

## **Algorithmic Arbitrators: Rethinking Legal Personality, Impartiality and Accountability in Arbitral Decision-Making**

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### **Abstract**

Artificial intelligence is increasingly finding its way into legal practice, and arbitration is no exception. AI tools are already being used for legal research, document review, evidence analysis and preparation of drafts. However, a different set of legal questions arises when AI is not merely assisting an arbitrator but is expected to take the decision itself. Arbitration law places particular importance on the identity, independence, impartiality and accountability of the arbitrator. This raises the question of whether an artificial intelligence system can occupy the position of an arbitrator in the first place.

This paper examines this question in the context of the Arbitration and Conciliation Act, 1996. It considers the requirements of independence, impartiality and disclosure under Section 12, the statutory requirements relating to arbitral awards under Section 31, and the grounds for challenging an award under Section 34. It also examines the question of responsibility where an AI system produces an erroneous or biased decision. Whether such responsibility can be

attributed to the developer, operator, arbitral institution or a human arbitrator supervising the system remains uncertain.

The paper further considers the position from a comparative perspective, with reference to the UNCITRAL framework, international arbitration standards and recent European developments concerning the use of AI in legal decision-making. It argues that the present Indian framework can accommodate AI as a tool to assist arbitrators, but recognising AI itself as an arbitrator would raise fundamental questions of legal status, accountability and enforceability. The paper therefore explores a model in which AI may assist the arbitral process while final responsibility remains with a human decision-maker.

**Keywords:** Artificial Intelligence; Arbitration; Arbitral Decision-Making; Legal Personality; Accountability

### **1. Introduction: Artificial Intelligence and the Changing Landscape of Arbitration**

Arbitration has traditionally been understood as a consensual form of private adjudication in which parties entrust the resolution of their dispute to one or more individuals chosen for their expertise, independence and impartiality. The authority of an arbitral tribunal therefore rests on more than the parties' agreement to arbitrate. It also depends upon confidence in the person or persons who exercise the adjudicatory function. The arbitrator receives the parties' submissions, examines the evidence, applies the applicable law and ultimately renders an award intended to produce legal consequences. The growing use of artificial intelligence (AI) in legal and dispute-resolution processes raises questions about each of these assumptions.

Technological developments have already altered the manner in which arbitration is conducted. Electronic disclosure, virtual hearings, digital evidence and online case-management systems have become familiar features of contemporary arbitral practice. AI represents a more significant development because it is capable not merely of storing or transmitting information, but of processing large volumes of material, identifying patterns and generating outputs that resemble legal analysis. In complex disputes, particularly those involving extensive documentary evidence, these capabilities can substantially influence how lawyers and tribunals prepare and assess a case.

The present debate, however, goes beyond the efficiency that AI may bring to arbitration. The more difficult question concerns the identity and legal status of the decision-maker. If a system can analyse pleadings, evaluate evidence against predetermined criteria, identify applicable legal rules and produce a reasoned outcome, at what point does technological assistance become adjudication itself? This question is particularly important because arbitration law has developed around the assumption that the person deciding the dispute is a legally recognised human decision-maker.

### **Emergence of AI in Dispute Resolution**

The application of AI to dispute resolution has developed alongside the broader digitalisation of legal practice. Its uses range from document review and legal research to evidence analysis, translation, transcription and the identification of patterns across large datasets. These applications are particularly relevant to arbitration because international commercial disputes

can involve extensive documentary records, multiple jurisdictions and complex contractual arrangements.

The significance of AI lies not simply in its ability to perform these tasks quickly. More advanced systems can classify information, identify relationships between documents, summarise competing arguments and generate legal text. This changes the nature of technological involvement in dispute resolution. Earlier forms of legal technology largely assisted lawyers and arbitrators in accessing information; newer systems can participate in the processing and organisation of that information in ways that resemble elements of legal reasoning.

This development has practical advantages. An arbitral tribunal dealing with a substantial commercial dispute may, for instance, use an AI-enabled system to identify correspondence relating to a contractual variation, organise thousands of documents chronologically or locate recurring references to a particular issue. Such functions may reduce the burden associated with handling large evidentiary records. They may also allow arbitrators and counsel to devote greater attention to questions requiring legal and factual judgment.

At the same time, the introduction of AI into dispute resolution creates questions that are not ordinarily raised by conventional technological tools. A search engine may retrieve a legal authority without becoming responsible for the legal proposition derived from it. An electronic document-management system may organise evidence without deciding its relevance. AI systems capable of generating substantive conclusions occupy a different position. Their outputs may influence the reasoning process itself, particularly where the human user relies heavily upon the system's assessment.

The issue therefore is not whether AI should be present in arbitration. Its use in various forms is already part of the wider technological development of legal practice. The more significant question is how far its role can extend before the legal responsibility for adjudication begins to shift from the human tribunal to the machine.

### **From Technological Assistance to Autonomous Decision-Making**

A useful distinction can be drawn between an AI system that supports the tribunal and one that performs the substantive function of deciding the dispute. In the first situation, the arbitrator remains responsible for assessing the material placed before the tribunal and for determining the dispute. AI may assist with particular tasks, but it does not possess decision-making authority.

The second possibility is substantially different. An autonomous AI-based system could, at least in principle, be designed to receive pleadings and evidence, apply specified legal rules, assess competing claims and produce an arbitral award with limited or no substantive human intervention. Such a system would not merely facilitate arbitration; it would occupy the position ordinarily assigned to the arbitrator.

The distinction has important legal consequences. Arbitration is not simply a process of obtaining an answer to a dispute. It is a legally structured form of adjudication. The parties agree to submit their dispute to a tribunal constituted in accordance with the applicable law and arbitral rules. The tribunal is expected to act independently and impartially, observe procedural

fairness and determine the dispute within the limits of its jurisdiction. An AI system would have to fit within this framework if its output were to be treated as an arbitral award rather than merely a technological recommendation.

The first difficulty concerns the identity of the arbitrator. Arbitration statutes and institutional rules generally refer to arbitrators as persons who are appointed, challenged and required to fulfil duties. Arbitrators are selected because of their professional qualifications, experience and independence. Whether an AI system can fall within such statutory or contractual language is therefore a question of legal interpretation rather than technological capability.

The second issue is party consent. Consent forms the foundation of arbitration. Parties agree not only to arbitrate but, depending on the applicable rules and their arbitration agreement, to a particular method of constituting and operating the tribunal. If the parties have agreed to have their dispute determined by a human arbitrator, replacing that arbitrator with an autonomous system may raise questions about whether the original agreement has been respected. Conversely, even an express agreement to use an AI-based adjudicator may not be sufficient if mandatory provisions of the applicable arbitration law require the tribunal to consist of legally recognised arbitrators.

A related issue is independence and impartiality. Conventional arbitration law has developed mechanisms through which the independence of arbitrators can be examined. Conflicts of interest can be disclosed, objections can be raised and arbitrators can, in appropriate circumstances, be challenged. AI introduces a different form of concern. The output of a system may be affected by its training data, design choices, underlying model, instructions and data-processing methods. Bias may consequently arise without taking the form of a conventional personal or financial conflict.

The question of reasoned decision-making is equally important. An arbitral award is not merely an outcome; in jurisdictions and under rules requiring reasons, the tribunal must provide an intelligible basis for its conclusions. A sophisticated AI system may generate an apparently coherent explanation, but this does not necessarily establish that its underlying reasoning can be independently examined. If the parties cannot understand how particular evidence was weighed or why one legal argument was preferred over another, the transparency of the adjudicatory process may be questioned.

This leads directly to the problem of accountability. A human arbitrator can be subject to procedural obligations and challenge mechanisms and may bear responsibility for serious breaches of applicable standards. An AI system has no comparable legal position. If an autonomous system produces an erroneous or procedurally defective award, identifying the appropriate bearer of responsibility becomes difficult. Possible candidates might include the developer, the operator, the arbitral institution or the person who authorised the system's use. None necessarily occupies the same legal position as the arbitrator whose decision is being challenged.

### **Can AI Legally Function as an Arbitrator?**

The central question is therefore not whether AI is capable of producing a decision that resembles an arbitral award. Increasingly sophisticated systems may be capable of performing

many tasks associated with legal reasoning. The more fundamental question is whether such capability can translate into legal authority to adjudicate.

This requires examination of concepts such as legal personality, capacity, consent, jurisdiction, procedural fairness and enforceability. The ability to analyse evidence or formulate reasons does not, by itself, confer legal status. An arbitrator is not simply an entity capable of producing a conclusion. The arbitrator occupies a legally defined position within a process created by agreement and regulated by law.

This distinction between functional capability and legal recognition is likely to become central to future debates concerning AI arbitration. If the law defines an arbitrator in terms that necessarily imply a natural person, an autonomous AI system may fall outside the statutory framework regardless of its technological sophistication. If, however, arbitration law is interpreted more functionally, the possibility may emerge of recognising an AI-based system where the essential requirements of consent, fairness, impartiality, transparency and enforceability can be satisfactorily secured.

The issue also raises a broader question about the nature of adjudication. Legal decision-making has traditionally involved an element of human judgment, including the interpretation of ambiguous language, assessment of credibility and appreciation of context. Whether these functions are inherently human or can be translated into computational processes remains open to debate. More importantly for arbitration law, even if they can be computationally reproduced, it does not automatically follow that the resulting process is legally equivalent to human adjudication.

The emergence of AI thus places arbitration at an important conceptual juncture. The challenge is not simply to determine whether machines can decide disputes, but whether the legal system is prepared to recognise a machine as the holder of adjudicatory authority. This requires a reconsideration of the relationship between legal personality, consent, responsibility and decision-making.

The future of AI in arbitration may consequently develop along several possible paths. AI may remain a sophisticated tool operating under human supervision; it may become part of hybrid models in which humans and machines share aspects of decision-making; or legal systems may eventually recognise forms of autonomous algorithmic adjudication. Each possibility raises different questions concerning validity, due process and enforcement. The present legal framework was largely designed for human arbitrators, and the extent to which it can accommodate non-human decision-making remains uncertain.

The question, therefore, is not merely whether an AI system can *act like* an arbitrator. It is whether the law can treat its decision as the decision of an arbitrator. That distinction provides the starting point for examining the legal personality, accountability and legitimacy of AI-driven arbitral decision-making.

## **2. The Arbitrator as a Legal Decision-Maker: Personality, Independence and Impartiality**

At the centre of every arbitration is a decision-maker. Parties may choose arbitration because it offers flexibility, confidentiality, expertise and procedural autonomy, but ultimately, they

must place their dispute in the hands of someone whom they trust to decide it fairly. This makes the legal position of the arbitrator particularly important when considering whether artificial intelligence (AI) could ever occupy the same position. The issue is not simply whether an AI system can analyse evidence or produce a reasoned outcome. It is whether the legal responsibilities attached to the office of an arbitrator can be meaningfully imposed upon a non-human system.

Under the Arbitration and Conciliation Act, 1996, the arbitrator derives authority from the arbitration agreement and the statutory framework governing the arbitral process. Section 11 deals with the appointment of arbitrators and provides, among other things, that a “person” of any nationality may be an arbitrator, subject to the agreement of the parties. The use of the term “person” is significant in the present context. The Act was drafted around a model in which the individual appointed to decide a dispute is a legally identifiable person capable of accepting the appointment, performing the functions of the tribunal and complying with the obligations imposed by law.

An arbitrator is not merely an expert who gives an opinion. Once appointed, the arbitrator occupies a position of legal authority. The tribunal determines questions placed before it within the limits of its jurisdiction, manages the proceedings and eventually issues an award that may be enforced against the parties. The Act also provides mechanisms through which the conduct and independence of an arbitrator can be questioned. In this sense, the arbitrator stands in a relationship of responsibility towards the parties and towards the integrity of the arbitral process itself.

This human dimension becomes particularly visible in Section 12. The provision requires a prospective arbitrator to disclose circumstances that may give rise to justifiable doubts as to his or her independence or impartiality. The requirement is not limited to obvious financial conflicts. Relationships, professional connections and other circumstances that could reasonably affect confidence in the decision-maker may become relevant. The Fifth and Seventh Schedules further identify circumstances that may give rise to justifiable doubts or render a person ineligible for appointment, subject to the statutory framework for waiver.

The purpose behind these provisions is straightforward. Parties should not have to wonder whether the person deciding their dispute has a reason to favour one side. Equally, the legitimacy of arbitration can be damaged even where actual bias is absent if the surrounding circumstances create a reasonable appearance of partiality. Section 12 therefore protects both actual impartiality and confidence in the impartiality of the tribunal.

The continuing nature of this obligation is equally important. Section 12(2) requires disclosure when relevant circumstances arise during the proceedings. This recognises that independence is not something that can simply be established once, at the time of appointment, and then ignored. Relationships and circumstances can change while an arbitration is underway. The law consequently expects an arbitrator to remain attentive to situations that could affect the parties' confidence in the process.

This framework presents an interesting problem when the proposed decision-maker is an AI system. An AI does not have friendships with counsel, investments in a company, previous

professional relationships with a party or personal interests in the outcome. In that narrow sense, some of the conventional conflicts associated with human arbitrators would simply not exist. It would be tempting, therefore, to regard AI as inherently neutral.

Such a conclusion, however, would be too simple. The absence of personal interests does not necessarily mean the absence of bias. An AI system is developed by people, trained using data selected through processes and operated according to technical parameters. The information used to train or configure a system may contain patterns of human bias. The system may also be influenced by the way questions are framed, the data supplied to it and the assumptions built into its design. Bias may therefore enter the decision-making process without taking the form of a conventional conflict of interest.

This changes the nature of disclosure rather than eliminating the need for it. In the case of a human arbitrator, parties may reasonably ask: *What is your relationship with the parties or their lawyers? Do you have any financial or professional interest in the dispute?* With an AI system, the relevant questions would be different: *Who developed the system? Who owns or controls it? What data was used to train or configure it? What rules govern its decision-making? Has the system previously been used in disputes involving any of the parties? Can its outputs be independently examined?*

These questions suggest that an AI-based arbitration system would require a much broader conception of disclosure. Transparency about the technology may become as important as disclosure of personal relationships is in conventional arbitration.

Procedural fairness raises an even more fundamental concern. Arbitration is expected to provide each party with a fair opportunity to present its case. The tribunal must consider the parties' submissions and evidence and decide the dispute according to the applicable legal and procedural framework. Human arbitrators may disagree about the weight to be given to evidence, but their reasoning can ordinarily be questioned through the mechanisms provided by arbitration law.

With AI, the difficulty may lie in understanding how the system arrived at its conclusion. If an AI system identifies one witness's evidence as more credible, gives greater weight to one contractual interpretation or rejects a particular piece of evidence, the parties would need to know why. A conclusion that cannot be meaningfully explained or tested creates difficulties for procedural fairness. An apparently rational answer is not necessarily the same thing as a transparent decision-making process.

There is also a question of responsibility. If a human arbitrator makes a procedural error, there is an identifiable decision-maker whose conduct can be examined through the available legal mechanisms. With an autonomous AI system, responsibility could become fragmented between the developer, the operator, the arbitral institution and the parties who agreed to use the technology. This creates a fundamental difficulty: who is accountable for the decision?

The problem is therefore not that AI is incapable of producing neutral or consistent outcomes. In some respects, an appropriately designed system might avoid forms of personal prejudice that can affect human decision-makers. The difficulty is that arbitration law does not define impartiality solely in terms of producing an unbiased result. It connects impartiality with an

identifiable decision-maker, disclosure, challenge, procedural responsibility and confidence in the adjudicatory process.

For an AI system to occupy the position of an arbitrator, these safeguards would need to be reconsidered rather than simply transferred from the human context to the technological one. There would have to be clear standards concerning the system's design and operation, disclosure of relevant information, independent auditing, protection against bias, transparency of reasoning and allocation of responsibility for errors.

Ultimately, the legitimacy of arbitration depends upon more than the correctness of the final award. Parties must have confidence in the process through which that award is reached. The traditional arbitrator provides that confidence through a combination of professional responsibility, independence, impartiality and legal accountability. Whether an AI system can provide equivalent safeguards remains uncertain under the present statutory framework.

The challenge, therefore, is not merely to determine whether AI can *decide* a dispute. It is to determine whether parties can reasonably be expected to place their legal rights in the hands of a system that cannot presently occupy the same position of personal responsibility as a human arbitrator. That distinction lies at the heart of the debate over whether AI can move from being a tool used in arbitration to becoming an arbitrator.

### **3. AI-Generated Arbitral Awards under Indian Arbitration Law**

The possibility of an AI-generated arbitral award brings the discussion from the identity of the arbitrator to the legal status of the decision itself. An AI system may be capable of analysing pleadings, identifying relevant evidence and producing a document that resembles a conventional arbitral award. But the fact that a document looks like an award does not necessarily make it one in the eyes of law. Under the Arbitration and Conciliation Act, 1996, an arbitral award is the outcome of a legally constituted arbitral process and must satisfy certain statutory requirements. This creates an important distinction between an award generated with the assistance of AI and one in which the substantive decision has effectively been made by AI.

#### **AI-Assisted Decision-Making and Section 31**

Section 31 of the Arbitration and Conciliation Act, 1996 deals with the form and contents of an arbitral award. It requires an award to be made in writing and signed by the members of the arbitral tribunal. Section 31(3) further provides, as the general rule, that an award must state the reasons upon which it is based, subject to the exceptions recognised by the provision. A signed copy must also be delivered to each party.

At first sight, these requirements may appear largely formal. In reality, they reveal something important about the nature of an arbitral award. The award is expected to be attributable to the arbitral tribunal. The requirement of a signature connects the written decision to the legally constituted decision-maker. It is therefore difficult to treat the production of a document by an AI system as sufficient.

The position is less complicated where AI is used by a human arbitrator during the preparation of the award. An arbitrator may use technology to organise evidence, identify relevant material or assist in drafting portions of the award, while retaining responsibility for the conclusions expressed in it. In such circumstances, the award remains the decision of the tribunal.

The difficulty begins when the distinction between drafting and deciding disappears. If an AI system independently determines liability, interprets the contract, assesses evidence and generates the final conclusions, the human signature placed on the document may become little more than a formal act. This raises a deeper issue under Section 31: does a signature satisfy the statutory requirement if the person signing the award did not actually exercise the adjudicatory judgment reflected in it?

The present language of Section 31 does not expressly contemplate such a situation. The provision assumes that the members of the arbitral tribunal make and sign the award. Consequently, the use of AI may be compatible with Section 31 where it remains subordinate to the tribunal's decision-making process, but autonomous AI decision-making creates a much more difficult question of statutory interpretation.

### **Reasoned Awards, Transparency and the “Black Box” Problem**

The requirement of reasons under Section 31(3) is particularly significant in the context of AI. A reasoned award allows the parties to understand why the tribunal reached its conclusion. It also provides a basis for examining whether the tribunal considered the relevant issues and acted within the limits of its jurisdiction.

Indian courts have repeatedly recognised that reasons must be meaningful. In *Dyna Technologies Pvt. Ltd. v. Crompton Greaves Ltd.*, the Supreme Court emphasised the importance of intelligible reasoning and cautioned against setting aside awards merely because every aspect of the reasoning has not been elaborately discussed. The broader principle is that reasons should be understandable and adequate in light of the issues that arise in the particular dispute. This approach has subsequently been discussed in cases dealing with the distinction between inadequate reasoning and reasoning that is effectively unintelligible.

This becomes particularly relevant when an AI system is involved because of what is commonly described as the “black box” problem. An AI model may produce a clear conclusion without providing a transparent account of the internal process through which that conclusion was reached. The final text may appear logical while the underlying computational process remains difficult, or in some cases impossible, for the parties to reconstruct.

For arbitration, this presents a serious concern. A reasoned award cannot be reduced to a conclusion accompanied by persuasive language. The reasons must provide a sufficiently intelligible connection between the issues raised, the evidence considered and the conclusions reached. An AI-generated explanation may satisfy the appearance of reasoning while leaving unanswered the more fundamental question of how the system evaluated competing evidence or selected one legal interpretation over another.

The problem is particularly acute where the AI system has relied upon data or internal processes that cannot be disclosed or independently examined. A party challenging an award may reasonably ask whether the system relied upon incorrect information, misunderstood a submission or reproduced a pattern from its underlying data that affected the outcome.

The challenge, therefore, is not simply to demand that AI “explain itself.” What is required is a level of transparency sufficient to allow the parties and, where necessary, a reviewing court to understand the basis of the decision.

### **Challenges to AI-Generated Awards under Section 34**

Section 34 provides the principal statutory mechanism for challenging an arbitral award before an Indian court. The provision permits recourse to the court only through an application for setting aside the award and specifies limited grounds for interference. These include incapacity of a party, invalidity of the arbitration agreement, inability to present one's case, decisions beyond the scope of the submission to arbitration and defects in the composition of the tribunal or the arbitral procedure. The provision also recognises certain public-policy grounds, while Section 34(2A) permits challenge on the ground of patent illegality appearing on the face of the award in arbitrations other than international commercial arbitrations.

Several of these grounds could become relevant if an award were generated autonomously by AI.

First, the composition of the tribunal could be questioned. If the applicable arbitration agreement or law requires a human arbitrator, the appointment of an AI system may itself raise an objection under Section 34(2)(a)(v), which concerns the composition of the tribunal or the arbitral procedure.

Second, the award could be challenged where a party was unable to present its case. For example, if an AI system improperly filtered evidence, misunderstood submissions or relied upon material that was never properly placed before the tribunal, the issue would not simply be technological error. It could become a question of procedural fairness.

Third, the reasoning of the award may become relevant. A decision that provides no intelligible reasons may conflict with the statutory requirement in Section 31(3). Indian judicial decisions have recognised that an unintelligible or fundamentally unreasoned award can justify judicial intervention within the boundaries of Section 34.

At the same time, the existence of an AI-related error should not automatically result in the setting aside of an award. Section 34 establishes a limited form of judicial review, and courts do not ordinarily sit as appellate bodies to reconsider the merits of an arbitral tribunal's factual or legal conclusions. Section 34(2A), for example, expressly states that an award cannot be set aside merely because of an erroneous application of law or reappreciation of evidence.

This distinction will be important in future cases. The issue should not simply be whether an AI system made a mistake. The more relevant question would be whether the manner in which the AI system was used resulted in a legally recognised defect in the arbitral process or award.

### **Consent, Validity and Enforceability**

The most fundamental issue may arise before the award is even examined on its merits: did the parties consent to have their dispute decided in this manner?

Consent is central to arbitration. Parties agree to submit their dispute to arbitration on the understanding that the procedure and tribunal will operate within the legal framework applicable to their agreement. If the parties expressly agreed to an AI-based system, the question would be whether such an agreement is legally permissible. If they agreed to arbitration before human arbitrators but one party subsequently introduced an autonomous AI system into the decision-making process, the position would be considerably more problematic.

The distinction matters because an arbitration agreement cannot be treated merely as consent to receive an answer. It represents consent to a particular form of adjudication. The identity and authority of the decision-maker are therefore connected to the legitimacy of the resulting award.

Enforceability presents a further difficulty. Under Indian law, an award must emerge from a valid arbitral process and comply with the requirements of the Arbitration Act. A court considering enforcement or a challenge may therefore have to look beyond the text of an AI-generated award and examine how it was produced. If the system was not legally capable of acting as the tribunal, or if its involvement fundamentally altered the agreed arbitral procedure, the issue could affect the validity of the award itself.

This suggests that the future legal treatment of AI-generated awards may depend upon distinguishing AI as a means of producing an award from AI as the source of adjudicatory authority. In the former case, the technology may remain comparable to other tools used by arbitrators, provided the human tribunal retains genuine control over the decision. In the latter, the problem becomes structural: the validity of the award may depend upon whether Indian arbitration law recognises the AI system as capable of exercising the authority attributed to an arbitrator.

The emerging challenge is therefore not simply technological. It concerns the foundations of arbitral legitimacy. Section 31 requires an award that can be attributed to the tribunal, understood through its reasons and authenticated through the statutory requirements. Section 34, in turn, provides a limited but important mechanism through which defects in the arbitral process and award can be examined. An autonomous AI-generated award would have to satisfy both sides of this framework.

Ultimately, the central concern is whether an AI-generated decision can provide the same legal traceability as a human arbitral award: who made the decision, on what basis, under what authority, and with what responsibility? Until these questions receive clearer answers, the use of AI in producing arbitral awards is likely to remain legally safer when the technology supports, rather than replaces, the human tribunal.

#### **4. Accountability and Comparative Legal Perspectives**

The question of accountability becomes unavoidable once artificial intelligence moves beyond a supporting role and begins to influence, or potentially determine, the outcome of an arbitral dispute. A human arbitrator can be identified as the author of an award and can be subject to the procedural duties imposed by arbitration law. With AI, responsibility may be distributed across several actors: the developer who created the system, the user who deployed it, the arbitral institution that permitted its use, and the human arbitrator or supervisor who relied upon its output. Determining where responsibility should lie is therefore one of the most difficult aspects of introducing AI into arbitral decision-making.

##### **Responsibility for Erroneous or Biased AI-Generated Decisions**

An erroneous AI-generated decision cannot be treated as merely a technical malfunction when it has legal consequences for the parties. An arbitral award may determine substantial

commercial rights and liabilities, and errors in the decision-making process can therefore affect the validity and enforceability of the award.

The problem becomes more complicated when an AI system produces a biased outcome. Bias may arise at different stages: from the data used to develop the system, from the assumptions incorporated into its design, from the instructions given to it, or from the material supplied during a particular arbitration. It may also result from an inability of the system to understand contextual or legally significant distinctions that a human arbitrator would ordinarily consider. Attribution is consequently difficult. Suppose an AI system incorrectly identifies a contractual obligation and produces an award based on that interpretation. The error could potentially be attributed to the system's developer, the person who supplied the relevant instructions, the arbitrator who accepted the output without sufficient scrutiny, or the institution that authorised the system. Each possibility raises a different legal question.

This suggests that accountability in AI-based arbitration cannot depend exclusively upon the idea of fault by the machine. An AI system does not possess legal responsibility in the conventional sense. Responsibility must instead be located within the network of human and institutional actors who design, deploy, supervise and rely upon the technology.

#### **Developers, Users, Institutions and Human Supervisors**

The developer occupies an important position because the architecture of an AI system can influence its behaviour. Developers determine, among other things, how a model is trained, what safeguards are incorporated and how the system processes information. Where an identifiable defect in the system causes foreseeable harm, questions may arise concerning the developer's responsibilities under the applicable legal framework.

The user occupies a different position. An AI system may be reliable when used for document organisation but unsuitable for determining credibility or interpreting complex legal provisions. The person or organisation deploying the technology therefore has a responsibility to understand its limitations and to use it within an appropriate context.

In arbitration, this responsibility may fall upon the arbitral tribunal, counsel, parties or institution depending upon the manner in which the technology is introduced. A human arbitrator who relies substantially upon an AI-generated analysis cannot necessarily avoid responsibility by arguing that the conclusion originated with the software. If the arbitrator remains the legally recognised decision-maker, the ultimate responsibility for the award would ordinarily continue to rest with the tribunal.

This raises the importance of human supervision. Supervision cannot simply mean placing a human signature at the end of an AI-generated document. If the human decision-maker has not independently examined the evidence and reasoning, formal human involvement may provide little additional protection. Meaningful supervision requires the ability to question, verify and, where necessary, reject the system's output.

Arbitral institutions may also have a role. Institutional rules and procedural guidance can determine whether parties should be informed about the use of AI, whether confidential information may be supplied to external AI systems, and what safeguards should apply where AI is used in preparing an award. Institutions may therefore become an important layer of

governance even where the underlying arbitration remains governed by national arbitration legislation.

The allocation of responsibility should accordingly reflect the actual role played by each actor. A developer responsible for a technical defect should not necessarily bear the same responsibility as an arbitrator who knowingly relies upon an unreliable output. Similarly, an institution that merely permits the use of AI cannot automatically be treated as responsible for every error produced by the system. The circumstances of each case would matter.

### **Comparative Perspectives: UNCITRAL and the International Development of AI Governance**

The international regulatory response to AI in dispute resolution is still developing. There is currently no universally accepted international framework that recognises autonomous AI as an arbitrator. Instead, international organisations and arbitral institutions are examining how existing principles of arbitration should respond to the growing use of AI.

UNCITRAL provides an important illustration of this developing approach. Its Working Group II has been examining technology-related dispute resolution and adjudication, including the use of AI in arbitration and mediation. In February 2026, UNCITRAL organised a colloquium specifically addressing the use of AI in dispute resolution and remote hearings. One of its panels focused on arbitrators' use of AI and the possible implications for the recognition and enforcement of arbitral awards.

The significance of this development lies in the fact that UNCITRAL's work is presently concerned with practical and procedural questions rather than simply treating AI as a theoretical possibility. Its materials identify differences in current practice, including whether arbitrators seek party agreement before using AI and whether they disclose such use in the award. The discussions also recognise that AI can be used for both substantive tasks, such as document review and case analysis, and procedural tasks, such as scheduling and case management.

UNCITRAL's broader arbitration framework remains centred on party agreement, procedural fairness and the recognition and enforcement of arbitral awards. The UNCITRAL Arbitration Rules regulate matters including appointment of arbitrators, conduct of proceedings and the form and effect of awards. The organisation's continuing work on AI therefore illustrates an incremental approach: technological developments are being considered within the existing architecture of arbitration rather than through an immediate assumption that AI should replace human adjudicators.

The European Union has taken a more explicit regulatory approach through the EU Artificial Intelligence Act. The Act treats certain AI systems used by judicial authorities or on their behalf for researching and interpreting facts and law and applying law to specific facts as high-risk systems. Importantly for arbitration, the Act also refers to AI systems intended for use by alternative dispute resolution bodies where the outcomes have legal effects for the parties. The legislative approach is based partly on concerns about bias, errors and opacity. At the same time, the EU framework states that AI may support judicial decision-making but should not replace it, and that final decision-making must remain a human-driven activity.

This approach is particularly relevant to the question of AI arbitrators because it distinguishes between using AI within adjudication and transferring adjudicatory authority to AI. The former can be regulated through requirements relating to risk management, transparency and human oversight, whereas the latter raises a more fundamental question about who is legally entitled to make the decision.

International developments outside these specific frameworks also demonstrate that the debate is moving towards questions of governance rather than technological possibility alone. UNCITRAL's continuing work, for example, includes consideration of AI in dispute resolution alongside broader work on electronic arbitral awards and their recognition and enforcement. This is significant because the future use of AI in international arbitration will inevitably intersect with the question of whether an award generated or substantially influenced by technology can be recognised across jurisdictions.

### **Towards a Framework of Shared Accountability**

The comparative position suggests that a workable approach to AI in arbitration will require several layers of accountability. First, the technology itself must be subject to appropriate standards concerning reliability, transparency and data governance. Secondly, the person or institution deploying the system must understand its limitations and use it within defined boundaries. Thirdly, where a human arbitrator remains responsible for the award, that responsibility cannot be transferred simply by attributing the reasoning to an AI system.

There is also a need for procedural transparency. Parties should know when AI has played a material role in the determination of their dispute, particularly where the technology has influenced the assessment of evidence or substantive reasoning. Disclosure can enable parties to raise concerns at an early stage rather than waiting until enforcement or setting-aside proceedings.

The comparative developments also reveal an important difference between regulatory strategies. The EU approach expressly emphasises human control in legally significant decision-making, while UNCITRAL is presently engaged in developing guidance and examining the implications of AI for arbitration and enforcement. Neither approach presently establishes a general international legal personality for AI arbitrators. Instead, the emerging emphasis is on ensuring that technological innovation does not undermine procedural safeguards that give arbitration its legitimacy.

For Indian arbitration law, these developments provide useful points of comparison. The Arbitration and Conciliation Act, 1996 was designed around human arbitrators and existing concepts of consent, independence, impartiality and responsibility. As AI becomes more sophisticated, these concepts may require clarification rather than abandonment. The objective would not necessarily be to prevent technological innovation, but to ensure that responsibility remains identifiable when technology becomes part of the decision-making process.

Ultimately, the central accountability question is relatively simple even if its legal answer is not: when an AI system participates in deciding a dispute, who stands behind the decision? Until that question can be answered clearly, the use of AI in arbitral adjudication will remain closely connected to the human actors who design, operate and supervise it. The future

development of AI arbitration will therefore depend not only on what the technology can do, but on whether legal systems can construct a framework in which technological decision-making remains transparent, contestable and attributable.

### **5. The Way Forward: Towards a Human-Centred Model of AI Arbitration**

The future of artificial intelligence in arbitration should not be framed as a choice between embracing technology and protecting the traditional arbitral process. The more useful question is how the two can coexist without compromising the values on which arbitration depends. AI can process information at a scale and speed that would be difficult for an individual arbitrator to match. It can assist with large documentary records, identify inconsistencies, organise evidence and support legal research. But arbitration is ultimately concerned with the resolution of human disputes. The parties do not merely seek an answer; they seek a process in which their arguments are heard, their evidence is considered and the decision is taken by a body that can be held responsible for the outcome.

A sensible future model should therefore place AI alongside the arbitrator rather than in place of the arbitrator.

#### **AI as an Assistive Rather than Autonomous Arbitrator**

The most immediate and legally workable model is one in which AI remains an assistive technology. Under this approach, the tribunal may use AI for tasks such as document analysis, chronology preparation, identification of authorities, translation, transcription and preliminary organisation of evidence. The technology can make the arbitral process more efficient without becoming the source of adjudicatory authority.

The distinction is important because efficiency and adjudication are not the same thing. An AI system may identify 500 documents relevant to a contractual dispute within seconds, but relevance does not necessarily determine evidentiary value. A human arbitrator may recognise that a particular document, although apparently relevant, was prepared for a different purpose or must be understood in the context of oral evidence. Similarly, an algorithm may identify a pattern in previous cases without appreciating why a particular precedent should or should not apply to the facts before the tribunal.

Human judgment remains especially important where the dispute involves ambiguity, credibility, commercial context or competing interpretations of the same evidence. These are not necessarily problems that disappear with more powerful technology.

This does not mean that AI should be treated with suspicion. On the contrary, its greatest contribution may be achieved when it performs those tasks for which computational systems are particularly well suited, while the arbitrator retains responsibility for questions requiring legal judgment. The objective should be complementarity rather than substitution.

#### **Human Oversight and Responsibility for the Final Award**

If AI is used in arbitration, human oversight must be more than a formality. The presence of a human arbitrator at the end of the process should not become a legal fiction in which the arbitrator simply signs an award generated by a machine.

The arbitrator must retain genuine control over the reasoning process. This means being able to examine the material relied upon by the AI system, test its conclusions, identify errors and depart from its recommendations. The final award must represent the tribunal's own judgment. This principle is particularly important because an AI system can produce an answer that appears convincing. The danger is not necessarily that the output will be obviously wrong. A more subtle problem may arise where an incorrect assumption is presented in fluent and authoritative language. A human reader may be inclined to accept the conclusion precisely because it appears coherent.

Meaningful oversight should therefore include a degree of professional scepticism. Arbitrators should be encouraged to ask what material the system considered, what it may have overlooked and whether its conclusion can be independently verified. Where an AI system produces a substantive analysis, the tribunal should be able to explain why it accepted or rejected that analysis.

Most importantly, responsibility for the award should remain with the human tribunal. The use of AI should not create a situation in which responsibility becomes impossible to locate. If an award is legally defective, the fact that the tribunal relied upon an AI system should not by itself provide an escape from the obligations imposed upon arbitrators.

The principle can be stated simply: AI may assist the arbitrator, but it should not become an excuse for the arbitrator to stop thinking.

#### **Disclosure: The Parties Should Know When AI Matters**

One of the first safeguards required for responsible use of AI is disclosure. Parties should not discover only after an award has been issued that a significant part of the tribunal's reasoning was produced or influenced by an AI system.

Disclosure need not mean that every minor technological tool used during an arbitration must be reported. Requiring disclosure of every use could become impractical and might discourage useful technological innovation. A more proportionate approach would distinguish between routine administrative uses and material uses that affect substantive decision-making.

For example, the use of AI for transcription may not raise the same concerns as the use of an AI system to analyse evidence or formulate substantive conclusions. Where AI has materially influenced the tribunal's assessment of evidence or legal reasoning, the parties should have an opportunity to know that fact and, where appropriate, raise objections.

Institutional rules could establish this distinction and require tribunals to disclose material use of AI while allowing ordinary administrative applications to remain outside the disclosure requirement.

#### **Transparency and Auditability**

Disclosure alone is insufficient if the parties cannot understand how the technology was used. A human-centred model should therefore require a reasonable level of transparency.

This does not necessarily mean revealing proprietary source code or commercially sensitive information. It means making the decision-making process sufficiently understandable to allow the parties to assess whether the technology was used appropriately.

A tribunal using AI for substantive analysis should, where relevant, be able to identify:

- the AI system or category of system used;
- the purpose for which it was used;
- the material provided to it;
- the extent to which its output influenced the tribunal;
- whether the output was independently verified; and
- who retained responsibility for the final conclusion.

This could be accompanied by an audit trail recording significant AI interactions during the arbitration. Such a record would become particularly valuable if the award were subsequently challenged. Instead of asking a court to speculate about how AI affected the proceedings, the record could demonstrate what role the technology actually played.

Auditability is therefore not simply a technological safeguard. It can become a procedural safeguard. It creates a traceable connection between the information provided to the system, the output produced and the human decision ultimately reflected in the award.

### **Confidentiality and Data Protection**

Confidentiality presents a particularly important concern in arbitration. Parties frequently submit commercially sensitive contracts, financial information, trade secrets, technical material and personal data. Sending such material to an external AI platform without adequate safeguards could create risks that did not previously exist in conventional arbitral practice.

Any framework governing AI in arbitration should therefore address where arbitral data is stored, who can access it, whether the information is retained, whether it can be used for further model training and what security measures apply. Parties should also be informed where their confidential material is being processed by an external provider.

This is an area where technological convenience should not override the basic expectations of arbitration. The fact that an AI platform can process information efficiently does not mean that confidential arbitral material should automatically be uploaded to it.

Institutional rules could require tribunals and parties to undertake a basic confidentiality and data-risk assessment before using AI with sensitive arbitral material. Higher-risk applications could require express consent or additional security measures.

### **The Need for Indian Legal and Institutional Guidelines**

India is well placed to develop a structured approach to AI in arbitration before the technology becomes sufficiently embedded to make regulation reactive rather than anticipatory. The Arbitration and Conciliation Act, 1996 contains important principles concerning appointment, independence, impartiality, procedure and arbitral awards, but it does not expressly address the use of AI in the arbitral process.

This does not necessarily mean that a completely new statute is required at the outset. A more practical approach could begin with institutional guidelines and professional standards, followed, where necessary, by legislative clarification.

Indian arbitral institutions could develop rules addressing at least four areas.

**First, disclosure.** Institutions could require disclosure where AI has materially contributed to substantive analysis or the preparation of an award.

**Second, human responsibility.** Institutional rules could make clear that the arbitrator remains responsible for the award even where AI has been used extensively during the proceedings.

**Third, confidentiality and data governance.** Institutions could establish minimum standards concerning the handling of confidential documents and personal data by AI systems.

**Fourth, auditability and record keeping.** Where AI is used for substantive purposes, tribunals could be encouraged or required to maintain sufficient records to establish how the technology was used.

There is also scope for arbitral institutions to develop approved protocols or secure AI environments rather than leaving individual arbitrators to decide independently which commercial systems are appropriate. Such an approach could reduce uncertainty while allowing technological experimentation within controlled boundaries.

Indian courts may eventually have an important role in clarifying how existing provisions apply to AI-driven arbitration. Questions concerning Section 12, Section 31 and Section 34 may arise in cases where AI has played a significant role in the constitution of the tribunal, the reasoning process or the preparation of the award. Judicial decisions could gradually establish principles without requiring every technological development to be anticipated in legislation.

#### **Towards a Human-Centred Model**

The objective should not be to preserve human involvement merely because arbitration has traditionally been conducted by humans. The stronger argument is that certain aspects of adjudication require accountability, explanation and responsibility, and these qualities must remain identifiable even when technology performs a substantial part of the analytical work.

A useful model for India could therefore be built around a simple principle: AI may expand the capabilities of the arbitral tribunal, but it should not displace the tribunal itself.

Under such a model, AI could perform computationally intensive tasks while arbitrators retain control over legal interpretation, evaluation of contested evidence and the final determination of the dispute. Parties would know when AI has played a material role. The use of the technology would be documented sufficiently to permit later scrutiny. Confidential information would be protected through appropriate technical and procedural safeguards. Most importantly, the final award would remain attributable to identifiable human decision-makers.

Such a framework would also leave room for the law to evolve. It would not permanently close the possibility of autonomous AI adjudication. If technology eventually develops to a point where its decision-making can be independently verified, its operation can be transparently audited and a satisfactory mechanism of legal responsibility can be established, the question may have to be reconsidered. For the present, however, there is a meaningful distinction between technological capability and legal legitimacy.

The future of arbitration should therefore not be presented as a contest between the human arbitrator and the machine. The more constructive possibility is a human–AI partnership, in which each performs functions for which it is comparatively suited. AI can bring speed, scale and analytical capacity; the human arbitrator can provide judgment, contextual understanding and legal responsibility.

Ultimately, the legitimacy of arbitration rests on the confidence of the parties that another human being, entrusted with legal authority, has genuinely heard and considered their dispute. Technology can strengthen that process, but it should not make the decision-maker invisible. The most sustainable model of AI arbitration is consequently one in which the technology remains powerful enough to assist the tribunal, but never so opaque or autonomous that the parties can no longer identify who decided their dispute, why it was decided that way, and who is answerable for the decision.

That may be the most important principle for the future development of AI in arbitration: innovation should change the way arbitration works but not eliminate the human accountability that makes the process worthy of trust.

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