Dealing with Experts in Delay and Liability: Critical Case Study of a Construction Arbitrator's Attempt to Expedite Proceedings

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ABSTRACT

This paper critically evaluates methods to enhance efficiency in Malaysian domestic construction arbitration. It revisits core arbitration principles, particularly the balance between party autonomy and the competence-competence doctrine. It then examines the interplay between technical expertise and evidentiary challenges, especially in distinguishing liability from delay analysis. The paper also analyses procedural sequencing, focusing on the positioning of expert evidence in relation to factual testimony. Central to the inquiry is whether construction arbitration must remain strictly counsel-driven, and the extent to which tribunals can or should contribute to procedural streamlining. The study adopts a qualitative methodology, using document analysis of a construction arbitration case involving delay and liability, supplemented by supporting tribunal orders, submissions by parties, expert reports, and final awards. The findings suggest that tribunal-led procedures, such as expert joint reports and hot-tubbing, can expedite proceedings, reduce costs, and improve efficiency. The conclusion discusses the benefits and limitations of tribunal intervention in construction arbitration and proposes that tribunals should have greater authority to streamline expert evidence handling, especially in technical disputes like delay causation and liability analysis.

Keywords: Construction Arbitration, Expert Evidence, Delay Analysis

INTRODUCTION

Ali (2006) argues that the most attractive part of arbitration lies in its flexibility and privacy, however, counsel-led proceedings often lead to adopting lengthy and costly procedures. Schiau (2017) asserts that this is often for reasons best known to the counsels, who are trained in traditional court procedures, with little focus on optimizing arbitration's inherent flexibility. Abraham (2020) questions whether prolonged proceedings simply mean prolonged income, suggesting a lack of incentive to expedite proceedings despite the adage, "justice delayed is justice denied." The central issue is whether construction arbitration should be strictly counsel-led and whether tribunals can or should attempt to expedite proceedings. This paper explores this question within the context of Malaysian domestic construction arbitration, considering how tribunal intervention might address delays while respecting the current legal framework governing arbitration.

LITERATURE REVIEW

Born (2021) stresses that although party autonomy is foundational, tribunals retain inherent powers to structure proceedings, including expert sequencing, to ensure procedural efficiency. This discretion becomes particularly vital where counsels exploit procedural leeway to delay resolution.

Susskind (2017) asserts that tribunal-led initiatives such as 'hot-tubbing'—concurrent expert testimony—have been underutilised, despite their effectiveness in narrowing issues. Studies by the Chartered Institute of Arbitrators (2016) show these techniques reduce hearing durations by up to 30%. Yet resistance from counsel and concerns about natural justice have stalled their adoption.

Debates on the admissibility of expert evidence and methodological scrutiny are increasingly influenced by the Daubert standard in the US and the Ikarian Reefer principles in the UK. As argued by Dorris (2015), these standards provide a procedural lens to filter out speculative or biased expert testimony. In jurisdictions like Malaysia, courts are beginning to apply similar reasoning, referencing section 45 of the Evidence Act 1950 as a guide.

Harmonisation efforts through soft law instruments, such as the IBA Rules on Evidence and the Prague Rules, offer model procedural frameworks. Berger (2019) argues that soft law's impact remains contingent on tribunal discretion and party agreement. These instruments reinforce procedural best practices, but lack binding authority.

In the context of delay analysis, Chan and Kumaraswamy (2005) highlight the fragmented application of analytical tools across projects, with inconsistent application of protocols such as the SCL Delay and Disruption Protocol. Al-Momani (2000) underscores that in many jurisdictions, delay causes are poorly documented, leading to exaggerated or misrepresented claims by experts.

The expert's duty to maintain impartiality has also been questioned in light of increasing commercial pressures. Gaitskell (2017) and Khoe (2018) discuss the risk of partisanship and the erosion of ethical boundaries when experts serve dual roles—as consultants and witnesses—without adequate disclosure. These concerns highlight the need for a codified national standard in expert ethics and accreditation.

Finally, the evolving regulatory landscape, particularly with OSH regulations impacting construction design responsibilities, raises new questions about the boundary between design obligations and expert liability. As noted by Brady (2006) and recent OSH regulatory commentaries, professionals such as architects may be unwittingly co-opted into roles for which they lack legal or technical training, thereby increasing litigation risks.

Construction arbitration, particularly involving delay and liability disputes, has long necessitated expert evidence to clarify technical matters. The flexibility of arbitration allows tribunals to accommodate such evidence, yet this has also led to concerns about procedural inefficiencies (Scherer, 2018). As pointed out by Ali (2006), while arbitration's appeal lies in its adaptability and privacy, counsel-led proceedings may mimic the formality and costliness of litigation.

A major debate revolves around party autonomy and the competence-competence doctrine. Scherer (2018) contends that excessive deference to party autonomy may impede tribunal discretion, especially in managing evidentiary and procedural matters. The Queen Mary University of London (2018) survey introduces the term 'due process paranoia' to describe tribunals' reluctance to exercise discretion for fear of award annulment. This phenomenon, as Menon (2018) cautions, compromises efficiency and fairness.

Expert evidence in construction disputes plays a central role in assessing liability, delay causation, and quantum. Rosenberg (2014) categorises this into four domains: liability, causation, quantum, and foreign law. The management of expert testimony—whether through party-appointed or tribunal-appointed experts—has been a subject of reform proposals, including the adoption of Single Joint Reports and 'hot-tubbing' (Susskind & Gaitskell, 2017).

Delay analysis, a frequent source of dispute, is often complicated by competing methodologies and inconsistent standards. Braimah (2013) argues that software-aided methods yield variable results depending on inputs, contributing to the perceived opacity of delay analysis. To address this, the Society of Construction

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Law (SCL) introduced a Delay and Disruption Protocol outlining six recognised methods. Yet, Marshall (2017) and Pickavance (2016) note that these tools can be manipulated to suit client narratives unless rigorously applied.

Critiques of expert practices also highlight the phenomenon of expert shopping, where parties select experts based on perceived favourable bias (Brady, 2006). The erosion of expert immunity in Jones v Kaney [2011] underscores the shift towards professional accountability. Institutional and statutory mechanisms—including CPR 35.3 and the IBA Rules—emphasise impartiality and the duty of experts to the tribunal rather than their clients (Susskind & Gaitskell, 2017).

METHODOLOGY

This study employs a qualitative methodology using document analysis, which is a systematic procedure for reviewing or evaluating documents—both printed and electronic (Bowen, 2009). Document analysis involves the examination and interpretation of data to extract meaning, gain understanding, and develop empirical knowledge.

The main source of data for this paper is a full case study of a construction arbitration involving delay and expert evidence. Supporting documents include tribunal orders, submissions by parties, expert reports, and the final award. Document analysis is appropriate for this research due to the retrospective nature of the inquiry and the need to assess procedural dynamics and decisions as they occurred.

As Bowen (2009) explains, document analysis is especially suitable when contextual understanding is crucial and when triangulation of data enhances reliability. This method aligns with the objectives by enabling an in-depth evaluation of the arbitrator's handling of expert evidence and its procedural impact

Table 1: Documents Referred and Analysed in This Study

Document Category	Description / Examples
Arbitral Documents	Procedural Orders, Submissions by Parties, Expert Reports (Primary, Rebuttal, Joint), Final Award, Hearing Transcripts
Case Law	Sineo Enterprise v Jayarena Construction; Pancaran Prima v Iswarabena; Master Mulia v Sigur Rus; Era Kemuncak Jaya v Tenaga Switchgear; Van Oord v Allseas; Jones v Kaney; Meadow v General Medical Council; White Constructions v PBS Holdings; Walter Lilly v McKay; Jerram Falkus Construction v Fenice Investments; Associated British Ports v Hydro Soil; Amey LG v Cumbria County Council
Statutory and Regulatory Instruments	Evidence Act 1950 (Malaysia), Arbitration Act 2005, UNCITRAL Model Law, OSH (Construction Work) (Design and Management) Regulations 2024
Soft Law and Guidelines	IBA Rules on the Taking of Evidence, Prague Rules, CIArb Guidelines and Protocols, LCIA Arbitration Rules, Practice Direction 35 (UK)
Technical Standards	SCL Protocol, CONQUAS (BCA Singapore), QLASSIC (CIDB Malaysia), CIS 7:2014/2021, RICS CPBS101–103, BARIS
Academic and Professional Sources	Bowen (2009); Cheung et al. (2013); Turner & Turner (1999); Braimah (2013); Brady (2006); Pickavance (2016); Marshall (2017)

RESULTS OF ANALYSIS

Arbitration can appear more costly than litigation, as experts and lawyers typically charge the same fees regardless of the forum. In some cases, as Kasi (2017) contended, court finds although inordinate delay of 10 years undermines confidence in arbitration, courts will not set aside an award on that basis alone, unless actual prejudice or a violation of procedural fairness is shown, although the flexibility of a well-managed arbitration can yield substantial cost savings to the parties. Xavier (2015) argues that arbitration is not entirely subject to

the tribunal's discretion under the doctrine of kompetenz-kompetenz, but is grounded in the lex arbitri and the arbitration agreement. This highlights the need for harmonisation across jurisdictions. The UNCITRAL Model Law (UML) seeks to achieve this by offering a unified legal framework that promotes party autonomy while limiting court intervention.

Restriction of Curial Intervention

Rajoo (2018) noted that arbitration conducted entirely outside the court system faces growing enforcement challenges. Lim highlighted that Malaysia adopted the UML over the UK Arbitration Act 1996 to align with local public policy. Haimbe (2021) pointed out that, despite the UML, issues like seat selection and arbitrability remain unsettled, with domestic arbitration subject to stricter scrutiny than international cases. Abraham (2020) called for reform of the overly legalistic framework, while Rajoo (2018) observed that institutions like AIAC have begun to eclipse traditional arbitral bodies. Chapman (2018) added that demand for technical arbitration remains strong, especially in disputes needing industry-specific expertise.

Party Autonomy

While party autonomy is a fundamental principle of arbitration, allowing parties' freedom over procedural and administrative choices, it must operate within limits set by mandatory laws and principles of natural justice. Garg (2019) argues that the UML supports empowering arbitral institutions, but clearer guidelines and oversight mechanisms, such as an independent monitoring body, are needed to uphold integrity. Scherer (2012) notes that institutional rules, like the LCIA Rules, may limit party autonomy to preserve impartiality and independence. The 246th Law Commission Report reinforces that these core values cannot be waived, even by prior agreement. Accordingly, arbitral tribunals must retain broad procedural discretion, particularly where parties disagree, balancing flexibility with fairness. Setting procedural calendars early ensures structured and efficient proceedings. A typical Schedule of Deliverables may take approximately, twenty four (24) months, which ideally be shorter to reach evidential hearing:

At the interlocutory stage, parties typically have broad flexibility to set timelines for discoveries and submissions. However, they frequently seek extensions for undisclosed reasons, leading to delays. Tribunals, cautious not to breach natural justice, often hesitate to deny such requests. This concern, termed "due process paranoia" in the Queen Mary University of London Survey 2018, was highlighted by Menon (2018) as a barrier to arbitration efficiency. It reflects the tendency to accommodate unreasonable procedural demands to avoid the risk of the award being set aside by the courts.

Competence – Competence

Xavier (2015) emphasises that tribunals do not exercise absolute kompetenz-kompetenz; rather, it functions as competence-competence, a procedural principle allowing tribunals to rule on jurisdictional matters, but not in disregard of party autonomy. This tension is illustrated in Sineo Enterprise v Jayarena Construction, where the court held a tribunal had misconducted proceedings by unilaterally determining procedural matters without party input, breaching the principle that tribunals serve as agreed instruments of the parties.

However, in Pancaran Prima v Iswarabena, the court affirmed that when a tribunal is an industry expert (e.g., engineer), reliance on personal expertise, such as profit and loss, does not breach natural justice, provided the issue falls within the tribunal's remit and evidence has been led. The tribunal's specialised knowledge is thus seen as enhancing the arbitration process, not undermining it.

This contrasts with Master Mulia v Sigur Rus, where the court took a stricter view on natural justice. The broader implication is that in construction arbitration, where tribunals often possess technical expertise, courts may afford greater deference to their discretion under competence-competence, recognising the specialised nature of the disputes.

DISCUSSIONS

The principle of party autonomy in arbitration is often seen to coexist with competence-competence, but as former Court of Appeal Judge Mah Weng Kwai argues, party autonomy tends to prevail. In common law jurisdictions, this means the tribunal's control over time and costs may be constrained by the parties' agreement. This raises the question of whether tribunals must fully defer to party wishes, even in managing expert evidence. The discussion thus shifts to whether tribunals can retain some control, particularly in areas like liability and delay analysis, to balance procedural efficiency with respect for party autonomy.

Tribunal, in exercising procedural discretion, must remain within the bounds of natural justice, ensuring that parties are afforded a fair opportunity to present their case and to respond to the case against them. Within this framework, the tribunal must first determine whether the construction dispute in question engages issues of liability, typically assessed by reference to the standard of due diligence, or causation, most often addressed through delay analysis.

Rosenberg (2014) identifies the role of expert evidence in construction disputes as falling within four principal domains: Liability – assessing the standard of professional care or diligence; Causation – often involving technical delay analysis; Quantum – valuation arising from liability, causation, termination, or variation; and Legal – relating to questions of foreign law. This discussion is confined to the first two domains: liability and causation (delay). Within these parameters, the tribunal possesses a qualified procedural autonomy to regulate the use and presentation of expert evidence. Such autonomy includes the ability to manage the appointment of experts, the framing of their terms of reference, and the sequencing and format of their reports.

As argued by Scherer (2018), the tribunal's discretion to manage expert evidence is both supported and limited by applicable procedural rules, whether institutional or ad hoc, and is to be exercised in a manner that does not compromise the fundamental requirements of natural justice. Thus, while the tribunal may actively shape the evidentiary process, including the role of expert witnesses, such control must always be exercised equitably, transparently, and with due regard to the parties' rights to a fair hearing.

Experts

An expert, for the purposes of legal proceedings, is simply another witness offering evidence, albeit in the form of opinion based on specialised knowledge. As established in R v Silverlock, there is no rigid threshold for qualification; even an amateur may be recognised as an expert if they possess relevant experience. The admissibility of such evidence hinges on the expert's ability to assist the tribunal in forming an independent opinion, rooted in science, skill, or specialised knowledge. Crucially, experts do not provide conclusions, but offer assessments which are to be critically evaluated by the tribunal.

Conflicting expert opinions are commonplace, akin to "ships passing by the night." As Ennis (2019) noted, experts are similar to historians where "facts are sacred, opinion is free". It is therefore the tribunal's prerogative, not the expert's, to determine what fact is and how to resolve conflicting assessments. As in Gordon v Wilson; Maynard v W. Midlands RHA, the tribunal may even disregard all expert opinions, provided its decision is grounded in admissible evidence rather than speculation or assumption.

The burden lies on the party adducing the expert to establish their competence, which may be based on experience rather than formal education. For technical matters, appropriate qualifications or demonstrable experience are essential. Expert opinion, by its nature, is not conclusive and must be corroborated by factual evidence.

Under the Civil Procedure Rules (CPR), particularly r.35.3, an expert owes an overriding duty to the court, superseding any obligations to the instructing party. An expert must not act as a "hired gun," advocating for the client's case. The leading authority, The Ikarian Reefer, defines the expert's responsibilities: the opinion

must be independent, unbiased, within the expert's field, qualified where necessary, and supported by the evidentiary record, with disclosure obligations to all parties.

These principles have informed the development of "soft law" instruments such as the IBA Rules on the Taking of Evidence, Prague Rules, and CIArb Guidelines and Protocol, many of which have been integrated into the English CPR 1998 and Practice Direction 35. As affirmed in Steven v Gullis, a breach of the expert's duty to the tribunal may result in the exclusion of the expert's opinion. Section 45 of the Evidence Act 1950 provides that expert opinions are admissible as relevant facts when the court or tribunal must form an opinion on matters involving foreign law, science, art, handwriting, or fingerprints. Such opinions must come from persons especially skilled in the relevant field. While tribunals are not bound by the Evidence Act, they may draw guidance from its provisions, particularly where technical issues arise and the tribunal must decide whether to rely on party-appointed or tribunal-appointed experts.

The procedural norm involves experts producing written reports: typically, a primary report, a rebuttal report, and a joint report. These are exchanged prior to the hearing and treated as "taken as read," allowing cross-examination to proceed efficiently. Hence, it is essential that the tribunal thoroughly reviews these documents in advance.

In specific contexts, such as delay analysis, procedural streamlining is often achieved by forgoing the primary and rebuttal reports in favour of a Single Joint Report (SJR), collaboratively prepared by both parties' experts. This approach aligns with the principle that the expert's overriding duty is to the tribunal, not to the party who instructed or remunerated them. This duty is codified under Civil Procedure Rule (CPR) 35.3, which affirms that experts must assist the tribunal on matters within their expertise, and this duty supersedes party loyalty. Freedman (2017) critiques the practical implications of the CPR reforms, suggesting that appointing a single joint expert often yields greater efficiency, reduced procedural complexity, and cost savings.

To comply with procedural expectations, an expert's report must contain, Credentials and qualifications of the expert; Sources and materials relied upon; A clear statement of the issues addressed; The factual basis and reasoning behind each opinion; Disclosure of any tests or experiments conducted (including details of those involved); A summary of the range of possible opinions and justification for the expert's chosen position; A declaration of the expert's belief in the correctness of the opinion; An affirmation of the expert's understanding of their overriding duty to the court or tribunal.

In common law, an expert witness does not generally owe a fiduciary duty of loyalty akin to that of a fiduciary whose obligation precludes conflicts between personal interest and duty without informed consent. While fiduciary obligations demand undivided loyalty, expert witnesses owe a paramount duty to the court or tribunal, not to the instructing party. Accordingly, no duty of loyalty arises where the expert provides consultancy services to multiple parties, including opposing sides, with the client's knowledge. Similarly, no such duty is found where an expert was merely consulted but not retained by one party and subsequently engaged by the other. The expert's independence and overriding duty to assist the court distinguishes their role from that of a fiduciary.

Expert's Immunity

The erosion of expert immunity in negligence, as established in Jones v Kaney, marks a significant shift in common law, aligning expert witnesses with broader principles of professional accountability. Previously shielded from negligence claims, experts are now liable where their conduct falls below the requisite standard of care. This development parallels the diminishing immunity of other professionals, notably in R v Skinner and Hargreaves v Bretherton, where the doctrine of "absolute autonomy" granted to construction professionals was scrutinised for undermining the integrity of their certifying roles as highlighted in Ranger v Great Western Railway, where dual appointments raised conflicts of interest.

The principle in Hedley Byrne v Heller further informs this trajectory, recognising that professionals, including certifiers, owe a duty of care in circumstances where reliance is reasonably foreseeable. Accordingly, the once broad immunities of certifiers have become increasingly untenable, mirroring the abolition of legal practitioners' immunities.

Post Jones v Kaney, Selby (2011) distinguishes between stages of expert involvement where immunity may or may not persist: advice on the merits and reports disclosed to third parties are not immune; however, reports prepared for pre-action correspondence may be immune, as are those produced for joint statements and oral evidence before tribunals. This position is echoed by Smith and Grange (2006), with subsequent cases such as Baxendale-Walker v Middleton, Warner v Pennington, and Ridgeland Properties v Bristol City Council reinforcing the nuanced application of immunity post-Jones.

Delay Analysis

Delay analysis has evolved from a niche technical function into a specialised sub-industry within construction disputes. It encompasses both delay and disruption, which are often intrinsically linked, disruption through productivity loss may lead to delay, and if the affected activities lie on the critical path, this results in critical delay. As such, disruption analysis may supplement a delay claim. However, even where disruption does not lead to delay beyond the contractual completion date, a contractor may still claim for loss of productivity, though not for an extension of time (EOT).

Experts operating in this domain, commonly referred to as delay experts, operate under the broad ambit of section 45 of the Malaysian Evidence Act 1950, yet no uniform standards exist to accredit or assess their competency. Their role is therefore susceptible to judicial scrutiny, and they may be liable in negligence, particularly following the UK Supreme Court's decision in Jones v Kaney, which abolished the longstanding immunity of expert witnesses from suit for breach of duty in legal proceedings.

In Era Kemuncak Jaya v Tenaga Switchgear, the Malaysian court firmly criticised the conduct of a "quantity surveyor" acting as an expert, finding that the individual lacked impartiality, applied inconsistent valuation rates, and ultimately prolonged the trial and inflated litigation costs. One recent Malaysian High Court decisions illustrate the courts' strict approach to fiduciary and professional misconduct for agents of the experts. In Plus Three Consultants v Landasan Kapital, the plaintiff consultancy (P3) claimed unpaid fees for arbitration support services, but the defendant successfully counterclaimed for breach of fiduciary duty after P3 failed to disclose its undisclosed commercial links with an expert it recommended. The Court reaffirmed that fiduciary agents must avoid conflicts of interest, and held that even in the absence of proven financial loss, mere non-disclosure of such a conflict sufficed to forfeit P3's entitlement to fees, with P3 held liable to repay the amount as a constructive trustee. Similarly in Van Oord v Allseas the expert appeared to have aligned his opinion with the claims advanced by his instructing party, without independently assessing whether the documentary evidence substantiated or contradicted those assertions. Moreover, he adopted the narrative presented by his client as his own expert conclusion, without the requisite analytical detachment or objective evaluation of the factual matrix. Both courts reiterated that experts must assist the court with independent, unbiased opinions, especially in highly technical matters.

This mirrors concerns expressed in Meadow v General Medical Council in the UK and the Daubert v Merrell Dow Pharmaceuticals standard in the United States, both of which underscore the judiciary's role in policing expert testimony to guard against partiality or incompetence. In Malaysia, the lack of coherent standards in delay analysis has led to inconsistencies in expert reporting and judicial reliance. As a soft-law response, the Society of Construction Law (SCL) has introduced six recognised methodologies for delay analysis, which have gradually gained domestic traction to bring greater rigour and consistency to this complex and often metaphysical field.

The field of delay analysis, though guided by established methodologies, remains highly contested due to the inherent variability in outcomes depending on the chosen method, terms of reference, and the use of

technology. Braimah (2013) argues that no two methodologies, especially when facilitated by computer software, can yield identical results. This divergence raises critical procedural challenges in arbitral proceedings, particularly where tribunals are faced with irreconcilable expert opinions. In such cases, tribunals may be compelled to accept one expert's view over another or, alternatively, reject both and appoint an independent tribunal expert. This uncertainty often leads to increased time and cost, inevitably borne by the parties.

A further concern arises with the traditional counsel-led model of expert engagement. Braimah (2013) cautions that this structure may compromise the expert's primary duty to the tribunal, fostering a tendency toward partisanship by selecting methodologies favourable to the appointing party. As a remedial measure, Braimah (2013) proposes that experts should be required to submit a joint statement of reasons (SJR), identifying the agreed methodology and baseline programme. Where consensus cannot be reached, experts should clarify areas of disagreement and jointly present available methodological options to the tribunal, akin to the "hot-tubbing" or concurrent evidence approach.

A similar situation arises when disputing parties submit a delay analysis report to challenge the architect's decision to grant an extension of time (EOT), without first acknowledging that the architect's authority to issue such certifications, including opinions on EOT, had been contractually agreed upon by all parties. This raises the question: what standing does a party now have to scrutinise or dispute the methodology employed by the architect in exercising a power that was previously accepted?

Barry (2019) refers to delay analysis as a potential "dark art," underscoring the opaque and often metaphysical nature of the process, especially when advanced digital tools, such as forensic animations and e-litigation technologies, are employed. As Pickavance (2016) and Champion observe, navigating between concepts such as prospective versus retrospective approaches, dynamic versus static methods, and baseline versus networked schedules can be daunting and metaphysically confusing while highly context-dependent. These choices must consider contract requirements, data availability, proportionality, and cost-efficiency.

The challenges of delay analysis are especially pronounced in cases involving liquidated damages or termination, where causation is central. In Jerram Falkus Construction v Fenice Investments, the court reaffirmed the "prevention principle" rooted in Peak Construction, which precludes an employer from enforcing a completion date if they have impeded the contractor's ability to perform.

Yet, even the adoption of a methodology endorsed by the Society of Construction Law (SCL) Protocol, as noted in White Constructions v PBS Holdings, does not guarantee its suitability for every case. The court held that the Protocol's methodologies do not possess automatic authority, nor does the exclusion of a rational method from the Protocol negate its admissibility. Therefore, while the SCL Protocol offers a valuable framework, it should not be applied rigidly. Courts remain open to any logical and coherent approach that effectively demonstrates causation. Ultimately, the persuasiveness of the evidence, rather than adherence to a particular protocol, guides the tribunal's or court's preference.

Accounts for Causation

Axelson posits that the philosophical treatment of causation as an "account", translates into legal doctrine through the application of formal "tests" for causation. In both contract and tort law, the dominant tests are the "but-for" test and the sufficiency test. The "but-for" test involves a retrospective, counterfactual inquiry into whether the outcome would have occurred in the absence of a particular cause. In contrast, the sufficiency test demands a more prospective and contemporaneous assessment, evaluating whether a particular act was sufficient, in real-time, to produce the effect in question. These legal tests expose a deeper metaphysical challenge in the context of delay analysis: the asymmetry of time. While the past is perceived as determinate and factual, the future can only be constructed through predictive models. This temporal disjunction creates an inherent difficulty in harmonising retrospective and prospective evaluations of causation. As such, delay analysis becomes a contested domain, where the act of simulating delay and quantifying its impact entails not

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only technical, but also metaphysical complexities. The inability to reconcile these temporal perspectives renders the establishment of a shared baseline for causation fraught with conceptual uncertainty and dispute.

SCL Protocol

The Society of Construction Law (SCL) Protocol aims to standardise delay analysis methodologies across the construction industry, offering structured guidance in the absence of statutory regulation. However, as Janice and Chih-Wen (2018) observe, judicial reception of the Protocol has been inconsistent. Where contracts are silent on the method of delay analysis, tribunals retain discretionary latitude to adopt methodologies endorsed by the Protocol, so long as these are deemed logical and proportionate to the evidentiary matrix.

A key concern arises from the potential for strategic abuse of these methodologies by partisan experts, particularly given the variance in delay outcomes produced by different analytical paths. Notably, methodologies that model the longest path often identify the greatest number of delays, yet paradoxically yield the least actual time impact, raising questions of metaphysical coherence and procedural fairness.

In Walter Lilly v McKay, the High Court downplayed the methodological divide between prospective and retrospective approaches, suggesting that both should, if applied rigorously, yield convergent results. This judicial pragmatism, however, is complicated by Balfour Beatty Building v Chestermount Properties, which entrenched the "net" approach to Extensions of Time (EOT). Under this doctrine, even where a contractor is in culpable delay, the architect is obligated to grant an EOT for any separate relevant event causing additional delay, rejecting the broader "gross" approach or global claims which aggregate contractor fault with other causative events.

The SCL Protocol itself compounds complexity by distinguishing between prospective, contemporaneous, and retrospective critical path methodologies. These represent fundamentally different temporal perspectives: the prospective approach limits analysis to conditions known at project inception; the contemporaneous approach tracks the evolving status of the project in real-time; while the retrospective approach reconstructs delay based on project completion data.

Marshall (2021) criticises this layering as unnecessarily convoluted, contending that disputes typically hinge on the misapplication of a chosen method rather than the choice of method itself. Moreover, since expert fees are recoverable, there is often a perverse incentive to employ the "cheapest defensible" methodology, even at the cost of analytical robustness. His hypothetical simulations demonstrate the improbability of different methods, retrospective and prospective, producing the same results.

Finally, Tieder contrasts the SCL Protocol with the American Association of Cost Engineers' (AACE) forensic scheduling framework, which is grounded in the understanding that planning and scheduling alone may not suffice for forensic analysis. AACE methodologies categorise delay assessments into "observational" (retrospective) and "modelled" (prospective) types, conceptually aligning with, though distinct from, the SCL Protocol. Both frameworks underscore that project schedules are merely tools, not definitive indicators of causation and that their forensic utility remains inherently limited and open to manipulation, such as:

(i) Retrospective Longest Path [RLP]

RLP is a traditional approach used in most traditional procurement, given the choice of delay analysis methodology was not expressly mentioned in the contract. This method does not required complex computation. First, an as-planned programme is required, i.e. in this hypothetical model:

This programme indicated the existence of float-time, which is the non-critical activity infused within a specific activity (as in activity 2 and 4). RLP required that these floats be removed:

The RLP is a line drawn following the longest-path of the activities:

The sums of these RLP represents the planned schedule which may differ from an as-built schedule, and such maybe the weakness of this methodology. Another method was developed i.e. As-planned vs. As-built ("APVAB"), to address this.

(i.a) Dotted-On:

Further to the RLP, the "dotted-on" allowed the Contract Administrator (CA), to "dot-on" any delay into the RLP, anywhere of the RLP.

In Carillion Construction v Woods Bagot Europe, the court upheld a straightforward approach to the interpretation of a contract clause, noting that the contract was unambiguous. As there was no need to invoke commercial common sense for interpretation, the extension of time (EOT) was to be added directly to the original completion date, reaffirming the principle that clear contractual terms should be enforced as written.

(ii) As-planned vs. As-built [APVAB]

APVAB compares the original project schedule (as-planned) with the actual progress made (as-built). This analysis identifies discrepancies between the intended and actual timelines, highlighting delays, their duration, and their impact on the overall project schedule. It provides stakeholders with a clear understanding of where and when delays occurred. Similar to the RLP, this method compares both the as-planned schedule (baseline schedule) with the actual as-built schedule to distil the differences, thus the number of delays, based on contemporaneously kept as-built:

When a planned schedule is superimposed on the as-built timeline, it becomes apparent that the planned schedule has been delayed. A comparison of both schedules, as illustrated in the diagram above, reveals that the total delay under the As-Planned vs. As-Built (APVAB) method exceeds that of the Retrospective Longest Path (RLP). This invites criticism of the APVAB method's inability to account for whether sufficient mitigation efforts were made to prevent delays. Additionally, it highlights the method's limitations in addressing complexities such as concurrency, parallel delays, unproductive work, secondary or consequential delays, acceleration, resequencing, and the effectiveness of mitigation strategies.

(iii) Collapsed As-built Analysis [CABA]

The prescription of this method is it involves removing delays from the actual project schedule to create a hypothetical scenario, illustrating the completion date had no delays occurred. This method helps identify the specific impact of each delay and clarifies the responsibility for those delays. This method ask the question, "but for the delay events, would the delay be prevented?" The salient different between CABA with APVAB, is that in CABA the as-built is mapped and compared with the hypothetical as-built minus the delay, instead as in APVAB:

Some criticise this method is similar with APVAB and if the sequential delays are plenty, it is time consuming to clean-up the hypothetical as-built.

(iv) Impacted As-planned Analysis [IAPA]

This method modifies the original project schedule by incorporating delays as they occurred, assessing their cumulative impact on the overall timeline. This approach helps project managers understand how each delay affects the project completion date by sequentially adding delays, providing a clear view of their impact on the project's progress. In contrast to CABA, IAPA do the reverse as frequently updating any delay causing events into the planned schedule (impacted as-planned), to generate multiple options based on work-modification or work-sequence or expediting critical path:

Potential issues with this approach include: (i) failure to account for actual progress, resulting in an inaccurate identification of the true causes of delays; (ii) insufficiency in determining causation, particularly in cases of

concurrent or culpable delays, which may lead to incorrect conclusions on impacted events; and (iii) judicial limitations, as noted in Leighton Contractors v Stelux Holdings and Great Eastern Hotel v John Laing Construction.

(v) Time-Slice Window Analysis [TSWA]

Window Analysis divides the project timeline into smaller segments or "windows" to evaluate delays within each period, providing a detailed and granular understanding of how delays impacted the project over time. This method allows for more precise identification and resolution of delay issues. Similarly, Fragnets (Fragmentary Networks) involves breaking down the project schedule into smaller sections to analyse specific delays. Focusing on particular activities or sequences, it offers a detailed view of how delays in one part affect the overall timeline, making it useful for addressing localized delay issues. A window is modelled to expend the sub-activities for the rationalisation of nett-delays and to red-flagged any possible float:

CA can scrutinise the mitigation impact to the overall delay by analysing the details of the sub-activities but it does not answer the what-if questions of the best delay mitigation. Common abuse of this method is to provide a narrow windows with the critical sub-activities hidden from being scrutinised. These methodology is incorporated in the Time Impact Analysis (TIA), also called the “prospective version of Time-Slice”.

(vi) Time-Impact Analysis [TIA]

Time Impact Analysis (TIA) assesses the impact of delays as they occur by inserting delay events into the project schedule and evaluating their effects on the overall timeline. This proactive approach helps manage ongoing projects by continuously updating and understanding the evolving schedule. TIA is a complex analysis that uses specialized software to explore "what-if" scenarios, demonstrating the delay-causing events and their impact on planned activities, as well as the mitigation efforts taken. It includes various standalone methodologies and produces TIA reports detailing each impacted event or delay. Unlike traditional methods, TIA does not rely on the as-planned programme. Instead, it uses Time-Scaled Window Analysis (TSWA) to identify windows of time impacted by delay events based on a baseline, modifying the critical path sequence to assess options with less time impact, similar to the Impacted As-Planned Analysis (IAPA). The control path and options paths were then critically compared and explained:

Weakness of this method lies with its complexities without the check and balance, with shifting baseline, including modification to sequence of work. CA would either accept or reject it in toto as Sanders argued, TIA was scientifically laden with fallacy.

Liabilities

Delay experts, utilising the SCL Protocol, provide expert opinions on the causation of delays and their impact on the overall project, often framed within a competing historical "but-for" analysis versus a more speculative "what-if" scenario. However, in addressing liability, a crucial consideration arises regarding the tools and methods available to experts for establishing causation of fault and demonstrating how deviations below the standard of care have resulted in damages or injury. An expert on liabilities is primarily tasked with offering an opinion on professional responsibility across various contexts. In construction, this role is particularly relevant in relation to professional duties, defects, and forensic analysis of failures. As Brady (2018) noted, such experts are responsible for identifying and articulating the causes of failure and offering expert testimony in dispute proceedings, addressing issues such as defects and non-performance by parties involved.

Expert Shopping

In the construction sector, the phenomenon of "expert shopping" arises when parties seek out "favourable" experts based on preconceived assumptions. This is particularly relevant in Malaysia, a highly regulated industry where stakeholders like architects, engineers, and surveyors are governed by their respective

professional boards. This dynamic mirrors the UK's response to the Grenfell Tower tragedy, which raised questions on occupational safety and the roles of professionals such as architects and engineers. This prompted the revival of the Construction Design Management (CDM) regulations in the UK and similar movements in Singapore and Malaysia. In Malaysia, the Occupational Safety and Health (Construction Work) (Design and Management) Regulations 2024 were introduced but faced criticism for vague definitions, ambiguous responsibilities, and harsh penalties.

Despite a lack of formal training, architects and engineers are increasingly held accountable for occupational safety and health (OSH) obligations, exposing them to unforeseen liabilities without proportional compensation. The Institute of Architects Malaysia (PAM) objected to the Regulation, arguing that OSH is not part of an architect's core competency, a stance supported by the Board of Architects Malaysia (LAM) . However, this stance leaves room for architects trained in OSH to assume responsibility if adequately compensated. This situation parallels the UK's CDM 2015, where architects take on proactive roles in designing for OSH risks, albeit with clearer definitions and structured implementation.

As a result, architects have effectively become the "de facto expert" on OSH matters by default, as outlined by the Regulation. This role encompasses both design and investigative functions, the latter involving the determination of causation in liability cases based on evidence, knowledge, and forensic methodology. However, Brady (2006) cautions that few successful designers are skilled in failure investigation, and vice versa, leading to challenges in establishing causation and frustrations in legal proceedings. Malaysia lacks a governing authority for expert conduct and practices, and while the Academy of Experts UK (AOE) recommends training in the expert's curriculum vitae, report preparation, and court appearances, these measures do not resolve the issue of expert shopping.

Expert shopping can occur through ad hoc appointments or via technical institutions like Malaysia's Construction Industry Development Board (CIDB), the Royal Institution of Surveyors Malaysia (RISM), or the Architect Centre (ACSB). The absence of a nationwide standard for construction quality and a regulatory body for experts' qualifications and ethical practices complicates matters for disputing parties. In common law settings, counsel-led experts are the norm, whereas in civil law jurisdictions, experts are typically appointed by the tribunal. The question arises whether a hybrid approach could be effective in international arbitration, where counsel-led experts submit joint reports under tribunal guidance.

(i) Counsel-led Experts:

In construction disputes, the typical counsel-led expert procedure involves the submission of an initial expert report on liability, followed by a rebuttal report, and concluding with a joint report or statement. Expert hearings generally occur after all factual witnesses have testified, which often leads to extended timelines and increased costs. This process allows counsel more time to prepare their case, including the opportunity to "fish for more evidence" from the opposing side. However, given that experts have an overarching duty to the tribunal, it could be more efficient for experts to produce a single joint report or statement. In cases where experts cannot agree, the points of disagreement could be clearly outlined within the same report, thereby saving both time and costs, and ensuring a more streamlined process.

(ii) The "Kitchen Sink" Phenomena (quantities):

Defective works in construction disputes are often vast in number, sometimes numbering in the hundreds or even thousands, and are typically compiled in defect sheets, commonly known as a "Scott's schedule." These schedules detail the nature, location, and status of defects, which may remain unresolved for years or even decades before expert inspection. As Di Palma (2024) suggests, this method can sometimes resemble "throwing in the kitchen sink," hoping that some of the defects will be found significant and potentially delay the resolution. Given the abundance of defects, the application of the res ipsa loquitur test, used to infer negligence from the mere occurrence of a defect, within a limited timeframe, presents significant challenges. The question arises: how much sampling is deemed appropriate in construction disputes when dealing with

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such large quantities of defects? Moreover, the question of quality standards becomes critical as to what benchmark should be applied to assess these defects, and whether an industry-accepted standard exists, remains a matter of concern.

(iii) What Standards (quality):

The Royal Institution of Chartered Surveyors (RICS) originally employed a detailed, "longhand survey description" method for building condition valuation, where surveyors would record defects using a non-destructive, visual approach in an essay-like format. This method, however, was found to be inefficiently clumsy and less user-friendly. In response, a simplified version utilizing the 'traffic light system' was introduced, where “green” indicated no action required, and “red” signalled an immediate need for repair. This system was primarily used for building maintenance surveys, not specifically for defect identification.

Subsequently, Che-Ani (2010 and colleagues expanded the RICS framework to develop the Condition Survey Protocol (CSP) 1 Matrix, which incorporated a scoring system to classify buildings as "good," "fair," or "dilapidated." Studies revealed that architectural defects were the most common, surpassing defects in electrical, mechanical, and civil systems. The RISM Building Surveying Department further refined the CSP 1 Matrix into CPBS101 (2010–2017) and introduced the Building Assessment Rating System (BARIS), followed by CPBS102 and CPBS103, which focused on building maintenance and dilapidation respectively.

Meanwhile, the Public Works Department Malaysia (PWD/JKR) created its own version of the BCA (2008) assessment, while the Malaysian Institute of Architects (PAM), through its subsidiary ACSB, developed an independent rating system, allowing flexibility for inspectors to tailor formats to specific needs. In Singapore, the Building and Construction Authority (BCA) developed the CONQUAS system, which CIDB later mirrored with the QLASSIC quality rating system based on their “standards” called CIS 7, evaluating projects based on architectural, engineering, and M&E components.

Despite these advancements, all of these systems rely on non-destructive visual inspections and evaluation matrices but lack the status of legally mandated standards under Malaysian law. Consequently, systems like CONQUAS and QLASSIC are voluntary, and the applicable standards for any given project must be determined on a case-by-case basis, guided by professional standards set by relevant authorities.

(iv) Sampling Sizes (quantity):

Pigott (2017) argued that sampling in construction defect claims is an essential means of establishing liabilities, as demonstrated in Associated British Port v Hydro Soil. In Amey LG v Cumbria County Council, a distinction was made between "probability" or "random sampling" and "non-probability" sampling, the latter being unsupported by a "percentage of confidence." In most cases, random sampling is preferred, as it allows for scientific methods to be applied. This process typically involves asking a question about observed phenomena, conducting background research, forming a hypothesis, experimenting, analysing data, and drawing conclusions.

The central limit theorem states that if sufficiently large samples are taken from a population, their means will be normally distributed. The sample size, crucial for making valid inferences about a population, is determined by the number of observations required to accurately represent that population. As a general rule, the larger the population, the smaller the required sample size; for populations exceeding 1,000, a sample size of 10% is often sufficient, with additional sample sizes yielding diminishing returns.

In practical applications, it is often impractical to assess all elements of a building, which is why CONQUAS 21 uses a sampling system based on the gross floor area. Similarly, CIS 7:2014 and CIS 7:2021 provide guidelines for selecting samples prior to assessment, which are drawn from floor plans and site plans. These samples should be distributed as evenly as possible across the project and construction stages. Typically, the general standard for sample size is 10% of the total floor area.

(v) Admissibility:

Both the locally prescribed "standards" by the architect or the engineer based on the sample size of 10% is important for the test of admissibility as it is the American case of Daubert v Merrell Dow Pharmaceuticals or commonly known as the "Daubert Test" or the "Daubert Standard" that is used in courts to evaluate the admissibility and reliability of expert testimony based on the following five tenets, Testability: technique must be testable and capable of being challenged scientifically, i.e. measurable with equipment; Peer Reviewed: subject to scrutiny, i.e. rebuttable by peers; Error Rate: caveat or disclaimer provided, i.e. limitation of equipment, information etc.; Standards & Control: what standard applicable or followed, i.e. UBBL, CIS-7; and General Acceptance: technique must be widely accepted by the relevant community.

(vi) Tribunal-led Experts and/or a Single Joint Report (SJR):

Rosenberg (2014) argued that the divergent approaches to handling expert witness evidence in international arbitration stem from the influence of both common law and civil law traditions. In civil law jurisdictions, tribunals typically take primary responsibility for appointing and managing expert evidence, whereas in common law jurisdictions, parties usually appoint their own experts. CIArb provided guidance on the powers of tribunals to appoint experts, assess the need for expert evidence, and establish procedural directions. CIArb outlined several methods for obtaining expert evidence, including party-appointed experts, a single expert appointed by both parties (rare), and tribunal-appointed experts, with the aim of mitigating bias and conflicts of interest.

Party-appointed experts are often criticized for bias, as they may consciously or unconsciously present opinions that favour the party who appointed them. This concern, as noted by Gaitskell (2017), is due to the expert's contractual relationship with the party, which can undermine objectivity and transparency, leading to conflicting analyses, commonly referred to as a "a ship that passed in the night" scenario. This divergence in expert opinions often complicates the tribunal's task, prolongs proceedings, and increases costs. On the other hand, tribunal-appointed experts are seen as more impartial and efficient. They have limited contact with the parties' legal teams, ensuring their accountability to the tribunal and reducing the likelihood of conflicting expert reports, which can streamline proceedings and reduce costs, as observed by Schiau in his study of Romanian tribunals.

The question arises whether tribunals in common law jurisdictions can compel party-appointed experts to submit a single joint report (SJR). CIArb affirmed that tribunals can direct experts to produce a single report, clarifying that the primary duty of party-appointed experts is to assist the tribunal, not the appointing party. The tribunal must establish terms of reference, including baseline standards, methodologies, and the format of the report. If parties fail to agree, the tribunal can intervene to determine these terms and ensure the expert's duty is fulfilled.

Gaitskell (2017) identified four critical activities where experts often encounter challenges: meetings between experts, reaching an agreement, preparing the SJR, and providing oral evidence. The tribunal must decide on any unresolved issues, such as the terms of reference, sampling methods, or standards, and direct the experts to produce a unified report. If no agreement can be reached, the tribunal may step in to finalize the terms for the expert's report.

(vii) Hot Tubbing

Smith and Grange (2012) suggest that the future of expert witness procedures in arbitration lies in "hot tubbing" or "expert conferencing," a natural progression from the use of Single Joint Reports (SJR). The SJR, which is the result of joint expert efforts, leads to experts meeting before the hearing to identify areas of agreement and disagreement. Disputed matters are communicated to the parties in advance, and expert conferencing allows experts to directly address the tribunal's agenda, saving both time and costs.

However, Ennis (2019) expresses concerns that hot tubbing, as an alternative to conventional counsel-led hearings, might be unpopular with counsel due to the perceived loss of control over the evidence. Counsel

may find it challenging to maintain a consistent line of argument, as they are accustomed to guiding expert testimony in their favours. Smith and Grange further argue that hot tubbing could undermine the credibility and independence of experts, as the collaborative nature of the process may blur the boundary between expert objectivity and party influence. If parties, influenced by counsel's advice, oppose these procedural innovations, the ultimate "kill-switch" is the ability to terminate the tribunal's mandate, though this option is ambiguous and lacks clear recourse, raising potential concerns about its practical application.

Summary

The inherent tension between the tribunal's competence-competence and the parties' autonomy in controlling time and costs in arbitration has prompted a re-evaluation of the role of experts, particularly in construction disputes involving delay analysis and liability assessments. Delay analysis, often considered an imprecise and "metaphysical" discipline, and the challenge of proving liability due to the lack of standardized methodologies and conflicting assumptions, highlight the complexities experts face. The growing prominence of experts in the arbitration process has drawn attention globally, with former Federal Court Judge Mary Lim advocating for domestic arbitration to adopt practices from international arbitration, such as expert joint reports and hot tubbing, which would shift the balance of control from the parties to the tribunal. This shift would allow the tribunal to better manage time and costs. The discussion then moves to whether tribunals should consider reversing the order of expert testimony, placing experts before factual witnesses, to further streamline proceedings and reduce costs.

(3) Considering the Procedural Aspect: Experts before Factual Witness

The tribunal is the "master of procedure", when parties fail to agree on the procedure, meaning they have the authority to determine the procedural rules, subject to the principles of natural justice and any specific agreements or rules imposed by the arbitration agreement , the pivoting points of competence-competence. But how far would such competence-competence bring?

Hearing

Freedman (2017) observed that while expert attendance at hearings is not mandatory, some jurisdictions, like Malaysia, have held that experts breach their implied duties if they are uncontactable or refuse to testify, even when virtual attendance is an option. Although no sanctions were imposed due to the absence of reliance on the expert's evidence, the outcome might have been different if rebuttal evidence had been needed. Ennis (2019) highlighted that arbitration in common law jurisdictions often involves oral hearings, with reports serving as substitutes for examination in chief, followed by cross-examination, where lead questioning and re-examination allow experts to clarify positions. In contrast, civil law jurisdictions adopt an inquisitorial approach, where the tribunal leads the questioning, and counsel's cross-examination is limited to contentious issues, saving time compared to the common law model. Despite these differences, the expert's role is to be thoroughly questioned, with advocates using concise question strategies, designed to elicit "yes" or "no" answers, a technique often aimed at subtly guiding the witness into admitting key points. In this context, experts in both systems may face rigorous questioning. Davinder Singh concurred that counsels had only two possible opportunities to speak to the tribunal, one during cross where narration is cloaked as a question and the other, in submissions, instead of "flogging the witness to death". This paper will explore two cases, one related to liability and the other to delay causation, without revealing specific details due to arbitration's private and confidential nature.

Case in Point – 01: Liability

This case centred on the claimant's losses, alleging that the respondent, as the novated architect, failed to meet their obligations under a bespoke contract that omitted the role of contract administrator. The complexity arose from thousands of defects listed in the ambiguous "Scott's schedule," complicating expert assessment. The defects included construction issues attributed to the claimant and professional omissions by the respondent and other sub-consultants. The arbitration process followed a traditional approach, extending over five years.

The process was prolonged due to two years spent on interlocutory matters, another two years for the parties' principal reports on liabilities, followed by rebuttal and joint reports. Experts struggled to reconcile their differing assessments of the defects. The hearing, which began after factual witnesses, further prolonged the proceedings and escalated costs. An alternative approach, where the tribunal orders the claimant's principal report, followed by the respondent's rebuttal, could have streamlined the process. A more efficient method might have involved the tribunal directing the experts to produce a single joint report (SJR), especially if the tribunal had technical expertise in the construction industry. This would have saved both time and costs.

Case in Point – 02: Delay Causation

This dispute involved a single issue of delay, where the claimant sought the imposition of liquidated damages (LD) against the respondent, a developer. The complexity arose from uncertain details at the outset, leading to the agreement of counsel-led experts. Over five years, the process involved lengthy interlocutory proceedings, exchange of expert reports on delay analysis, and diverging opinions on baselines and methodologies. Despite rebuttal reports, the experts failed to reach a consensus, leading the tribunal to appoint a tribunal-led expert to consolidate findings, adding to more costs and time. A more efficient approach could have been for the tribunal, comprising technical experts, to direct the submission of a single joint report (SJR) since the dispute was limited to one issue, which is delay causation. By directing the experts to agree on a baseline schedule and methodology, or allowing the tribunal to decide on these matters, the arbitration could have been resolved in a much shorter time, potentially within two years. This approach would align with the tribunal's competence-competence, leveraging the experts' duty to assist the tribunal and reducing time and costs.

CONCLUSIONS

The tenets of arbitration, particularly party autonomy and competence-competence, often see a shift toward prioritising legal processes over technical considerations. This shift results in party autonomy being regarded as supreme, leaving the tribunal with limited control over time and costs. The discussion then explored the nature of experts in construction disputes, particularly concerning liability and delay causation, where expert methodologies are often seen as more metaphysical "dark art" than science. This led to the consideration of adopting experts' joint reports (SJR) and "hot tubbing" as mechanisms to shift the balance toward competence-competence, reducing reliance on party autonomy.

Construction disputes, being inherently technical, require tribunals with technical expertise to expedite proceedings while minimizing costs. It is argued that experts should ideally be heard before factual witnesses, and that through techniques like hot-tubbing, issues could be narrowed to the extent that not all factual witnesses may be necessary, ultimately saving both time and costs. However, counsels accustomed to traditional court processes and experts who rely on counsel-driven instructions may resist such innovations, as these changes could disrupt their business models, including eliminating the opportunity to "float" proceedings and the risks to the tribunal if uncooperative parties may just terminate the tribunal's mandate if things did not go according to their plans, or the position of preference for the selection of the tribunal would strictly be limited to legal practitioners and not technical professionals. Despite these potential concerns and undisclosed intentions, this paper invites further exploration of these developments in arbitration practice, especially in the international context.

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