THE CHALLENGES FACING THE USE OF A MACHINE ARBITRATOR AS AN APPLICATION OF ARTIFICIAL INTELLIGENCE IN THEORY AND IN PRACTICE

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ABSTRACT

This article deals first-hand with some legal, technological, ethical, and practical challenges facing the use of a machine arbitrator as an application of Artificial Intelligence (AI) in theory and in practice, considering that the use of a machine arbitrator, as part of a 'robotic justice', might be possible throughout the arbitral process. These challenges include: the reference in the arbitration agreement to a machine arbitrator, the use of a machine arbitrator in the appointment of arbitrators, making an award by a machine arbitrator, and the provision of reasons in a machine arbitral award. This article shall exclude consideration of court decisions made by machines, even though a machine may also be used in making such decisions. This article concludes with findings regarding both the legal and the practical challenges facing the use of a machine arbitrator, and recommendations for facing these challenges. This encompasses, inter alia, provisions that might be considered in the future for amendment, including national laws of arbitration, model laws of arbitration, international conventions on arbitration, and institutional arbitration rules, de lege ferenda as opposed to de lege lata.

Keywords: Artificial Intelligence, Machine Arbitrators, Machine Arbitration Agreements, Machine Arbitral Awards, Online Arbitration, Dispute Resolution of Business to Business and Business to Consumer Disputes.

INTRODUCTION

This article shall deal with several legal and practical challenges facing the use of a machine arbitrator as an application of Artificial Intelligence in both traditional arbitration and online arbitration (e-arbitration). A machine arbitrator might be used in different phases throughout the arbitral process, including, but not limited to, the arbitration agreement, the appointment of arbitrators, the translation of documents, the case management, the cost estimation, the hearings, the provision of reasons in award, drafting an award, including the procedural history, and making an award.

As far as counsels are concerned, one may note that AI is already used in many areas of law, including contract analysis and electronic discovery (Scherer, 2019). In that, some online platforms help counsels, through technological tools, to streamline their work by processing key documents, transcripts, facts, and research[1].

As far as courts are concerned, courts of some countries have started using AI in the litigation process to modernise their judicial systems. For example, the courts of Shanghai have adopted AI assistants, as part of the efforts to modernise the Chinese judicial system using technology, to transcribe case notes, pull out files, and present digitised evidence[2].

In the following paragraphs, I shall deal with some of these challenges. However, before I start dealing with the challenges, I shall provide an overview of both AI and arbitration, both traditional arbitration and online arbitration.

Artificial Intelligence, as opposed to natural intelligence, is based on an algorithm, and is defined as *"making a machine behave in ways that would be called intelligent if a human were so behaving"* (Scherer, 2019). In terms of problem-solving functions, AI is *"often used to describe machines (or computers) that mimic "cognitive" functions that humans associate with the human mind"*. AI is used not only for solving Business to Business (B2B) disputes through arbitration, but also for solving Business to Consumer Disputes (B2C), also known as consumer arbitration. For example, eBay has created an arbitration automated system to solve disputes arising from B2C transactions. However, one could argue that this may constitute a breach of the User Agreement, which states in Section 18 (B), entitled Legal Disputes: Agreement to arbitrate that: any dispute arises shall be settled through traditional arbitration under the Federal Arbitration Act, and conducted by the American Arbitration Association (AAA) under its own rules and procedures (Amro, 2021). Moreover, one may argue that this automated system is biased, i.e., in favour of the consumer (the buyer), because the trader (the seller) cannot respond until and unless the buyer uses the system. In addition, one may argue that the consumer is not requested to provide any evidence supporting his claim. Finally, it should be mentioned that this automated arbitration system applies a shortened procedure, which may violate due process as an integral part of the procedural public policy[3].

Arbitration, as opposed to litigation, is an alternative dispute resolution mechanism that allows parties to settle their dispute out of the court and choose their arbitrators. Arbitration is divided into domestic arbitration and international arbitration. Also, arbitration is divided into ad hoc arbitration and institutional arbitration. Arbitration might be conducted by means of technology without in-person meeting. This kind of arbitration is called online arbitration; where parties can agree to conduct the arbitration process entirely online (Amro, 2021). Online arbitration is mainly used to solve disputes arising out of electronic commercial transactions. However, online arbitration might also be used to solve disputes arising out of traditional commercial transactions. The Coronavirus pandemic shows, and possibly proves, that the use of online arbitration for solving traditional commercial disputes is useful in practice.

As stated above, arbitration might be conducted on an ad hoc basis, or on an institutional basis. In institutional arbitration, parties agree to settle the dispute arisen or that may arise in accordance with the rules of procedure of the chosen institution. Institutional arbitration is widely used in both traditional arbitration and online arbitration. However, in online arbitration, online dispute resolution centres (providers) are playing a wider role than the role of traditional arbitration institutions.

Is an Arbitration Agreement Referring to a Machine Arbitrator Valid and Enforceable?

The question that might be raised here of whether it is possible and admissible to refer to the use of a machine arbitrator in an arbitration agreement under national laws, and under institutional arbitration rules. That is, the question is whether an arbitration agreement referring to a machine arbitrator is valid and enforceable in national jurisdictions.

Before I answer this important question, I shall deal with an arbitration agreement, both a traditional (conventional) arbitration agreement, and an online arbitration agreement.

On the one hand, in traditional arbitration, parties in most cases conclude their arbitration agreement in-person. In some cases, parties may agree in a traditional commercial contract via e-mail exchanges to settle any dispute that may arise through traditional arbitration. On the other hand, in online arbitration, parties conclude their agreement to arbitrate the dispute in all cases electronically. This applies to both kinds of arbitration agreements, i.e., an e-arbitration clause included in the main contract, and a subsequent agreement concluded after the dispute arises. An online arbitration agreement is primarily designed for electronic commerce (e-commerce) contracts, but it might also be used for other kinds of traditional commercial contracts where parties agree via e-mail exchanges to settle the dispute through arbitration, as stated above. This means that the arbitration agreement concluded online is not necessarily specific to e-arbitration or to online transactions. Online arbitration agreements, as part of online arbitration, have become more popular among the business community amid the spread of Coronavirus.

In both traditional arbitration and online arbitration, an e-arbitration agreement shall indicate the place of arbitration, the law applicable on the substance and on the procedure, the arbitration rules governing the proceedings, either in case of ad hoc arbitration or in case of institutional arbitration, the appointment of arbitrators, the number of arbitrators, as well as the appointing authority, if any, and the language in which the arbitration is to be conducted. If the parties have not agreed, the arbitral tribunal will determine the place of arbitration, and the language(s) in which the arbitration will be conducted.

The formation of an e-arbitration agreement might be included in the meaning of Article 11(1) of the Model Law on Electronic Commerce, which reads:

> *"An offer and the acceptance of an offer may be expressed by means of a data message. Where a data message is used in the formation of a contract, that contract shall not be denied validity or enforceability on the sole ground that a data message was used for that purpose."*

Also, it should be mentioned that national laws, especially in civil law countries, have recognised the validity and the enforceability of arbitration agreements concluded by means of technology. To give examples of these countries, Germany, Austria, Greece, France, Belgium, Slovenia, Serbia, Hungary, and The Netherlands. Moreover, institutional arbitration rules have regulated online arbitration agreements, including (the ICC Arbitration Rules of 2021, and the German Arbitration Institute Rules the DIS Arbitration Rules of 2018). In addition, the UNCITRAL Model Law, as Amended in 2006 (Law, 2006), has regulated online arbitration agreements, under Article 7 thereof, which states, inter alia, that:

An arbitration agreement is in writing if its content is recorded in any form, whether or not the arbitration agreement or contract has been concluded orally, by conduct, or by other means. The requirement that an arbitration agreement be in writing is met by an electronic communication if the information contained therein is accessible so as to be useable for subsequent reference; "*electronic communication*" means any communication that the parties make by means of data messages; "*data message*" means information generated, sent, received or stored by electronic, magnetic, optical or similar means, including, but not limited to, Electronic Data Interchange (EDI), electronic mail, telegram, telex or telecopy.

An arbitration agreement referring to a machine arbitrator has not been regulated yet under national laws, under institutional arbitration rules, and under international legislations, including international arbitration conventions and model laws. However, the current state-of-

the-art developments of business and technology may dictate using a machine arbitrator in the future, and accordingly an arbitration agreement that refers to a machine arbitrator might be possible and admissible, provided that national laws will regulate the use of a machine arbitrator, either explicitly or implicitly. In that, Veronika Pavlovskaya has suggested that the possible arbitration agreement referring to a machine arbitrator might be as follows:

> *"All disputes arising out of or in connection with the present contract shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce by one arbitrator appointed in accordance with said Rules. The parties may jointly nominate a machine arbitrator (the title of the program to serve as the machine arbitrator, if already agreed) and a reserve human arbitrator who should observe the arbitration proceedings and replace the machine arbitrator in case any irreparable technical problem arises. The IT point person shall observe the arbitration proceedings, test, and ensure the proper functioning of the machine arbitrator, and, in case any technical problem arises, eliminate this problem, or establish that this problem is irreparable. The seat of arbitration shall be Paris, France. The language of arbitration shall be English (Pavlovskaya, 2019)."*

In a thorough review of the above, the opportunity might be conducive for regulating machine arbitrators, and arbitration agreements referring to machine arbitrators, in the above jurisdictions, and in any other jurisdictions in the foreseeable future. This would certainly allow for the enforcement of such arbitration agreements in national courts of both common law and civil law countries.

Can Machine Arbitrator be used in the Appointment of Arbitrators or be Appointed as Arbitrator?

An important question that might be raised here is whether arbitrators can be appointed by AI applications, including a machine arbitrator. In such a case, machine arbitrator may play the role of the appointing authority, as application in institutional arbitration. However, before dealing with the use of a machine arbitrator as an application of artificial intelligence in the appointment of arbitrators, it should be mentioned that arbitrators in both traditional arbitration and online arbitration might be appointed, either by the parties to the dispute or by the arbitration institution, if institutional arbitration is applicable.

In that, it should be mentioned that in 2021 the Chartered Institute of Arbitrators in the UK released a Framework Guideline on the Use of Technology in International Arbitration. Under this Framework Guideline, arbitrators should understand their powers and limits throughout the arbitral process, including SS[4].

As stated above, a question that might be raised is whether a machine can appoint arbitrators in the same manner and to the same effect as parties, institutions, and as appointing authorities, if any, under national laws and international arbitration rules.

To answer this question, it is important to indicate that AI might be used in the appointment of arbitrators from both technological and practical perspectives. One may note that the selection of an arbitrator through AI applications, including a machine arbitrator, may depend on how the arbitrator dealt with previous cases, on how the arbitrator dealt with production of documents, and on how the arbitrator dealt with settlements (Pavlovskaya, 2019).

In practice, some online arbitration centres and online platforms engaged in international arbitration around the world help parties to select their international arbitrators relying on AI, including Arbitrator Intelligence. Arbitrator Intelligence is an online platform that

provides parties with state-of-the-art analytics and crucial feedback on international arbitrators, especially on non-public cases[5].

To achieve the above goal, Arbitrator Intelligence asks parties and counsels to complete a questionnaire at the end of an arbitration. This Questionnaire (AIQ), which consists of two phases, is a confidential and anonymous online survey. At the end of phase I, the user (party or attorney) will be invited to continue to take phase II. The responses of phase I will prefill key information into phase II questions of the AIQ[6].

The AIQ seeks factual information such as the names of the arbitrators, the dates, and the amount recovered. In addition, the AIQ seeks some other information about the arbitrators, the arbitral process, and the arbitral award. To keep the confidentiality of the case, AIQ does not collect any information on the names of the parties, the names of the lawyers, and the names of the law firms involved in the case. Based on the AIQ, Arbitrator Intelligence produces reports analyzing the procedural and the substantive decision making of an arbitrator, and offers these reports for sale via the webstie[7]. Upon publication, the survey responses will include a disclaimer as follows:

> "*The following responses provide an arbitrator's general perspectives on various issues. Procedural or case management decisions in individual cases necessarily on the applicable law and circumstances of the particular case. Pursuant to Arbitrator Intelligence's terms of use, survey responses should neither be taken as a representation about future arbitrator decision making nor can they be used for the purpose of challenging an arbitrator.*"[8]

A pertinent question that might be raised is whether machine arbitrators can be appointed by parties as arbitrators.

To answer this question, it should be mentioned that the UNCITRAL Arbitration Rules, as Amended in 2013, do not prohibit a machine from acting as arbitrator that is based on Article IV thereof, entitled *"The Award"*[9]. In this matter, one may note that the appointment of a machine arbitrator may contradict the public policy, stating that:

> "*The appointment of machine arbitrator could be curbed based on an alleged breach of international public order. Such a concept constantly emerges to meet the needs of the political, social, cultural, and economic contexts. However, change takes time to be executed (Chandran, 2017).*"

Based on the above analysis, machine arbitrators might be used not only in the appointment of arbitrators, but they might also be appointed as arbitrators. However, the challenge is when national laws of arbitration do not allow parties to appoint machine arbitrators. On this challenge, one may provide a solution, stating that *"even if parties were disallowed to appoint computers as arbitrators, it does not mean they cannot consent to use them. Even if arbitration laws do not apply, courts should still execute such agreements as a matter of contract law"*.

An additional question that might be raised is whether a machine arbitral tribunal provides an equal treatment of both parties, i.e., the question of whether a machine arbitrator is independent, impartial and confidential, given that the decision made by a machine on the selection of arbitrators will mainly depend on data provided by the developer/programmer.

On this matter, Veronika Pavlovskaya comments as follows:

"*However, if we dive deeper, the machine arbitrator is a program applying Artificial Intelligence and Machine Learning (AI and ML) mechanisms. The program goes through a learning cycle where the program is taught to make decisions based on the previous court and arbitration practice, upon the input of the developer. This means that the developer of such a machine arbitrator may influence the AI behaviour by providing relevant cases in favo[u]r of one of the parties (though in ideal world the machine arbitrator should learn itself having the access to information). In fact, this forms a kind of pre-disposition and makes such a machine arbitrator neither impartial nor independent (Pavlovskaya, 2019).*"

On that basis, I must emphasize that a machine arbitrator should be provided all data pertaining to the case. However, one may observe that there might be a practical difficulty facing this opinion, especially in commercial arbitration, because AI has a limited ability to access data due to confidentiality considerations (Surdek, 2021). This may give businesses, among other reasons, the right to refuse such an appointment made by a machine arbitrator. In other words, businesses may not accept to settle their disputes through a machine arbitrator for confidentiality considerations.

Finally, and possibly most importantly, as far as the use of AI in arbitration is concerned, there might be a fear that the use of AI will substantially affect the work of arbitrators and arbitration counsels in the next 10 years. In that, one may believe that AI will only affect the work of paralegals and tribunal secretaries, but not the work of arbitrators or arbitration counsels (Surdek, 2021).

Can a Machine Arbitrator be used in Making Arbitral Awards?

An additional challenge facing the use of a machine arbitrator from both legal and technological perspectives pertains to the possibility of using a machine arbitrator in making an enforceable arbitral award. In the following paragraphs, I will deal with this challenge briefly because I dealt with this topic in detail in a previous article (Amro, 2019).

In terms of law, it should be emphasised that some national laws in both common law and civil law countries provide that only human can act as arbitrator, including the UK, France, the Netherlands, Brazil, and Egypt (Wahab & Katsh, 2018). However, other national laws, especially in Latin American countries, may not stipulate such a requirement, including Chile, Mexico, and Columbia (Chandran, 2017). Also, some international arbitration rules do not prohibit the use of a machine to make an arbitral award, including the UNCITRAL Arbitration Rules, as Amended in 2013, which do not prohibit the use of machine in arbitration that is under Section IV, entitled The Award. In addition, some institutional arbitration rules do not require that a human render an arbitral award, including the ICC International Court of Arbitration Rules of 2020 in Article 13 thereof.

On this matter, a question that might be raised is whether national courts will accept to enforce an award made by a machine arbitrator. In other words, the question is whether a machine arbitral award can be challenged in case of the lack of due process, i.e., in case of the lack of impartiality and fairness when making an award.

Theoretically speaking, the lack of due process by a machine arbitrator might be considered a violation of the procedural public policy, noting that the right to a fair trial, including making an arbitral award, is a human right (Franklin, 2020). As a result, a machine arbitral award may not be recognised and enforced by national court of the country of enforcement that is in accordance with Article V(1)(b) of the New York Convention of 1958

(Amro, 2021). Similarly, a machine arbitral award might be challenged based on the lack of due process before national court of the country of origin.

In addition, most national laws have not regulated the enforcement of awards other than traditional arbitral awards yet. This means that national laws have not regulated the enforcement of both online arbitral awards and machine arbitral awards. Therefore, national laws, and international legislations, should change to include provisions that regulate the enforcement of both online arbitral awards, and machine arbitral awards in the same manner and to the same effect as traditional arbitral awards.

In practice, one may argue that the enforcement of AI arbitral awards might be easier than the enforcement of traditional arbitral awards, especially that an award is not subject to an appeal based on the merits, i.e., an award can mainly be challenged based on procedural grounds, but not based on substantive grounds, which means a limited judicial review (Singh, 2020).

In terms of technology, it might be possible to use AI applications, including a machine arbitrator, in making an arbitral award. Accordingly, national laws, and international arbitration rules, need to change to meet state-of-the-art developments of smart technology (Amro, 2021).

To conclude, a machine arbitrator might be used in making an arbitral award from both legal and technological perspectives, provided that national laws will include provisions that allow such a use of a machine in arbitration.

Can Machine Arbitrator provide Reasons in Award?

One of the main challenges that may face the use of a machine arbitrator is the lack of reasons in award, especially that some national laws provide that the lack of reasons in award may contradict the public policy.

The question that might be raised here of whether a machine arbitrator is able to provide reasons in award, and if the answer is yes, the question that might be raised of whether such reasons would be fair enough to explain the rationale behind the award.

To answer both questions, it should be mentioned that it might be possible to some extent from a technological perspective, for a machine arbitrator to provide an explanation of an award based on an algorithm. However, one may note that AI machines are unable to explain the decisions (awards) in an understandable language. In addition, one may note that AI will continue to lack the ability to explain the rationale behind its decision, because AI is not using a deductive reasoning and logic (Surdek, 2021).

In this matter, the EU Ethics Guidelines for Trustworthy AI, which is a document prepared by the High-Level Expert Group on Artificial Intelligence (AI HLEG); indicate that AI systems and their decisions should be explained in a manner adapted to the stakeholder concerned[10]. This is known, according to some commentators, as the right to an explanation. Also, the same Guidelines state that humans need to be aware that they are interacting with an AI system, and must be informed of the system's capabilities and limitations. In that, it is important to refer to the use of 'Turing Test', which is a method of inquiry in AI for determining whether or not a computer is capable of thinking like a human being[11].

One may argue that AI programs may not be able to provide a fair legal reasoning that explains for the losing party the rationale behind the outcome, and accordingly this may constitute a challenge facing an award rendered by a machine (Scherer, 2019). This may mean

according to some commentators that AI programs will provide an inductive reasoning, but not a deductive reasoning, while processing the data provided as stated above.

To avoid the lack of the provision of reasons in a machine arbitral award, it should be mentioned that some national arbitration laws have dealt with this requirement flexibly. For example, in the Netherlands, a civil law country, the Arbitration Act contained in the Code of Civil Procedure, as Amended in 2015, gives the parties the right to agree in writing, after the commencement of arbitration, that no reasons shall be given in award[12].

Moreover, it should be emphasised that some international arbitration rules have dealt with this requirement liberally. For example, the UNCITRAL Arbitration Rules, as Amended in 2013, provide in Article 34(3), entitled *"Form and Effect of the Award"* that *"the arbitral tribunal shall state the reasons upon which the award is based, unless the parties have agreed that no reasons are to be given"*. This paragraph clearly states that the parties have the right to exclude the provision of reasons in award[13]. Likewise, the LCIA Arbitration Rules of 2020 have permitted under Article 26(2) the parties to agree in writing that no reasons shall be given in award[14].

The rationale behind giving parties the opportunity to waive their right of a reasoned award under both national and international arbitration rules is that the aim of the provision of reasons in award is to give parties, especially the losing party, the opportunity to know the reasons for losing the arbitration, which may help in case of setting aside an award. That is, parties are free to waive their right to ask for reasons in award, including an online arbitral award, and a machine arbitral award in so far this is not in contradiction with national laws, and with institutional arbitration rules, if institutional arbitration is applicable. When parties agree to waive their right of a reasoned award they decided to focus on the outcome of an award 'the dispositive part' rather than the reasons of an award.

On this matter, one may argue that the above provisions were not intended to facilitate the use of a machine arbitrator. However, it should be observed that there is no prohibition in the above rules, either explicitly or implicitly, of using such rules in case of an award made by a machine arbitrator in both traditional arbitration and online arbitration. The above provisions may constitute alternative ways of regulating the inability of a machine arbitrator to provide a fair legal reasoning that explains for the losing party the rationale behind the outcome.

In practice, it should be emphasised that the mandatory requirements of law for making traditional arbitral awards, including the provision of reasons in award, may also be applicable to online arbitral awards, and to machine arbitral awards. In other words, if reasons are not provided in award this may be regarded as a violation of public policy under the arbitration laws of some civil law countries, and accordingly an award may not be enforced in the country of enforcement that is based on Article V(2)(1) of the New York Convention of 1958. However, courts in these countries may still uphold an award which lacks reasons, because not every mandatory rule is relevant when dealing with recognition and enforcement of foreign awards (Amro, 2021).

To conclude, the lack of reasons in award may not constitute an obstacle facing both the making and the enforcement of arbitral awards, including online arbitral awards, and machine arbitral awards, especially that most arbitration laws and institutional arbitration rules allow parties to waive their right to a reasoned award, as stated above. If the provision of reasons in award is a prerequisite under national law or under institutional arbitration rules, one may suggest implementing the 'ethical black box' into the algorithm, which may help to know all the

procedures conducted, and the steps taken, by a machine to reach the outcome (Pavlovskaya, 2020).

CONCLUSION

This article concludes that, from both technological and practical perspectives, a machine arbitrator as an integral part of a *"robotic justice"* might be used in the arbitral process, including the appointment of arbitrators, making arbitral awards, and the provision of reasons in award.

Also, this article concludes that the use of a machine arbitrator as an application of artificial intelligence faces some legal, technological, ethical, and practical challenges. These challenges pertain to an arbitration agreement referring to a machine arbitrator, to the use of a machine in the appointment of arbitrators and the appointment of machines as arbitrators, to the use of a machine arbitrator in making an award, and to the provision of reasons in a machine arbitral award.

Moreover, this article concludes that some national laws as well as institutional arbitration rules in both common law and civil law countries have prohibited the use of a machine arbitrator explicitly, including the UK, France, the Netherlands, Brazil, and Egypt, which stipulate that only humans can act as arbitrators.

In addition, this article concludes that some other national laws and model laws have not prohibited the use of AI in arbitration explicitly. For that reason, among others, the use of AI in arbitration generally, and the use of a machine arbitrator specifically, is a matter of time. Such a use of AI in arbitration will surely help parties, arbitration counsels, arbitrators, and judges during the arbitral process, as well as during the enforcement process.

This article mainly recommends that national laws and institutional arbitration rules should change to match the rapid developments of both law and smart technology, including the acceptance, or non-prohibition, of the use of AI in arbitration, especially the use of a machine arbitrator in the appointment of arbitrators, and in the conduct of the arbitral process, including, but not limited to, making an award.

ENDNOTE

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