] In 2018, the European Commission for Efficiency of Justice (CEPEJ) published the European Ethical Charter on the Use of Artificial Intelligence in judicial systems and their environment. Though non-binding, the document was the first of its kind, and later on served as basis for the Brazilian National Council of Justice when implementing the national framework in the same matter. The Charter enumerates five guiding principles: 1) respect for fundamental rights, 2) non-discrimination, 3) quality and security, 4) transparency, impartiality and fairness, 5) user under control (European Comission for the Efficiency of Justice 2018).

Anderssen and Pors (2017), in their work on the historic developments on the form of decision in public administration, observe this development as a possibility for introducing even more uncertainty when the structures seem too rigid:

> "The potentiality administration does not only support self-governance through dialog, institutional contracts, strategy training, and governance tools. The point of departure is not the pre-existence of a certain amount of chaos and uncontrollability within the welfare institutions, which public administration seeks to help bring under control. By contrast, the starting point is too much order and stability. The problem is that what is uncontrollable in the institutions remains invisible to the institutions because they are locked into structures that are considered inevitable. Thus, the starting point for the central administration in the potentiality administration is that leaders do not encounter enough complexity and chaos through which to enact opportunities and change" (Anderssen/Pors 2017, 15).

The multireferentiality of Courts can already be teased out in the case description, especially following the 2004 Constitutional reform – the creation of a supervisory organ with the task of making the Judiciary quantifiable; the presence of management reports as an eloquent source of data in the justification of algorithms, the measurement of percentages, the praise of innovation. When it comes to the potentiality administration, in the case of the STJ, it might be difficult to envision the 'numerical crisis of the Judiciary' as a situation where there is an excess of stability, the rigidity of structures and the slowness of the administrative-legal means of change do resonate with the situation of hand. In this context of multireferentiality, then, the concept of efficiency emerges as a term that can resonate with different reference points – both as legal principle and as managerial imperative – in justifying the presence of algorithms.

4 Efficiency

Whether in management, engineering, economics or law, efficiency is generally tied to some sort of optimization in the use of resources in order to achieve a given task. The Merriam-Webster dictionary defines efficiency as "the ability to do something or produce something without wasting materials, time, or energy". However, this particular relationship between means and ends of an operation assumes widely different meanings across different areas, and even within the same institution or discipline. Particularly when it comes to public administration, Rutgers and Van der Meer (2010) identify two clear contemporary and contradicting notions, between "a technical term concerning the relation between resources and results and a more substantive meaning concerning

professional actions and organization, ensuring compliance with the execution of legal rules and regulations" (2010, 757). So, while alignment of means can easily be explained by the economic dimension of resource allocation, there is a possibility of emphasizing the stated goal to be met, and attempt to conceptualize efficiency in such a way that does not divorce means and ends.

When it comes to defining efficiency, it is also important to talk about related (and often conflated) concepts of effectiveness and efficacy. Considered by Karpen (2016) as criteria of managerial rationality used to evaluate the legitimacy of laws, and using German legislation as the starting point, his conceptualization of the three is equally tied to the area of an economic analysis of law. Thus, efficacy is defined as the extent to which legislative action achieves its goal, that is, if it produces the effects intended by the legislator. Effectiveness, then, is the extent to how the behavior of the subjects of the law correspond to the law – in other words, whether the intent behind the law is obeyed. Finally, efficiency relates to the relationship between the means proposed by the law and the ends that it achieves, expressed either by productivity of the legal measure, or by economic parsimony.

In the Brazilian context, however, there are some marked differences in emphasis when it comes to representations of efficiency, efficacy and effectivity in law. Linguistically, the Portuguese language has very similar words (eficiência, eficácia e efetividade), even though legal practice might emphasize different aspects of the concept. The website of the School of Magistrates of the Federal Regional Tribunal of the 3rd Region[15] (Escola de Magistrados do Tribunal Regional Federal da 3ª Região 2020) considers them interlinked concepts and defines them in more general terms. Here, efficacy is related to fulfilling a task or function, closely related to goals. Meanwhile, efficiency is more focused on the means. Notably, the economic dimension is not mentioned here, but rather other procedural virtues such as quality, competence, or absence of mistakes. Effective, then, becomes the synthesis of efficiency and efficacy, when means and ends are aligned positively.

With the conceptual variance heavily depending on the point of observation, it is fruitful to look closer at how efficiency is articulated in the legislation that serves as a basis for the justifications.

[15] Which is part of the material accessible to the continuous education of judges in the most populated region of the country.

Considering the wide competence of the STJ to address matters of civil, criminal and administrative law, the legal common denominator – as well as the legal motivation which is explicitly mentioned in the normative act that introduced the algorithms – are the general principles the Brazilian Federal Constitution.

In its current iteration, there are two broad and direct articles that refer to efficiency as it applies to the legal procedure. In a more explicit manner, the *caput* of article 37, under the title "about Public administration" reads: "Article 37. The governmental entities and entities owned by the Government in any of the powers of the Union, the States, the Federal District and the Municipalities shall obey the principles of lawfulness, impersonality, morality, publicity, and efficiency …" (Constitution of the Federative Republic of Brazil 1998).

This formulation was not part of the original redaction o the Constitution in 1988: it was added by Constitutional Amendment n. 19, of 1998. This does not mean, however, that efficiency was a foreign concept to Brazilian law: it was already present in other parts which detailed the activities of public management, in related words in the same semantic field such as 'quality of work, quickness, optimization, striving or the best standards, and so on (Leal 2008). However, the explicit inclusion of efficiency in the core of the definition of public administration elevated the notion as a general principle, and should accordingly permeate all administrative activities, including the management of courts.

The preparatory works for this amendment were permeated with the experience of a situation of a long economic and fiscal crisis which saw the public administration acting in ways perceived as wasteful and lacking in pragmatic use of resources. Including the principle of efficiency was, then, part of an attempt at an administrative overhaul, with the objective of offering better services to the population with the resources available (Guimarães/Garcia 2019). This particular notion of efficiency is closely related to economic considerations of optimization of resources, a notion that equates efficiency to a cost-benefit analysis (Liscow 2018) in a situation of scarcity.

This economic conception is not, however, the only one present in Brazilian legal theory and jurisprudence on the matter. The principle of efficiency can also be used as a measure of adequacy of the means to reach goals beyond the distribution of resources. In this sense, an act of the public

administration would be efficient not only by the standards of how much (or little) it costs, but also in how it measures up according to the specific objectives of each activity (Leal 2008). To that regard, efficiency has been conflated with the notion of 'effectiveness of justice', both in colloquial and academic use, highlighting the temporal dimensions of this concept. While there is no law containing this particular principle, it is often mentioned with the formulation of efficiency for/as effectiveness of justice, derived from the constitutional principles and tied to the idea of due process.

An applied example of this notion of efficiency is in the aforementioned Constitutional Amendment n. 45 of 2004, which adds subsection LXXVII to Article 5, which details fundamental rights. It reads "everyone is assured that judicial and administrative proceedings will end within a reasonable time and the means to guarantee that they will be handled speedily". Although it does not directly make references to the word "efficiency", it refers to the necessary instrumental aspect of the means (in this case, the duration of the procedure). And it is precisely this dimension of legal efficiency that is most commonly used to justify the introduction of algorithms into the STJ – increasing the efficiency of the Court in the sense that it helps them fulfill this internal, constitutional fundamental guarantee.

5 In the name of which efficiency?

The normative instruction n. 6 of 2018, the internal document which first authorized development of both Athos and Sócrates, stated that "increasing efficiency and productivity of the work" was one of the main objectives of the project. As the projects developed and started being incorporated into management reports, mentions of both algorithms were strongly associated with promoting agility and speed in procedures. These initiatives were enlisted into the strategic goals of increasing the efficiency of the court and contributing to the herculean task of diminishing the enormous number of pending cases. Here it is possible to identify a few separate dimensions – the reactive, immediate and concrete dimension of addressing the number of pending cases in the STJ, as well as more general considerations about fulfilling other efficiency-related objectives.

At first glance, the fact that the STJ produces and publicizes strategic management reports, highlights and represents the number of their caseload as a problem, and is constantly engaging in self-descriptions in terms of numbers, percentages and strategic goals when justifying the

implementation of algorithms showcases the conception of the Court as an organization that delivers 'judgment services' to the public. The management reports are filled with colorful graphs and organograms, value chain pictures describing jurisdictional activity as "finalistic macro-process of the organization", and colorful mission statements that include terms like "corporate governance" and "attracting and retaining talent". But for every colorful organogram and corporate buzzwords, the laws, internal regiments and other normative documents that authorize these methodologies of performance measurement are highlighted in bold, almost as a visual reminder of the legal framework necessary for the institution. In this sense, it is the normative instruction of the Court, interpreting Constitutional principles and specifying how they should be carried out, permits the institution to act and describe itself as an organization, in the clear expectation that the corporate style of organizing will better fulfill the legal requirement. When it comes to algorithms, more specifically, the management reports are very clear in showcasing, in different parts of the report, the two main problems that algorithms address: speed and cost.

The interactions that the Court have with the public in general have indications that the problem of slowness of decisions is not only theoretical: the 2019 ombudsman report for the Court, which collected data about all outside complaints, comments and suggestions, represented the subject of every case received in a word cloud, where the words "slowness" and "status of filed cases" were represented as having more than double the size of every other word, including "jurisprudence" and even technical issues, such as "push notification service", which were the second largest set of words represented. On the management reports, the tracking of the number of pending cases – including tracking the number of pending cases from 3 and 5 years before every report – are incorporated under the goal of "improving the quality of jurisdictional services", and indicate that this is institutionally regarded as a problem – as well as translating the jurisdictional activity of the court through the operation of offering jurisdictional services, which would require a quality control beyond legality.

But whereas most of the documental sources have the 'numerical crisis' as a deciding justifying factor, it is when speaking directly and more informally to the public that this connection becomes even clearer. This was observed during a keynote speech given by the President of the Court on the 2nd of July of 2020, at the National Conference of Technology, Innovation and Culture of the

Union General Attorney's Office.[16] The keynote speech, under the rubric "AI advances at the STJ", as well as the event in general, was open to the public, but had government attorneys and other people tied to the Brazilian legal context as their target audience. There, Justice Noronha describes to the audience a Sisyphean situation in which a newly appointed Justice starts his first day with more than 20 thousand cases under his or her responsibility, in a never-diminishing virtual pile that grows by 50 to 60 cases every day. He utilizes more statistics for emphasis in a context of representing algorithms as a necessary step for the Court, a crucial tool in alleviating an unsustainable situation.

Very sparse and almost implicit in the speeches is the dimension of the suffering of citizens who have to wait for their conflicts to be resolved – while the situation was generally described as absurd and inhumane, the perspective of this being an existentially agonizing workplace, the lack of dignity of a judiciary that is not seen as stable and predictable, and even the prospect of investors being deterred by the slowness of the judiciary are mentioned with more emphasis than the setbacks suffered by the citizens whose legal demands are waiting almost indefinitely for a solution. This might be partially explained by the fact that the STJ does not come into direct contact with citizens for the most part, as this is a court of appeals.

The economic dimension, however, cannot be neglected when it comes for the implementation of algorithms in this particular circumstance: Justice Noronha was very candid about the strategic move towards algorithms being a cost-effective way to cope with the caseload. He specifically states that the budget cuts and constraints meant that it would be impossible to properly expand the number of judges needed to handle the situation, and that there was a complete overhaul in the hiring of administrative staff: with the automation, they were able to let older workers retire without substituting their functions, hiring only for their IT division and overall diminishing their contingent of paralegals. Gowder (2018) points out how legal automation can take shape of providing services that would be the equivalent of 'cheaper lawyers', and this case is a textbook example of activities within the judiciary being made redundant. It is important to note, however, that these descriptions relied heavily in dramatizing the situation of judges, and clearly situated the role of the then President of the STJ as an administrator justifying his past hiring decisions.

[16] The full conference is available to the public on YouTube at: https://www.youtube.com/watch?v=LvxuAI_9-0Y&ab_channel=Judici%C3%A1rioExponencial.

When it comes to engaging the legal aspect of justifications, the management reports of the Court are very clear on the place and objectives of the algorithms, not as an isolated innovation, but as an integral part of fulfilling their main mandate of achieving uniformity in the interpretation of federal law throughout Brazil, purposefully aligning this development with fulfilling the general constitutional principles of due process – and, in particular, the contents of Constitutional Amendment n. 45, and the guarantees of the reasonable length of proceedings. This connection is emphasized in the foreword to the yearly management reports where the project development is considered news – that is, 2018 and 2019 – as well as repeated in the formula that was used in all judicial decisions that mention that Athos system, which specifically mentions its role as a tool used towards fulfilling procedural guarantees by furthering the explicit goal of correcting the inconformity in the current situation.

A legal principle, then, that enters the game in equilibrium and sometimes being in competition with other principles, being an integral part of what is considered 'due process'. It also relates to the means-ends dynamics of what efficiency means in general, but closely watches the ends, and has to yield to other principles if the ends are not met. When put in the context of access to justice and other procedural guarantees, the efficiency of the legal system can be employed as an instrumental evaluative tool for the functioning of the system, a 'reasonableness' clause that integrates this particular value into the considerations of the binary lawful/unlawful, by associating the over-formalization, barriers to access as something that de-characterizes the system. It is also important to notice that when it comes to how far they want to develop algorithms for Courts, a techno-futuristic situation of total substitution is not the future that the STJ Justices and IT technicians have in mind when attempting to solve their Sisyphean caseload, explicitly clarifying that all their solutions intend to augment, but never completely substitute, human cognition from the equation.[17]

In fact, Justice Noronha preemptively defends the Court from considerations of algorithmic risk by emphasizing, in interviews and during the keynote speech, that they did not intend to substitute, but rather enhance human capabilities, and that the moment of decision-making would always be delegated to the judge. Moreover, he describes the objective of utilizing algorithms so that judges

[17] Much more in line with the general proposals of 'legal tech' in general, which propose an augmentation of human cognition, rather than total substitution (Cobbe 2020).

can return to an "artisanal form of decision-making", where mass adjudications and algorithmic speed would allow judges to take their time analyzing the legal problems in their complexity. Implied in his assumption is the current state of an industrial form of decision-making which is considered undesirable, where the time constraints demand either super-human efforts from judges, or sub-par, repetitive analysis.

Notions of potential risk that could arise with the implementation of algorithms were barely addressed – as is, in some ways, to be expected in justificatory texts. There are constant references to including risk analysis in their strategic management process, but the exact content of these assessments was not accessible to the general public. The only outline of potential risks can be seen in the arguments that present some form of preemptive defense mentioned above, but quickly dismissed as the moment of decision-making is defended from algorithmic interference. This might be exacerbated by the fact that the court is developing the algorithm themselves, without the interference of outside institutions that would potentially introduce external logics or modes of operations. The question remains, however, whether the multireferential modes of operation of the Court, by themselves, might impact the algorithms in ways that produces risks for the legal operations of the STJ.

The emphasis of numbers for quality assessment of the STJ's performance contains no consideration for complexity of cases. Adding this to a system like Sócrates, which produces a suggested solution and even, in the 2.0. version, a suggested decision, could potentially incentivize the over-reliance on the suggestion instead of the 'artisanal judge' which Justice Noronha envisions. The multireferentiality here comes with the risk of allowing the managerial goals to take precedence over the judge's attention to detail. This becomes even more critical in a context of mass litigation, which is in its turn facilitated by Athos.

6 Conclusion

The introduction of algorithms into the inner workings of the Brazilian Superior Tribunal of Justice, which is being developed internally since 2018, emerged as a part of a solution for an overwhelmed Court, combining considerations of cost, speed and due process failures into one, generalized constitutional command of efficiency in all administrative procedure. This concept is

used to articulate and condense their multiple meanings in the legal system, and while the legal dimension of efficacy of justice is often officially named as the main legal justification, both performance measurement metrics of the Court and oral, informal accounts of the use of algorithms lean much more heavily into a managerial and economic justification for the implementation of algorithms. This reflects the multireferentiality of Courts, which are incentivized to emulate the private sector in order to attempt to bypass the rigidity of possibilities.

Within the legal system itself, despite the introduction of efficiency as a principle having been done with a strong prevalence of the economic sense and managerial considerations as legislative impulses, the incorporation of this new principle into the constitutional order expands the directionality of efficiency to include not only considerations of administrative cost, but also an instrumental measure of following other considerations in the program – which also reflects on the self-descriptions of the Court.

The multiple meanings of efficiency brought up by the STJ accommodate a heterogeneity of goals and considerations in what can be seen as efficient – whether it is cost, time, or even the ability to contribute to the integrity of the legal system in face of a situation of disturbances, they accommodate a diversity of conceptions about the direction, function and characteristics that are desired of a legal system.

I find that the court communicates in terms of procedural guarantees and access to Justice in official, written accounts of the use of algorithms, but leans much more heavily in managerial and economic self-descriptions when measuring performance and addressing other institutions more informally. Notions of algorithmic risk are dismissed on the basis that the moment of decision-making is not substituted, and this distinction allows them to focus solely on the managerial changes and efficiency gains that the algorithms bring, and avoid engaging with the discussion about how this change might potentially affect legal decision-making indirectly.

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