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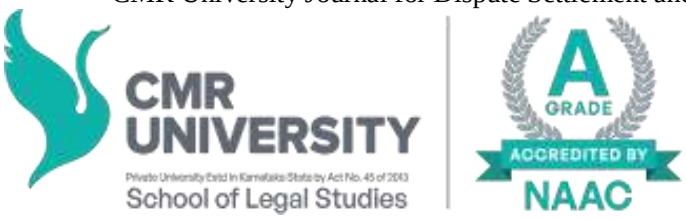

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THE DOUBLE-EDGED SWORD: HOW AI – DRIVEN SELECTION AND DIGITALIZATION ARE REDEFINING ACCESS AND NEUTRALITY IN INTERNATIONAL ARBITRATION

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Introduction

"Instruments of justice, like the societies they serve, are never static; they evolve in response to the pressures placed upon them." — Sir Robert Megarry[1]

International arbitration has never been static, but its capacity to adapt without compromising internal coherence is now being tested at a structural level[2]. Computational systems no longer operate at the margins of arbitral practice. They intervene at discrete procedural stages: arbitrator selection is mediated through ranking algorithms that weight prior appointments and subject-matter tags[3]; document review relies on supervised classification systems trained on labelled datasets[4]; and evidentiary retrieval increasingly incorporates a large language model–assisted semantic search, which reorganises relevance around probabilistic similarity rather than exact match. Hearings conducted on digital platforms further constrain interaction through pre-structured interfaces and time allocation protocols[5]. These interventions do not merely assist adjudication but instead they reshape how information is generated, filtered, and presented before the tribunal engages with it.

The claim advanced here is narrow but doctrinally consequential. The integration of such systems places

[1] Robert Megarry, A New Miscellany-at-Law: Yet Another Diversion for Lawyers and Others 392 (Bryan A. Garner ed., 2005).
[2] Sch. of Int'l Arb., Queen Mary Univ. of London & White & Case, 2025 International Arbitration Survey: The Path Forward 5–8 (2025).
[3] Pietro Ortolani, The Impact of Artificial Intelligence on International Commercial Arbitration, 116 Am. Soc'y Int'l L. Proc. 177, 178 (2022).
[4] Bryan Cave Leighton Paisner, Annual Arbitration Survey 2023: AI in International Arbitration 14–16 (2023).
[5] Maxi Scherer, Remote Hearings in International Arbitration: An Analytical Framework, 37 J. Int'l Arb. 407, 412–15 (2020).

pressure on the principle of procedural equality under Article 18 of the UNCITRAL Model Law[6]. That provision guarantees equal treatment and a full opportunity to present one's case, and is conventionally interpreted to prohibit procedural discrimination while tolerating asymmetries in resources. The argument developed in this paper is that certain forms of technological asymmetry fall outside that tolerated range. Where computational tools generate non-replicable informational advantages that affect the identification, organisation, or deployment of material evidence within procedural timelines, the resulting disparity is not merely external. It operates within the adjudicative process itself.

This interpretation is reflected in enforcement jurisprudence, where courts have consistently emphasised that Article V(1)(b) of the New York Convention[7] is engaged not by mere procedural imperfection, but by substantial deprivation of the right to be heard. In ***Minmetals Germany GmbH v Ferco Steel Ltd*** [8] The court held that enforcement may be refused where a party is "unable to present its case" in a manner that affects the fairness of proceedings. Similarly, in ***Iran Aircraft Industries v Avco Corp***[9], the court emphasised that the standard requires a showing of procedural prejudice, not merely formal irregularity. These cases establish that the threshold is functional, not formal, a distinction central to the present argument.

This matters because enforcement doctrine is sensitive to internal impairment. Article V(1)(b)[10] permits refusal of enforcement where a party was "unable to present his case." Judicial interpretation has traditionally confined this standard to clear procedural denial, such as a lack of notice or inability to participate. The question raised here is whether technologically induced informational asymmetry can, under certain conditions, meet that threshold.

To move beyond assertion, this paper proposes a structured inquiry. A violation of procedural equality arises where four conditions converge: (i) one party deploys computational systems that generate a material informational advantage through data access, model capability, or processing speed; (ii) the

[6] UNCITRAL Model Law on International Commercial Arbitration art. 18, U.N. Doc. A/40/17, annex I (1985), *as amended by* U.N. Doc. A/61/17, annex I (2006).
[7] Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. V(1)(b), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3.
[8] Minmetals Germany GmbH v. Ferco Steel Ltd., [1999] 1 All E.R. (Comm) 315 (Q.B.).
[9] Iran Aircraft Indus. v. Avco Corp., 980 F.2d 141 (2d Cir. 1992).
[10] Supra note 7.

advantage affects the timely identification or strategic deployment of evidence or argument; (iii) the opposing party cannot reasonably replicate or mitigate that advantage within the procedural framework; and (iv) the disparity creates a plausible effect on the outcome. This formulation does not collapse all technological disparity into doctrinal violation. It isolates those instances where asymmetry translates into impairment.

This formulation aligns with a line of reasoning in arbitral practice that treats procedural equality as substantive opportunity rather than formal symmetry, as reflected in tribunal reasoning in ***Methanex Corporation v United States***[11], where the tribunal emphasised the importance of a meaningful opportunity to present evidence rather than a merely nominal one.

Recent empirical data confirms that this shift is not theoretical but systemic. The 2023 BCLP Annual Arbitration Survey reports that over 70% of arbitration users have adopted or are considering AI-assisted tools, particularly in document review and case analytics[12]. Meanwhile, the 2025 Queen Mary University of London and White & Case Survey, based on data collected in 2023–2024, indicates that 90% of respondents expect to use AI for document review and research[13].

The broader context sharpens the stakes. Arbitration now operates across jurisdictions and industries with increasing scale, and institutional caseloads continue to expand. In response, computational systems have shifted from optional tools to embedded components of practice. Their outputs are derived from historical data, and their operation depends on feature selection, training labels, and optimization functions that are rarely transparent to opposing parties. The result is not neutrality by default, but structured dependence on prior patterns.

The appeal of these systems is straightforward. They reduce time, compress cost, and introduce a degree of consistency in handling large datasets. Yet efficiency is not normatively neutral. Systems trained on historical distributions reproduce those distributions unless deliberately adjusted, and actors with greater access to data, compute, and technical expertise are better positioned to exploit these tools. The relevant

[11] Methanex Corp. v. United States, Final Award on Jurisdiction and Merits, 44 I.L.M. 1345 (NAFTA Ch. 11 Arb. Trib. 2005)
[12] Supra note 4
[13] Supra note 2

question is not whether such advantages exist, but when they become legally cognisable.

This paper proceeds from that problem. It argues that artificial intelligence does not simply optimize arbitration; it alters the conditions under which equality is assessed, and in doing so, exposes a gap between formal doctrine and functional reality.

The Efficiency Gains

The efficiency gains associated with computational systems are most apparent in domains characterised by scale and repetition, particularly document review and arbitrator selection. These gains are real, but their operation requires technical precision.

Document review tools typically rely on supervised machine learning, often described as predictive coding. A model is trained on a labelled subset of documents, where human reviewers classify relevance, and then applied to a larger corpus to prioritise or exclude material. More recent systems incorporate large language models to enable semantic retrieval, identifying documents based on contextual similarity rather than keyword matching. These systems optimize for recall and precision under defined parameters, but their performance depends on training data quality, label consistency, and feature representation.

Empirical studies demonstrate that technology-assisted review can reduce document review time by up to 70–80% and costs by approximately 50–70% compared to traditional linear review. However, courts have also acknowledged that such systems alter the structure of evidentiary discovery[14]. In ***Da Silva Moore v Publicis Groupe***[15], one of the earliest judicial endorsements of predictive coding, the court recognised that algorithmic prioritisation shapes the evidentiary record itself, not merely its processing.

Arbitrator selection tools operate differently. They are not predictive in the same sense, but rely on multi-factor ranking systems that weight variables such as prior appointments, subject-matter experience, and institutional affiliations. The design of these systems embeds choices about which attributes matter and how they are quantified. Frequency of appointment, for example, often functions as a proxy for suitability,

[14] Maura R. Grossman & Gordon V. Cormack, Technology-Assisted Review in E-Discovery Can Be More Effective and More Efficient Than Exhaustive Manual Review, 17 Rich. J.L. & Tech. 11, 43 (2011).
[15] Moore v. Publicis Groupe**,** 287 F.R.D. 182 (S.D.N.Y. 2012).

introducing a feedback loop in which past visibility generates future selection.

This dynamic mirror concerns raised in institutional practice regarding repeat appointments. In ***Hrvatska Elektroprivreda v Slovenia***[16]The tribunal addressed issues of arbitrator independence arising from overlapping professional networks, highlighting how structural visibility can influence selection outcomes. Algorithmic ranking systems risk formalising and accelerating these same dynamics through data-driven weighting.

The distinction matters because efficiency is produced through specific mechanisms. In document review, the advantage arises from the ability to process large datasets rapidly and identify relevant material within compressed timelines. In selection systems, advantage arises from structured visibility and the prioritisation of certain profiles. In both cases, the system does not "decide" outcomes, but it shapes the informational field within which decisions are made.

Human judgment remains central, but it is mediated. Information reaches the decision-maker after filtration, classification, and ranking. The relevant shift is not the displacement of judgment, but its conditioning. Upstream design choices: training labels, feature selection, weighting criteria, etc affect downstream reasoning in ways that are not always visible within the procedural record.

This creates a distinction between efficiency and neutrality. Alignment with past outcomes reflects consistency within a given dataset, not normative correctness. Where historical practices exhibit concentration or bias, systems trained on those practices will reproduce them unless adjusted. The efficiency gains are therefore inseparable from the structure of the data and the assumptions embedded in model design.

The Digital Access Gap

The central issue is not efficiency itself, but its interaction with unequal access. Arbitration has always tolerated disparities in resources, including differences in legal representation and funding. The question

[16] Hrvatska Elektroprivreda d.d. v. Republic of Slovenia, ICSID Case No. ARB/05/24, Award (Dec. 17, 2015)

is whether computational asymmetry introduces a different category of disadvantage.

The strongest counter-argument is straightforward: access to AI tools is functionally analogous to access to better counsel. Parties have always operated under unequal conditions, and arbitration has never required parity. On this view, technological advantage is simply another instance of permissible asymmetry.

That position is incomplete. Computational asymmetry differs along three dimensions.

First, scale. Machine-assisted systems allow the processing of large evidentiary datasets within timelines that would otherwise be prohibitive. This compresses the window for effective response. A party without access to such tools may be unable to identify critical material in time, even with competent counsel.

Second, opacity. The internal logic of these systems: whether in document classification or ranking is not readily accessible to opposing parties. Unlike legal argument, which is contestable on the record, algorithmic outputs often appear as neutral artefacts without exposing the assumptions that produced them.

Third, feedback effects. Systems trained on historical data reinforce existing patterns through repeated use. In arbitrator selection, frequent prior appointments increase future visibility. In document review, training sets shape relevance criteria that persist across cases.

These features interact. A party with access to advanced tools can identify, structure, and deploy evidence with a degree of precision that is difficult to replicate within procedural constraints. The resulting advantage is not merely quantitative. It affects the architecture of the argument itself.

Consider a scenario analogous to document production disputes addressed in ***Libananco Holdings Co Ltd v Turkey***[17]**,** where the tribunal scrutinised the integrity and accessibility of evidentiary material. If one party deploys supervised machine learning to identify key documents within millions of files while the opposing party relies on manual review and misses critical evidence within a fixed procedural timeline, the disparity is not merely strategic. It affects the substantive completeness of the evidentiary record before

[17] Libananco Holdings Co. v. Republic of Turk., ICSID Case No. ARB/06/8, Decision on Preliminary Issues (June 23, 2008).

the tribunal.

Courts have consistently required a showing that the procedural defect had a causal impact on the ability to present the case. In ***China Nanhai Oil Joint Service Corp v Gee Tai Holdings Co Ltd***[18]**,** the court emphasised that the inability must be real and consequential, not speculative. This reinforces the need to demonstrate that technological asymmetry produces identifiable evidentiary or argumentative loss, rather than abstract disadvantage.

Empirical evidence confirms that this asymmetry is systemic. Approximately 65–75% of large law firms and multinational corporate legal departments now utilise AI-assisted document review tools, compared to less than 30% adoption among smaller firms and state-linked entities[19]. Machine-assisted systems have been shown to process documents up to ten times faster than manual review in large datasets[20]. Adoption also varies across jurisdictions, with significantly higher uptake in North America and Western Europe than in emerging arbitration hubs[21].

Cybersecurity constraints introduce a related dimension. Parties lacking secure infrastructure may limit their use of digital tools, not by choice but by necessity. This affects participation indirectly, altering strategy and engagement with procedural mechanisms.

The result is not exclusion, but stratification. Participation remains formally open, yet functionally uneven. Where that unevenness produces a demonstrable impact on the ability to present a case, it becomes relevant under Article V(1)(b)[22]. The burden of proof remains high, but the category of potential violation is broader than traditionally recognised.

Synthesis and Recommendations

Empirical indicators from institutional reporting and industry studies suggest that the adoption of AI-

[18] China Nanhai Oil Joint Serv. Corp. Shenzhen Branch v. Gee Tai Holdings Co., [1995] 2 HKLR 215 (H.C.).
[19] Supra note 8.
[20] Supra note 14
[21] Supra note 4.
[22] Supra note 7.

assisted tools is uneven across parties and jurisdictions. Over 70% of large international law firms employ AI-assisted review and analytics tools, compared to approximately 25–35% of smaller firms and state-affiliated parties.[23] This uneven adoption correlates with procedural choices, including increased reliance on digital hearings and compressed evidentiary timelines[24].

Reform must proceed along doctrinal and procedural lines.

First, disclosure. Parties should be required to disclose the use of AI-assisted systems where such use materially affects document review, evidentiary organisation, or arbitrator selection. Disclosure does not require the revelation of proprietary models, but it enables tribunals to assess whether asymmetry may arise. Disclosure obligations find analogues in existing procedural duties, including conflicts disclosure, third-party funding transparency, and document production methodologies. Extending this logic to AI-assisted processes is doctrinally consistent rather than novel.

Second, procedural calibration. Tribunals should exercise existing powers to adjust timelines, evidentiary phases, and hearing formats where technological disparity risks impairing participation. This does not require doctrinal innovation, but a more explicit recognition of the problem within procedural orders.
Third, data governance. The development of shared or auditable datasets for arbitrator selection would reduce reliance on opaque proprietary systems. While politically complex, this direction aligns with broader trends in transparency and accountability.

Fourth, doctrinal clarification. Courts reviewing enforcement under Article V(1)(b)[25] should articulate how informational asymmetry interacts with the standard of "unable to present his case." The four-part framework proposed here provides a starting point, but requires refinement through judicial application.
Failure to disclose material use of AI systems that affects evidentiary construction could, in principle, support enforcement challenges where non-disclosure contributes to demonstrable prejudice under Article V(1)(b)[26]. This would align with judicial reasoning emphasising transparency as a component of procedural fairness, as reflected in ***Karaha Bodas Co LLC v Perusahaan Pertambangan Minyak Dan***

[23] Supra note 4.
[24] Supra note 2.
[25] Supra note 7.
[26] Ibid.

***Gas Bumi Negara*[27].**

These measures do not eliminate asymmetry. They render it visible and subject to assessment within existing legal structures.

Conclusion

International arbitration continues to evolve under the pressure of technological change. Computational systems have increased efficiency and expanded the capacity to manage complex disputes. At the same time, they have altered the conditions under which participation occurs, introducing forms of asymmetry that are less visible but potentially more consequential than traditional disparities.

The core challenge is doctrinal. Existing frameworks focus on formal indicators of fairness, yet the processes that generate those indicators have shifted. Equality in form may persist even where inequality in function emerges.

The case law suggests that the enforcement doctrine is capable of accommodating this shift without formal amendment. What is required is not doctrinal invention, but doctrinal extension through application. The concept of "inability to present one's case" has always been functional. The present argument situates technological asymmetry within that existing logic.

The argument developed here is limited but precise. Technological asymmetry becomes legally significant where it produces a non-replicable informational advantage that materially impairs a party's ability to present its case. This does not require a redefinition of arbitral fairness. It requires a more exact application of existing principles to altered conditions.

The trajectory is clear. Computational systems will remain embedded in arbitral practice. The question is whether doctrine will adapt with sufficient precision to account for their effects. If it does not, efficiency gains will continue to accumulate without corresponding safeguards, and the legitimacy of the process will rest on assumptions that no longer hold.

[27] Karaha Bodas Co. v. Perusahaan Pertambangan Minyak Dan Gas Bumi Negara, 364 F.3d 274 (5th Cir. 2004).