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Use of AI-Based Technologies in International Commercial Arbitration*

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Abstract

This paper deals with the involvement of Artificial Intelligence (AI) based technologies in international commercial arbitration. Specifically, this concerns both their assistance in the arbitral processes and the challenging question of replacement of human arbitrators with AI-arbitrators. Regarding the second question, the current normative framework on international commercial arbitration, notably the provisions of UNCITRAL Model Law on International Commercial Arbitration and the New York Convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards on the requirements as to arbitrators, the arbitral tribunal and public policy (*ordre public*) is analysed.

It is submitted that depending on the law of the requested State, public policy may act as an important ground to reject the recognition or enforcement of the arbitral award if given by AI-arbitrators with differing reasons. For instance, the award is not given by natural persons, or it may be that the impartiality and independence of AI-arbitrators is questioned because of data-drivenness of AI, or that the arbitral award lacks sufficient reasoning. It can be argued that even where it is accepted that other provisions of the New York Convention can be interpreted, and possibly be enlarged, to allow the use of AI technologies, public policy requirements might still act as an important barrier for the recognition and enforcement of arbitral awards given by AI-arbitrators.

Although future relationship of AI and international commercial arbitration is not known, we believe that if assistance of AI to judicial processes in general, and to arbitral process in particular, proves to contribute by lessening the workload, which would speed up the legal process, minimizing the costs and the risks of human mind efficiently. As a result, this could

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establish a demand for a new regulatory framework for AI-arbitrators to replace human arbitrators. An important consideration in this regard would be the willingness of the parties to include AI systems in the resolution of their dispute by arbitration. At that point in time the question shall arise on whether this can be achieved by the amendment of the current instruments or their replacement with new ones.

We believe that UNCITRAL Model Law may be amended to adjust itself to new technologies, as was the case in 2006 to conform the practices of international trade. The New York Convention is resistant to change, proposing any such amendment may not be a realistic option. Alternatively, the adoption of soft-law instruments (such as UNCITRAL recommendations on the application of the New York Convention or amendments on the UNCITRAL Secretariat Guide on the Convention) may rather be preferred to adjust the Convention to the use of new technologies.

Keywords: Artificial Intelligence, Arbitration, AI-arbitrator, New York Convention, UNCITRAL Model Law.

Introduction

Developments in science and technology and the rapid change brought by such developments lead to new questions in international dispute resolution. One such question is the interaction between artificial intelligence (AI) and international commercial arbitration. In private international law relationships, arbitration is usually preferred as a method of dispute resolution by the parties due to different reasons. These include speed, confidentiality, neutrality, expertise, as well as the enforceability of the arbitral award. As AI technologies have brought along fast transformation in judicial services like many other sectors, arbitration cannot be exempted from such transformation.

The purpose of this paper is to determine and evaluate the role that AI plays/can play in the resolution of international commercial disputes via arbitration. In this regard, it deals with the involvement of AI-based technologies in international arbitration as regards two questions.

First, it deals with assistance of AI technologies to the arbitral process, including the parties, their counsel and the arbitral tribunal. As will be stated below, various examples of such assistance have already been developed and used in practice.

The second part of the paper deals with the most challenging question of whether AI-arbitrators can replace human arbitrators. Replacement of human arbitrators with AI-arbitrators requires an analysis of the current normative framework on international commercial arbitration.

It also includes assessment of legal instruments both as regards the requirements as to the arbitrators and other possible limitations as to the recognition and enforcement of the arbitral awards. As such, certain national legislation on international commercial arbitration, the UNCITRAL Model Law on International Commercial Arbitration (‘UNCITRAL

Model Law')[1] and the Convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards ('the New York Convention')[2] shall be considered. In this regard, we shall try to reach conclusions on whether the current regulatory framework is sufficient to defend the replacement of human arbitrators with AI-arbitrators or should new instruments be proposed.

1. Defining AI

John McCarthy who coined the term 'AI' in 1955, describes (2007) it as *'the science and engineering of making intelligent machines'*, *'intelligence'* being *'the computational part of the ability to achieve goals in the world'*. According to Ryan Calo (2017), *'AI is best understood as a set of techniques aimed at approximating some aspect of human or animal cognition using machines.'*

In the work of High-Level Expert Group on AI (Ethics Guidelines for Trustworthy AI) set up by European Commission, AI is defined as *'software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal.'*[3] Various taxonomies are also used to explain different degrees of intelligence, including Narrow/Weak AI-Artificial General Intelligence (strong AI) taxonomy, which is based on whether AI system has the ability to perform human-level intelligence (Goertzel, 2014, 1).

Fundamentally, there is no official consensus on the definition of AI. This is because AI is an umbrella (blanket) term, which encompasses various subjects and techniques, such as machine learning, cognitive computing, natural language processing etc.[4] While definition of AI is not within the scope of this paper, for its purposes, the term AI refers, not only to computer systems that provide simple answers to questions or make predictions about possible decisions, but also, complex, self-learning systems which collect and analyse data and reach decisions without human intervention. In the paper, the latter is referred to as the *'AI-arbitrator.'*

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[1] UNCITRAL Model Law on International Commercial Arbitration (1985) with amendments as adopted in 2006, Vienna 2008, <https://www.uncitral.org/pdf/english/texts/arbitration/ml-arb/07-86998_Ebook.pdf> (accessed September 15, 2020).

[2] Convention of 1958 on the Recognition and Enforcement of Foreign Arbitral Awards, <http://www.newyorkconvention.org/english> (accessed September 15, 2020).

[3] Available at <https://ec.europa.eu/digital-single-market/en/news/ethics-guidelines-trustworthy-ai> (accessed September 15, 2020).

[4] For this reason, it is suggested that policy makers should refrain from using the term AI for regulatory purposes; instead, they should define 'certain designs, use cases and/or capabilities following a risk-based approach', depending on technology which they intend to regulate: Schuett 2019, 3.

2. AI Assisting the arbitral process

Inclusion of AI as an assisting body in arbitration may take different forms. This can be drafting of an arbitration agreement by the parties or by their counsel, or rendering the arbitral award by the arbitrator/the arbitral tribunal. Thus, in the circumstances mentioned below, AI systems may act to assist the parties, the counsel[5] or the arbitrator(s).

The main roles of counsel in the arbitration process may be stated as to draft an arbitration clause/an arbitration agreement; to initiate arbitration; to determine the facts related to the dispute in order to defend the client during the arbitral proceedings and to prepare the appropriate documents and petitions by investigating the legal rules and legal practices related to these facts; to prove their claims that are built in favour of their clients by various evidence methods including cross-examination and finally to take the necessary actions to enforce the arbitral award.

Regarding most aspects of the counsel's role, AI technologies have already been developed today. There are systems that can analyse an arbitration clause and make suggestions on how to improve it, as well as systems that can directly draft an arbitration clause: For example, Kira Systems, a machine learning contract review and analysis software[6] can read the current provisions in the contract as to whether there are any ambiguities or omissions in the provisions and promises to make the arbitration clauses almost perfect within a faster time period. Moreover, the American Arbitration Association's (AAA) on-line tool *'Clause-Builder'* is developed to assist the clients to draft arbitration clauses depending on the nature of the dispute as well as their wish as regards the elements of an arbitration agreement.[7]

A key that would assist parties and their counsel would be case or decision prediction, a technology of predicting case outcomes by using algorithms (Rhim and Park 2019, 20), which would enable them to resolve the dispute without initiating a judicial process. Although there is no such algorithm developed for the resolution of cross-border disputes by arbitration so far, research in other areas of law shows that such algorithms can reach high probability to predict the case results. For example, an AI system, developed by University College London, University of Pennsylvania, and the University of Sheffield, was able to predict the results of the cases regarding Articles 3, 6, and 8, of the Convention for

[5] The question whether AI-counsels may replace human counsels is a distinct question which is outside the scope of this paper. An interesting discussion in the US, however, has been as regards the services provided by LegalZoom, an online LegalTech company that provides for blank templates for some legal documents as well as a service in which the fully prepared documents can be downloaded from the website as the customers fill a questionnaire regarding the information needed for the legal documents to be prepared. There have been questions about the characteristics of the LegalZoom's operations and several lawsuits have been brought before the state courts (including North Carolina, Missouri, Ohio, California, Arkansas, South Carolina, Connecticut) alleging that its operations constitute an unauthorized practice of law. As regards discussions on LegalZoom see Figueras 2013.

[6] <http://www.kirasystems.com/> (accessed February 15, 2021).

[7] <https://www.clausebuilder.org/cb/faces/index> (accessed September 15, 2020).

the Protection of Human Rights and Fundamental Freedoms[8] at a 79 percent accuracy rate. This was achieved by evaluating the language used in submissions and in case law (Aletras et al. 2016). According to research conducted in 2014 an algorithm developed for the decisions of the Supreme Court of the United States was able to predict the decisions at a 70 percent accuracy (Katz et al. 2017).

The chance of success, the amount of possible compensation to be awarded, the duration of the arbitral proceedings (depending on the arbitral institution), including costs, as well as the outcome of the case can be said to be reasonably predicted by AI systems (Paisley and Sussman 2018, 35). The development of such technologies would have a positive impact on both foreseeability of the arbitration process and legal certainty (Paisley and Sussman 2018, 35; Hildebrandt 2018, 20, 34). It is without doubt that they may only be successful if a reliable data pool of previous arbitral awards is established. The required data would include the elements of disputes that are subject to arbitration, the rules governing the arbitral proceedings, and, any previous awards rendered according to these factors. This is due to the fact that international commercial arbitration may require different laws to be applied (such as the law applicable to the merits, to the substantial validity of the arbitration agreement and to the arbitral procedure) feeding AI with accurate and reliable data is of greater importance (Karall and Oiwoh 2020, 462).

Nevertheless, it should be admitted that confidentiality is one of the main reasons for the parties for resolution of their disputes via arbitration. Unlike court proceedings, international arbitration is a private dispute resolution mechanism where the submissions of the parties, the arbitral hearings, and the arbitral awards, remain confidential (Born 2015, 13). The arbitral institutions usually do not publish the arbitral awards, ICSID (International Centre for the Settlement of Investment Disputes) and SMA (Society of Maritime Arbitrators) being exceptions.

The International Chamber of Commerce (ICC) publishes the summary of some awards only whereas HKIAC (Hong Kong International Arbitration Centre (HKIAC) do not publish any awards in principle unless a request is made for an award to be published (Paisley and Sussman 2018, 37). Thus, non-publication of arbitral awards or limited amount of data obtained in international commercial disputes may be considered as a barrier of the use of AI technologies in arbitration, since data plays a central role in their development (Rhim and Park 2019, 20; Scherer 2019, 509; Vannieuwenhuyse 2018, 126).

However, it should be noted that, certain databases are already in use for providing data in arbitral proceedings. For instance, examples include: Arbitrator Intelligence[9], Dispute Resolution Data (DRD)[10] and Global Arbitration Review Arbitrator Research Tool (GAR ART)[11] etc (Paisley and Sussman 2018, 38). DRD, for instance, which is used for arbitration

[8]Convention for the Protection of Human Rights and Fundamental Freedoms, as amended by Protocols Nos. 11 and 14 (opened for signature 4 November 1950, entered into force 3 September 1953), ETS no 5, <https://www.echr.coe.int/ Documents/Convention_ENG.pdf> (accessed February 12, 2021).
[9] <www.ArbitratorIntelligence.org> (accessed September 15, 2020).
[10] <http://www.disputeresolution.com> (accessed September 15, 2020).
[11] <https://www.globalarbitrationreview.com/arbitrator-research-tool> (accessed September 15, 2020).

and other forms of alternative dispute resolutions currently gathers data from 18 institutions, including the International Chamber of Commerce (ICC) and the AAA and has covered over 5000 arbitrations, with the parties representing 185 countries. The data is provided anonymized and any identifying information and comments on the merits of the cases remain confidential.[12] Additionally, ArbiLex, RavelLaw, Solomanic are examples of various programs that provide foreseeability in arbitration by predicting future results (Eidenmüller and Varesis 2020, 14).

Certain machine learning techniques, such as *'transfer learning'* that is based on a technology that stores the information that is obtained by focusing on a solution of a problem and accordingly *'transfers'* this information to find a solution in the next problem, may also be considered as functional for the instances in which the data is scarce (Rhim and Park 2019, 22). Thus, it can be said that AI systems can still be developed for arbitration without sacrificing the principle of confidentiality, in other words, without publishing all arbitral awards.

Today there are also software that can conduct activities like legal research, creating documents, and preparing summaries, all of which aim to improve the way the counsel is preparing documents and petitions. The most important example of these technologies is an AI system called Ross Intelligence of IBM's Watson which is described as the world's first AI attorney. Ross Intelligence, based on natural language processing, answers legal questions and prepares a two-page memo by processing and citing huge amounts of data (legislation, jurisprudence, and academic research) (Lohre 2017; Organization for Economic Cooperation and Development (OECD) 2019, 46). There are also various e-discovery tools such as eBravia, Everlaw and DISCO for document evaluation (Eidenmüller and Varesis 2020, 10).

However, the cross-examination method, which is frequently used in international commercial arbitration and carried out by human attorneys by using psychological methods has not yet been carried out by any software. Thus, impacts of the AI technologies that will be involved in these processes have not been concretely observed. Nonetheless, there are studies showing that AI may be successful in cross-examination. For example, in a study, AI systems correctly determined at a 90 percent accuracy whether the witnesses who gave testimonies in hypothetical courts were lying (Schmitz 2019, 150).

Another aspect where AI may be thought to be helpful in arbitration is the selection of arbitrators (Rhim and Park 2019, 18). Selection of arbitrators is a process in which almost no legal analysis is required, however, qualifications that are sought in arbitrators by the parties play an important role. As such, a database where the information as to practicing arbitrators are included and on which parties are able to log the arbitrator's qualifications can speed-up the process and prevent possible objections of parties against the appointed arbitrators. An AI system, that can access data regarding the contacts of an arbitrator with a company or an individual, may be expected to determine which arbitrators suit best for the dispute in question and possibility whether there is a conflict of interest. Thus, it may

[12] <http://www.disputeresolution.com> (accessed September 15, 2020).

be claimed that such a system may also contribute to impartiality and the independence of arbitrators.

AI technologies may also assist human arbitrators in various ways including researching and summarizing the relevant law in general, processing and analysing party statements, or, for the arrangement of hearings and conferences in arbitral process (Eidenmüller and Varesis 2020, 9). One of the most recent developments in this regard is the launch of e-Arbitration services administered by the Hong Kong's Electronic Business-Related Arbitration and Mediation Platform (eBRAM).[13] The Platform is intended to provide AI functions including text translation, real time translation on chat-style sentences, transcription of the recording of online-hearings and user authentication for access security (such as facial recognition, silhouette tracking and Radio Frequency proximity sensing)[14]. It also provides final, binding and enforceable award from the arbitrator. It is reported that eBRAM handles disputes of less than HKD 500.000 (USD 64.500) for HKD 200 fee through mediation or arbitration within six weeks (Sito 2020).

3. AI-arbitrators replacing human arbitrators

Replacement of human arbitrators with AI-arbitrators is a challenging question. In fact, it is a part of a more general question of whether AI could act as the adjudicatory (decision-making) authority. Although there is currently no such algorithm developed for an AI-arbitrator to act as the adjudicatory authority instead of a human arbitrator, this question proves to be an important one due to the increase in the use of AI-based technologies in legal services and for the future of international commercial arbitration.

Theoretically, it may be said to include important advantages, such as increasing the effectiveness of the arbitral procedure by preventing loss of time and decreasing the costs which arise from human reality and weaknesses. Similarly, it may be said that an AI-arbitrator would not have certain prejudices based on cultural values, moral understanding or gender which would negatively impact the impartiality of a human arbitrator (Scherer 2019, 510; Carrara 2020, 514). Inclusion of AI-arbitrators may also be said to facilitate access to (international) justice by composing an AI programme with the characteristics that the parties are looking for instead of finding a human arbitrator holding the required characteristics. This may also contribute to decrease the costs of arbitration and encourage the small businesses to refer their disputes to arbitration.[15]

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[13] <https://www.ebram.org/services.html> (accessed February 5, 2021).

[14] Legislative Council (of the Hong Kong Special Administrative Region of the People's Republic of China) Panel on Administration of Justice and Legal Services. 2019. Development of an Online Dispute Resolution and Deal Making Platform by Non-governmental Organisation, CB(4)665/18-19(03), Annex I, p. 1, <https://www.legco.gov.hk/yr18-19/english/panels/ajls/papers/ajls20190325cb4-665-3-e.pdf> (accessed February 5, 2021).

[15] As regards the effects of the use of AI technologies on small businesses see Paisley and Sussman 2018, 36.

However, such advantages may only be born if law permits the resolution of disputes by AI-arbitrators. Thus, it requires first and foremost an analysis of legislative instruments as to requirements of arbitrators. The most important concern in this regard is the existence of provisions requiring arbitrators to be natural persons. However even where there is no such limitation, there are other questions that need to be addressed as regards recognition and enforcement of foreign arbitral awards under the New York Convention.

3.1 Requirements as to arbitrators being natural persons

Party autonomy is one of the most important advantages of international commercial arbitration. It gives the parties the opportunity to make a choice on different aspects of the arbitral procedure within the limits of the mandatory provisions of *lex arbitri*, including the choice of arbitrators. As such, unlike resolution of disputes before national courts, the parties can select the arbitrators to see their dispute depending on their expertise and abilities.

However, whether this autonomy also includes selection of AI as an arbitrator is another question. The answer to be given to the question of whether there are any normative limitations as to qualification of arbitrators to be natural persons varies depending on the legislation concerned. Certain national legislation explicitly requires arbitrators to be natural persons, such as the Turkish Act on International Arbitration (Art. 7/B/1);[16] Scottish Arbitration Rules (Rule 3);[17] Swedish Arbitration Act (Sec. 7)[18] and Brazilian Arbitration Act (Art. 13).[19] UNCITRAL Model Law, on the other hand does not expressly provide for such a requirement.

Nevertheless, under certain provisions, it impliedly gives regard to human arbitrators: Art. 11 stipulates that the arbitrators cannot be prevented from being an arbitrator on the grounds of their citizenship unless otherwise agreed by the parties, whereas Art. 12(1) reads that *'[w]hen a person is approached in connection with his possible appointment as an arbitrator, he shall disclose any circumstances likely to give rise to justifiable doubts as to his impartiality or independence'*.

In a similar vein, ICC Arbitration Rules[20] refer to nationality (Art. 13(1), (5)) as well as place of residence of the arbitrators (Art. 13(1)). The London Court of International Arbitration

[16] Turkish Act on International Arbitration, numbered 4686, dated 21 June 2001 (Official Gazette of 5 July 2001, No. 24453).
[17] Arbitration (Scotland) Act 2010, Schedule I, <https://www.legislation.gov.uk /asp/2010 /1/ notes/division/4/9/8> (accessed February 7, 2021).
[18] Swedish Arbitration Act (SFS 1999:116), <https://sccinstitute.com/media/37089/the-swedish-arbitration-act.pdf> (accessed February 7, 2021).
[19] Brazilian Arbitration Act, No. 9.307 of 23 September 1996, <https://www.jus.uio.no/lm/brazil.arbitration.law.no.9.307.1996/doc.html> (accessed February 7, 2021).
[20] ICC 2021 Arbitration Rules, <https://iccwbo.org/dispute-resolution-services/arbitration/rules-of-arbitration/> (accessed February 7, 2021).

(LCIA) Arbitration Rules[21] provides for detailed rules on nationality of the arbitrators under Art. 6, also considering the issue of dual nationality. Under the New York Convention, the term *'arbitral award'* includes the awards rendered by not only the arbitrators appointed to resolve certain issues, but by the permanent arbitral bodies invoked by the parties (Art. I(2)). Thus, the New York Convention permits the recognition and enforcement of foreign arbitral awards rendered by natural and legal persons (van den Berg 2003, 4; Sim 2018, 3).

Yet, the Convention is silent on the question of whether AI can act as an arbitrator. Adopted in 1958, it is obvious that possibility of selecting AI-arbitrators was not taken into consideration in the drafting of the Convention. However, such silence can equally be construed as that the Convention does not include any restriction against the awards rendered by AI-arbitrators. Thus if Art. I(2) of the Convention is construed also including AI-arbitrators there would be no barriers before the recognition and enforcement of the awards that are rendered by AI-arbitrators under the said provision (Ng (Huang Ying) and Benedetti del Rio 2019, 123). It can be claimed that the provisions of the New York Convention should be interpreted according to the technological developments. As known, such an interpretation was recommended by UNCITRAL in 2006[22] as regards Art. II(2) of the Convention enlarging the application of the said provision to arbitration agreements concluded via e-mail or other instantaneous means of communication (Eidenmüller and Varesis 2020, 35).

A related issue would be on the form of the arbitral award. Most national legislation on international commercial arbitration requires the arbitral award to be in writing and to include the signatures of the arbitrators.[23] The same is true under Art. IV(1)(a) of the New York Convention which requires submission of duly authenticated original award[24], *'authentication'* being a formality attesting that the signatures are genuine (van den Berg 2003, 12). Thus, since AI-arbitrators may not be able to *'sign'* the award in the strict sense, it may be argued that such provisions may act as a barrier to cover arbitral awards given by the AI-arbitrators.

However, we share the opinion that as long as an AI-arbitrator may be provided with *'a predetermined and unique mark or stamp that is uniquely and undisputedly linked to it'* (Ng

[21] LCIA Arbitration Rules (effective 1 October 2020), <https://www.lcia.org/Dispute_Resolution_Services/lcia-arbitration-rules-2020.aspx> (accessed February 7, 2021).

[22] United Nations Commission on International Trade Law 2006a.

[23] See e.g. Swiss Federal Act on Private International Law, Art. 189(2); English Arbitration Act 1996, Sec. 52(3); French Code of Civil Procedure, Art. 1513; Turkish Act on International Arbitration, Art. 14/A/4. However, there are certain differences between national legislation as to the signature of the arbitrators. In Swiss law the signature of the chairman is sufficient whereas English, French and Turkish legislation require that the arbitral award is signed by all the arbitrators.

[24] Under Art. IV/1/a of the Convention, '*to obtain the recognition and enforcement mentioned in the preceding article, the party applying for recognition and enforcement shall, at the time of the application, supply the duly authenticated original award or a duly certified copy thereof*'.

(Huang Ying) and Benedetti del Rio 2019, 125 *et seq.*), the requirement as to signature should be held to be fulfilled under the Convention. Current requirements as to arbitrators to be *'natural persons'* include the requirement that the arbitrators should have *'legal personality'*, the latter also closely related with the liability of arbitrators. Granting some kind of legal personality to AI systems has been centre of many discussions from Lawrence Solum's seminal work (1992) onwards and particularly following the adoption of the Resolution on Civil Law Rules on Robotics by European Parliament in 2017.[25] Nevertheless, such discussions are still underway and has not yet been subject to a legislative instrument.[26]

3.1.1 Other limitations under the New York convention and UNCITRAL model law

Other points of discussion as to an arbitral tribunal consisting of AI-arbitrators, some of which are possibly linked to the requirement of arbitrators being natural persons, relate to recognition and enforcement of arbitral awards and setting aside proceedings.

The New York Convention, under Article V, provides for an exhaustive list of limited grounds for the rejection of the recognition and enforcement of arbitral awards and differentiates between the grounds which are to be proved by the party against whom recognition and enforcement is invoked (including lack of capacity of parties to conclude arbitration agreement or lack of valid arbitration agreement (Art. V(1)(a)); lack of proper notice of appointment of an arbitrator or of the arbitral proceedings or inability of the party concerned to present the case (Art. V(1)(b)); award deals with matters outside the scope of submission to arbitration (Art. V(1)(c)); composition of the arbitral tribunal or conduct of arbitral proceedings contrary to the agreement of parties (Art. V (1)(d)); non-binding or annulled awards in the arbitral seat (Art. V(1)(e)) and others that are to be considered by the requested court on its own motion (including non-arbitrability of subject-matter of the dispute (Art. V(2)(a)) and violation of public policy of the forum (Art. V(2)(b))). The UNCITRAL Model Law takes a parallel approach and adopts essentially the same grounds on which an arbitral award may be set aside (Art. 34).

Once these grounds are examined, we believe that two of them, namely composition of the arbitral tribunal and violation of public policy, deserve particular attention for the current question on whether the human arbitrators can be replaced with AI- arbitrators, since they are directly related with the 'arbitrator/arbitral tribunal' as the adjudicatory authority. Other than these, where the award is to be given by an AI-arbitrator, concerns may also arise as regards to the determination of the *'country where the award was made'*, which is provided as the connecting factor of the governing law in determining the validity of the arbitration agreement (Art. V(1)(*a*)) as well as the non-binding and annulled awards (Art. V(1)(e)).

3.1.1.1 Composition of the arbitral tribunal

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[25]European Parliament. 2017. Civil Law Rules on Robotics. <https://www.europarl.europa.eu/doceo/document/TA-8-2017-0051_EN.html?redirect> (accessed September 15, 2020).

[26] For differing views on granting legal personality to AI see Bertolini 2020, 9; Chesterman, 2020.

Under the New York Convention, recognition and enforcement of an arbitral award may be rejected if *'the composition of the arbitral authority or the arbitral procedure was not in accordance with the agreement of the parties, or, failing such agreement, was not in accordance with the law of the country where the arbitration took place'* (Art. V/1/d). A similar provision is found under Art. 34(2)(a)(iv) of UNCITRAL Model Law as a ground for setting aside proceedings.[27]

As regards the arbitral tribunals composed of AI-arbitrators, such provisions may especially be initiated against the arbitral awards if the arbitration agreement between the parties does not expressly provide that the arbitral tribunal shall be composed of AI-arbitrators. However, we believe that if the arbitration agreement expressly provides for this possibility, then the mentioned provisions should not be inserted against the award either in the setting aside proceedings or in recognition or enforcement of the arbitral award[28]. The same should apply where the parties have expressly agreed on an AI-arbitrator to act as the sole arbitrator.

In cases where the arbitration agreement does not provide expressly that the arbitral tribunal shall be composed of the AI-arbitrators and that one of the parties oppose the recognition or enforcement of the award, or, has initiated setting aside proceedings against the award, then, one may conclude that rejection of the recognition and enforcement of the award may be based on this ground. This view, however, is based on the fact that AI-arbitrators have not yet taken an active role in the arbitral practice (Ng (Huang Ying) and Benedetti del Rio 2019, 130). Nevertheless, for this ground to be accepted in the recognition or enforcement proceedings, the party opposing recognition or enforcement should have already raised it during the arbitral proceedings.

A distinct issue regarding the composition of the arbitral tribunal concerns the possibility of arbitral tribunals including both AI, and, human arbitrators. One important question that may arise is the possible prejudice that human arbitrators may have regarding the inclusion of AI in the decision making-process. For example, such an instance may occur where two human arbitrators may prevent an AI-arbitrator to have a say on the formation of the award (Sim 2018, 5). In such a case, the advantages of including AI in decision making processes will certainly be hampered.

There might be further questions as to the possibility of composition of the arbitral tribunal where the AI-arbitrator acts as the president (Sim 2018, 5). In such a case a particular type of algorithm may be needed depending on the functions of the president in the arbitral proceedings. This is especially true in certain situations where the award is to be given by the president alone if a majority decision of arbitrators cannot be reached (Art. 32(1) ICC Arbitration Rules) or where the president is authorized to resolve the disputes related to

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[27] Under Art. 34(2)(a)(iv) of UNCITRAL Model Law, an arbitral award may be set aside by the court if the party making the application furnishes proof that '*the composition of the arbitral tribunal or the arbitral procedure was not in accordance with the agreement of the parties, unless such agreement was in conflict with a provision of this Law from which the parties cannot derogate, or, failing such agreement, was not in accordance with this Law*'.

[28] Regarding New York Convention see Ng (Huang Ying) and Benedetti del Rio 2019, 130.

procedural matters without the need to consult the full panel (R-44(b) AAA Commercial Arbitration Rules).[29]

3.1.1.2 Public policy (ordre public)

Violation of public policy is accepted as a ground to reject the recognition and enforcement of a foreign arbitral award under the New York Convention (Art. V/2/b)[30] and a ground to set aside an arbitral award under the UNCITRAL Model Law (Art. 34/2/b (ii)).[31] In both instruments, public policy is a ground to be considered by the requested court *ex officio*.

Under both New York Convention and UNCITRAL Model Law, it is the public policy of the *'forum'* at a given time that is to be taken into consideration. As such, due to relativity of public policy, there is no common definition of this concept and its content may change depending on the requested forum State.[32] Thus, the public policy of the State in which setting aside proocedings are initiated or where recognition or enforcement of an award is requested plays a pivotal role and includes considerable amount of discreation on the part of the forum. Nevertheless, principles protecting legal, economic and social order of a State, the fundamental rights and freedoms, the customary and moral values of the society may be referred to as the values of public policy.

Despite the fact that neither the New York Convention nor UNCITRAL Model Law clearly refers to a *'manifest'* incompatibility with the public policy of the forum, it is accepted that the requirement as to public policy should be construed narrowly, referring to its exceptional character.[33] Therefore, under both instruments public policy requires a case-

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[29] For the text of AAA Commercial Arbitration Rules see <https://www.adr.org/sites/default/files/Commercial%20Rules.pdf> (accessed September 15, 2020). In LCIA Arbitration Rules it is also provided that the presiding arbitrator, with the prior agreement of its other members and all parties, may make procedural decisions alone (Art. 14.7).

[30] Under the said provision, '*[r]ecognition and enforcement of an arbitral award may also be refused if the competent authority in the country where recognition and enforcement is sought finds that the recognition or enforcement of the award would be contrary to the public policy of that country*'.

[31] Art. 34/2/b (ii) of the UNCITRAL Model Law provides that an arbitral award may be set aside by the court if the court finds that the award is in conflict with the public policy of this State. Also see Swiss Federal Act on Private International Law, Art. 190(1)(e); Turkish Act on International Arbitration, Art. 15/A(2)(b); English Arbitration Act, Sec. 68(2)(g) providing violation of public policy as a ground to set aside an arbitral award.

[32] For a comprehensive assessment of the public policy exception in private international law see Paul Lagarde, 'Public Policy' *International Encyclopaedia of Comparative Law* (1994) vol 3, 3; Alex Mills, 'The Dimensions of Public Policy in Private International Law' (2008) 4(2) Journal of Private International Law 201; Ionna Thoma, 'Public policy (*ordre public*)' *Encyclopaedia of Private International Law* (2017) vol 2, 1453.

[33] Nevertheless, in other areas of private international law (i.e. in the area of applicable law and in the recognition and enforcement of foreign judgments), there is mostly clarity in provisions as to the exceptional character of public policy: See e.g. Regulation (EC) No 593/2008 of the European Parliament and of the Council of 17 June 2008 ('Rome I'), Art. 21; Regulation (EU) No 1215/2012 of the European Parliament and of the Council of 12 December 2012 on jurisdiction and the recognition and enforcement of judgments in civil and commercial matters (recast), Art. 45(1)(a), Art. 46; Swiss Federal Act on Private International Law, Art. 27(1); Turkish Private International Law Act, Art. 5 (applicable law),

by-case analysis and should cause the rejection of the recognition or enforcement or setting aside the arbitral award only if it is found as clearly incompatible with the fundamental legal principles and values of the forum State.

In the application of the New York Convention, it is settled that public policy requirement applies with the limitation of prohibition of *révision au fond* which prevents the requested court to revise the arbitral award as to its substance. Thus, determination and application of certain provisions (including substantive as well as the conflict-of-laws rules) by the arbitral tribunal which are different from or even contrary to the mandatory rules of the requested State or incorrectly applied the designated law may not lead to the refusal of the arbitral award (Born 2015, 409). As such, the arbitral tribunal may have reached to a different result than the requested court. The same prohibition is certainly true for the UNCITRAL Model Law which would otherwise be in clear conflict with the essence of arbitration.

A number of issues might arise as regards public policy in case of arbital awards if given by AI-arbitrators. First, where the law of the forum provides for the requirement of arbitrators to be natural persons, it may be argued that the arbitral award rendered by AI-arbitrators are to be possibly set aside on public policy grounds. The same conclusion can be reached under Article V(2)(b) of the New York Convention that recognition and enforcement of such an award may be rejected (Eidenmüller and Varesis 2020, 36). Therefore interpretation of the relevant state courts on whether breach of such a mandatory rule constitutes a breach of public policy, shall be decisive.

Tangentially, where the arbitrators fail to act independently and impartially vis-à-vis the parties during the arbitral proceedings, the award rendered as a result of such proceedings may be set aside or a request for the recognition and the enforcement of this award may be rejected on public policy grounds (Benedettelli 2015, 657; van den Berg 2003, 19). In this regard, impartiality and independence of AI-arbitrators may be questioned on the fact that the AI is data-driven, the outcomes depend on collected data. Thus, where the data is discriminatory in nature based on sex, gender, race, or, favouring the party located in a certain country, then the outcome given by the AI (the arbitral award) would accordingly be discriminatory and would hamper the principle of impartiality of the arbitrators.

Nevertheless, it should be noted that discrimination problem caused by AI may essentially be a human-induced situation. It is hard to say that the disadvantage in question is unique for the arbitral proceedings in which AI is included, since even in arbitral proceedings conducted only by human arbitrators, there is a possibility and risk of discrimination based on race, religion, gender or any type of prejudices. This may occur in situations where a human arbitrator unwittingly pays less attention to the testimony of a witness who has a particular ethnic origin or evaluates the defence according to the sex of the counsel or

Art. 54(1)(c) (recognition and enforcement of foreign judgments); Introductory Act to the German Civil Code, Art. 6; Dutch Civil Code- Book 10 on the Conflict of Laws (of 1 January 2012), Art. 6.

agrees with another arbitrator of the same religion or with the same legal tradition and educational background (Cohen and Nappert 2017).

Therefore, it is not free of doubt to accept that examples of possible discrimination would certainly increase with the inclusion of AI technologies. It can be expected that the risk of discrimination in question may decrease gradually with the increase in the amount of data to be processed by the AI, the development of the prepared algorithms or AI systems reducing their mistakes by learning from their own mistakes (Alpaydin 2016, 24-25; Deeks 2019, 1832). Thus, it may equally be said that inclusion of AI technologies and minimalization of human intervention may even contribute to prevent certain discrimination that may occur during the arbitral proceedings.

Finally, the reasoning of the arbitral awards must also be considered. Under UNCITRAL Model Law *'[t]he award shall state the reasons upon which it is based, unless the parties have agreed that no reasons are to be given or the award is an award on agreed terms'* (Art. 32(2)). Certain national legislation also requires that arbitral awards must be reasoned.[34] As such, reasoning of an adjudicatory authority (be it a national court or an arbitral tribunal) is accepted as a fundamental prerequisite of justice which gives the parties the opportunity to understand how and why this decision/award is reached (Scherer 2019, 512).

In those countries, lack of reasoning of an arbitral tribunal may be seen as a violation of public policy, thus may be accepted as a ground to set aside the arbitral award or to reject the recognition or enforcement of a foreign arbitral award.[35] The fact that results generated by AI algorithms are usually unexplainable (the so-called *'black box problem'*) appears as an obstacle for the use of these technologies in arbitration (Schmitz 2019, 152). This is because the transparency problem in the algorithms prevents the actions carried out in the arbitration process from being justified and explainable (Deeks 2019, 1833). Thus, lack of justification and explanation of an award rendered by AI-arbitrators would at least be questionable as to the parties' right to a fair trial until the algorithms reach to a certain stage to produce reasoned awards.[36]

3.1.1.3 Determining the country where the award was made

The New York Convention refers to the law of the country where the award was made as regards two grounds for refusing the recognition and enforcement of a foreign arbitral award. The first reference is found in Art. V(1)(a) which provides that recognition and enforcement of the award may be refused, at the request of the party against whom it is invoked, if that party proves that *'[…] the arbitration agreement is not valid under the law to which the parties have subjected it or, failing any indication thereon, under the law of*

[34] See e.g. Turkish International Arbitration Act, Art. 14/A(2); Belgian Judicial Code, Art. 1713(4). Also see §52(3) of English Arbitration Act and Art. 189 (2) of the Swiss Federal Act on Private International Law providing for party autonomy as regards the form of the arbitral award, including the reasons.

[35] However, there is certain authority that in some countries where reasoning of an award is mandatory, foreign arbitral awards without reasons may still be recognised or enforced, provided that unreasoned awards are permitted under the law of arbitral seat: Born 2015, 292.

[36] As regards explainable AI technologies that have been developed see Deeks 2019, 1834.

the country where the award was made.' The same ground is provided under Art. 34 (2)(a)(i) of UNCITRAL Model Law for setting aside the arbitral awards. Under the New York Convention, the party against whom it is invoked may also prove that *'the award has not yet become binding on the parties, or has been set aside or suspended by a competent authority of the country in which, or under the law of which, that award was made'* (Art. V(1)(e)).

Concerns are raised as regards to determination of the country where the award was made for situations where human arbitrators are replaced by AI-arbitrators, considering different possibilities of *'parties having access AI-based arbitral procedure from different countries, AI-arbitrator being stored and powered in different countries as well as the place where the arbitral award was signed'* (Ng (Huang Ying) and Benedetti del Rio 2019, 130).

It is true that the New York Convention does not define *'the country where the award made'*. In practice, however, the seat of arbitration (the place of arbitration) as determined by the parties in the arbitration agreement is mostly accepted as the country where the award was made.[37] The UNCITRAL Model Law also provides for the freedom of the parties to agree on the place of arbitration. Where the parties fail to do so, it is the arbitral tribunal to determine the place of arbitration, considering the circumstances of the case, including the convenience of the parties (Art. 20).

Due to the importance of the seat of arbitration in settlement of disputes by arbitration (including determination of *lex arbitri* as well as the nationality of the arbitral award for its recognition and enforcement), it is observed that parties mostly designate the seat of arbitration in their arbitration agreement. According to the 2019 statistics of ICC, in the great majority of the cases the seat of arbitration is chosen by the parties, where the parties fail to do so International Court of Arbitration of the ICC fixed the seat of arbitration according to Art. 18 of the ICC Arbitration Rules only in 10 percent of all cases.[38]

Consequently, it may be argued that determination of *'the country where the award was made'* may not include additional difficulties in situations where the AI-arbitrators replace human arbitrators, with the reservation that the parties designate the place of arbitration. Thus, it should be admitted that such designation becomes even more important when the award is to be made by an AI-arbitrator.

Conclusion

AI technologies may have a number of impacts on the resolution of disputes through arbitration. Assistance of such technologies to arbitral process includes certain benefits including speed, costs, efficiency, both for the parties and their counsel as well as for the arbitrators. In fact, assistance of AI-based technologies does not bring fundamental concerns mainly because of the fact that in such cases the arbitral process is finalized with

[37] United Nations Commission on International Trade Law 2016, 143, para. 34; 220, para. 26.
[38] ICC. ICC Dispute Resolution 2019 Statistics, p. 14, https://iccwbo.org/publication/icc-dispute-resolution-statistics/ (accessed February 05, 2021).

an award given by human arbitrators. The central question, however, is whether human arbitrators can be replaced by AI-arbitrators.

Although no such technologies have been developed so far, this question proves to be an important one due to the increase in the use of AI-based technologies in legal services and for the future of international commercial arbitration. As the law stands today, most national legislation as well as UNCITRAL Model Law require the arbitrators to be natural persons either expressly or in an implied way. Adopted in 1958 the New York Convention was obviously not drafted in a way to include the possibility of recognition and enforcement of arbitral awards given by AI-arbitrators.

Under the New York Convention depending on the law of the forum, public policy concerns may also act as a ground to reject the recognition or enforcement of the arbitral award if given by AI-arbitrators since the award is not given by natural persons, or that impartiality and independence of AI-arbitrators is questioned since outcomes of AI depend on collected data. The fact that AI decisions are usually unexplainable may also be considered as problematic since lack of reasoning of the award may be accepted as a part of right to a fair trial, thus part of public policy of the forum.

Therefore, it can be argued that even where it is accepted that other provisions of the New York Convention can be interpreted and possibly be enlarged to allow the use of AI technologies, public policy requirements would still act as an important barrier for the recognition and enforcement of arbitral awards given by AI-arbitrators. This may be explained by the relativity of the public policy exception and with possible concerns of national courts as regards the use of such technologies at the moment. Outside the normative framework there might be other concerns against AI as an adjudicatory authority since by its nature it lacks human characteristics such as emotions or morality, which might be seen as unwritten requirements to perform adjudicatory powers[39].

Against this backdrop, the future relationship between AI and international commercial arbitration is not known. The assistance currently provided by AI technologies to arbitration constitutes an intermediary formula for the societies that are not yet ready to fully embrace AI technologies as an adjudicatory authority. Thus, it is still preferred to have human control over the resolution of disputes. As long as the assistance of AI to judicial processes in general and to arbitral process in particular proves to contribute the processes by lessening the workload, speeding up the process, minimizing the costs and the risks of human mind efficiently.

This may open a new path for development of AI technologies specific for arbitration and may establish a demand for a new regulatory framework for AI-arbitrators to replace human arbitrators. An important consideration in this regard would be the willingness of the parties to include AI systems in the resolution of their dispute by arbitration. As a result, the time may come to make a decision on whether this can be achieved by the amendment of the current instruments or their replacement with new ones, especially with regard to

[39] Also see Vannieeuwenhuyse 2018, 125; Argerich, Noodt Taquela and Jorge 2020.

UNCITRAL Model Law and the New York Convention as two most important instruments of international commercial arbitration.

It may be asserted that UNCITRAL Model Law may be amended to adjust itself to new technologies, as it was already amended in 2006 to conform the practices of international trade. Amendments of UNCITRAL Model Law would also result with changes on national legislation on international commercial arbitration. The New York Convention, on the other hand may require a different stand.[40]

Although there are certain differences in the contracting states in terms of application of a number of its provisions, the New York Convention is a widely adopted binding instrument over more than sixty years. In fact, one of the reasons of choosing arbitration in international commercial disputes is the enforceability of the arbitral awards under the New York Convention.

It should be remembered that amendment of the New York Convention or adoption of a protocol to the Convention was discussed previously as regards its Art. II(2) which was then found impractical by the UNCITRAL Working Group considering that it would likely *'[…]exacerbate the existing lack of harmony in interpretation and that adoption of such a protocol or amendment by a number of States would take a significant number of years and, in the interim, create more uncertainty'*[41] which resulted with the adoption of a recommendation in 2006 on the interpretation of the said provision.[42]

A more comprehensive amendment of the New York Convention was also discussed especially following the proposal of Prof. Albert Jan van den Berg in 2008,[43] a prominent commentator of the New York Convention, with a view to modernize the Convention nevertheless substantial steps were not taken. Thus, amendment of New York Convention to include awards of AI-arbitrators may not be a realistic option, the Convention being too rooted to be changed.

However, adoption of soft-law instruments such as UNCITRAL recommendations on the application of the New York Convention or amendments on the UNCITRAL Secretariat Guide[44] on the Convention may instead be preferred to adjust the Convention to the use of new technologies.

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[40] Also see Argerich, Noodt Taquela and Jorge 2020.
[41] United Nations Commission on International Trade Law 2006b, para. 6.
[42] See fn (22).
[43] For the text of Draft Convention on the International Enforcement of Arbitration Agreements and Awards prepared by Prof. Albert Jan van den Berg see Tirado, Acevedo and Cosio 2019, 310.
[44] For the suggestion of using the Guide to the New York Convention to overcome certain difficulties in the application of the Convention in the contracting states see Tirado, Acevedo and Cosio 2019, 310.

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