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"TAINTED MEMORIES:

EXPOSING THE FALLACY OF WITNESS EVIDENCE

IN INTERNATIONAL ARBITRATION"

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TAINTED MEMORIES:

EXPOSING THE FALLACY OF WITNESS EVIDENCE

IN INTERNATIONAL ARBITRATION

*"'**Lawyer:** 'This myasthenia gravis -- does it affect your memory at all?'*

***Witness:** 'Yes.'*

***Lawyer:** 'And in what ways does it affect your memory?'*

***Witness:** 'I forget.'*

***Lawyer:** 'You forget. Can you give us an example of something that you've forgotten?'"*

- Hearing transcript series

I. INTRODUCTION

One of the principal and most frequently trumpeted successes of the modern system of international arbitration has been the evolution of standardised procedures and practices. A harmonised and internationally accepted procedural model has long taken hold, converging aspects of both civil and common law traditions, and bridging cultural diversities.

One of the core components of this model is the preparation and presentation of witness evidence – a component that is now commonplace in virtually all types of international arbitration, and enshrined in arbitration laws and rules worldwide. It is also a component that now constitutes a, and often the, principal focus of arbitration hearings, and frequently accounts for substantial time and costs.

And yet, despite occupying this central role in the arbitration process, the preparation and presentation of witness evidence is one that has been adopted and accepted largely without question or scrutiny. In particular, it has developed without any regard for what is a very substantial body of scientific research on the operation of human memory. This scholarship has begun to shape criminal procedure in national courts, but it is rarely applied in civil practice, and apparently never in the world of international arbitration. In our harmonised arbitration model, we regularly and confidently adduce and test recollections on the basis of interviews, witness statements, examination and cross-examination. But we do so with neither training nor understanding as to the actual nature of recollections. And once our model is tested by reference to the relevant science, it is immediately apparent that we have arrived at a standardised system that is fundamentally flawed in terms of procedure, theory and basic assumptions.

II. THE CONTEMPORARY MODEL FOR WITNESS EVIDENCE

Anglo-US Roots

The contemporary approach to witness evidence in international arbitration is an adaptation of the Anglo-US litigation model. This has traditionally placed oral testimony at the centre of its process and, being adversarial as opposed to inquisitorial in nature, has placed all elements of the procedure almost exclusively in the hands of each disputing party rather than the court.

The key distinguishing features of this model, including written witness statements and cross-examination, have their roots in the nineteenth century.

The procedural reforms in England of 1850 in both chancery and common law practice gave birth to the Chancery Procedure Act 1852 and to the Common Law Procedure Act of 1854, leading to the abolition of the older system of written interrogatories. Driving this development was the growing centrality given to cross-examination in common law criminal and civil procedure in the first half of the nineteenth century. Indeed, during this period, cross-examination became the key theoretical basis of the modern law of evidence both in England and throughout the common law world. As described in one commentary, one can see at this time a "*radical re-theorization of the nature of 'safeguard' in Anglo-American law – from oath, that is, fear of detection (and damnation) by God, to fear of exposure by cross-examining lawyers.*"[1]

The rise of cross-examination as the principal forensic mechanism led in turn to the rise of famous cross-examiners, who attained celebrity status in their time. Sir John Frederic Wrottesley in his treatise *The Examination of Witnesses in Court* notes in particular Sir William Webb Follett QC,[2] Sir Henry Hawkins PC QC,[3] Sir Charles Arthur Russell,[4] and John Duke Coleridge PC.[5] So important was cross-examination in this period that leading counsel would routinely leave examination-in chief to their juniors. In 1940, John H. Wigmore[6] described

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1 See Langbein, Lerner & Smith "*History of the Common Law*" (Kluwer 2009), at 376-7.

2 Sir William Webb Follett (2 December 1796 – 28 June 1845) was reputed to be the "*greatest advocate of the century*". He entered the Inner Temple in 1816 and began to practice in 1821. In 1824, he was called to the Bar. He was knighted in 1835.

3 Sir Henry Hawkins PC QC (14 September 1817 – 6 October 1907) served as a judge of the High Court of Justice between 1876 and 1898. He became a barrister in 1858 and a Queen's Counsel in 1859. He was engaged in many of the most famous trials of the reign of Queen Victoria (the *Simon Bertrand* case, the *Roupell v Waite* case, and the *Overend-Gurney* prosecution).

4 Sir Charles Arthur Russell, Baron Russell of Killowen GCMG PC (10 November 1832 – 10 August 1900) was Lord Chief Justice of England. He entered Lincoln's Inn in 1856, and became a Queen's Counsel in 1872. In 1893, he represented Britain in the *Bering Sea Arbitration*, his speech against the United States' contentions lasting eleven days, and was appointed GCMG for his services.

5 John Duke Coleridge, 1st Baron Coleridge, PC (3 December 1820 – 14 June 1894) was a British lawyer, judge and Liberal politician. His leading cases and judgments include *R v Coney* (1882) 8 QBD 534, *R v Dudley and Stephens* (1884) 14 QBD 273 DC, and *Gordon-Cumming v Wilson and Others* (1891) (the trial arising from the Royal Baccarat Scandal).

6 John H. Wigmore was a prominent American jurist and a recognised expert in the law of evidence. He taught at the Keio University in Tokyo, and was the dean of Northwestern Law School. He is the author of a method of graphical analysis of evidence known as the *Wigmore chart.*

cross-examination in his panegyric *A Treatise on the Anglo-American System of Evidence in Trials at Common Law* as "*the greatest legal engine ever invented for the discovery of truth*".[7]

But with this increased emphasis on oral witness testimony came ever longer, unwieldy and costly trials.

By the second half of the twentieth century, the evils of delays and disproportionate expenses plagued High Court litigation in England.[8] The situation was so desperate that in 1953, the Evershed Committee urged more intervention by the court in an attempt to control the high costs of litigation.[9] Little if anything came of this initiative. However, in 1988, another committee set in motion a more daring chain of reforms by proposing the modification of the adversarial system through a "*cards on the table*" approach.[10] The chief immediate consequence of this was the introduction, in 1992, of the compulsory exchange of witness statements before trial. A 1995 Practice Direction carried this process a good deal further;[11] witness statements were to stand as evidence-in-chief unless otherwise ordered, so that oral evidence would begin with cross-examination.

In 1996, Sir Harry Woolf (now Lord Woolf) published a report outlining his further reforms, which led to the adoption of the Civil Procedure Rules in 1999, and entrenched these developments.

From Litigation to Arbitration

For some reason, this system has been broadly transposed into international arbitration. This is curious, given its very different roots and history, and given the different civil law conception of witness testimony. Indeed, historically, full written witness statements have been generally unknown in civil law systems, and indeed explicitly forbidden in some.[12] The UNCITRAL Arbitration Rules were drafted to provide expressly for written witness statements, but only after lengthy debates and strong objections from civil law representatives.[13] The IBA Rules, as well as major institutional arbitration rules, have followed suit.[14] Since then, written witness statements have become almost a universal occurrence.[15]

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7 John H. Wigmore, *A Treatise on the Anglo-American System of Evidence in Trials at Common Law (3rd Ed 1940) – 10 Vols – Vol 5* at sect. 1367, at 29.

8 Baker, *An Introduction to English Legal History* (4th Ed, 2002), at 94-5.

9 Final Report of the Committee on Supreme Court Practice and Procedure (1953) Cmd 8878.

10 Report of the Review Body on Civil Justice (1988) Cm 394.

11 Practice Direction [1955] 1 All E.R. 385.

12 D. Caron, L. Caplan & M. Pellonpaa, *The UNCITRAL Arbitration Rules: A Commentary* 620 (2006).

13 UNCITRAL Rules (1976) – Art 25(5), and now UNCITRAL Rules (2010). *See*, Summary Record of the Ninth Meeting of the Committee of the Whole (II), UNCITRAL, Ninth Session, UN Doc. A/CN.9/9/C.2/SR.9, at para 38 et seq., as quoted in D. Caron, L. Caplan & M. Pellonpaa, *The UNCITRAL Arbitration Rules: A Commentary* 620 (2006).

14 The IBA Rules (2010), p. 5: "Witness Statement" means a written statement of testimony by a witness of fact; *See* also, LCIA rules, Art 20(6).

15 *See* generally: Buhler & Dorgan, *Witness Testimony Pursuant to the 1999 IBA Rules of Evidence in International Commercial Arbitration – Novel or Tested Standards?*, 17(1) J. Int's Arb 3 (2000); Gelinas,

The modern approach in international arbitration routinely comprises six key stages:

i. The identification and selection of witnesses.

ii. Initial proofing of witnesses, and the drafting of written witness statements and reply statements.

iii. Preparation of witnesses ahead of oral examination at a hearing.

iv. Examination-in-Chief, or direct examination.

v. Cross-examination.

vi. Re-examination.

Each stage has a number of key characteristics. As a prelude to the discussion below, it is useful to highlight a few pertinent points:

i. The identification and selection of witnesses.

Unlike inquisitorial systems in which the court may take the initiative in identifying potential witnesses that it considers may assist it, but just as in the Anglo-US model, the identification of witnesses in international arbitration is done by each party, on the basis of its own strategic requirements.[16]

ii. Initial proofing of witnesses, and the drafting of written witness statements and reply statements.

It is now standard practice for witnesses to be interviewed and "proofed" by counsel, and testimony to be set out in a full and detailed written statement which will stand as evidence-in-chief or direct testimony at a hearing.

Whilst there exist different methods by which a witness statement can be compiled, it is common for initial drafts to be prepared by lawyers and then checked by witnesses. Generalisations are difficult, but it is rarely the case in modern practice that a witness would draft his or her own statement from scratch, unsupervised by counsel. The result of this process is that written witness statements are often detailed and lengthy documents, which are costly to produce.

The same approach is followed in the preparation of witness statements in reply. Lawyers generally prepare the first draft following a review of an opposing party's submissions and evidence, occasionally with the witness' input, and the witness will generally review and check the draft thereafter.

Evidence Through Witnesses, in Levy & Veeder (eds), Arbitration and Oral Evidence, - Dossiers – ICC Institute of World Business Law (2004), 29; Schlaepfer, Witness Statements, in Levy & Veeder (supra) at 65.

[16] Under some systems an arbitral tribunal may also be empowered to request the production of witness testimony, but such powers are rarely invoked.

iii. Preparation of witnesses ahead of oral examination at a hearing.

It has become an accepted procedure in international arbitration for counsel to prepare witnesses for oral testimony, in particular for cross-examination. This is now so common that it is reflected in the IBA Rules.[17] That said, practices across jurisdictions vary widely as to the nature of this preparation exercise, ranging from no preparation at all, to limited procedural preparation, to "coaching" on the substance of the evidence, to full dress-rehearsals.

iv. Examination-in-Chief, or direct examination.

Given the use of full witness statements, this has become a limited exercise, often confined to general introductory and "warm-up" questions by the party calling the witness, and clarifications of the written evidence.

v. Cross-examination.

As with the Anglo-US model, this is a major component of the process, and largely centres upon the testing by opposing counsel of the evidence set out in written witness statements. The exercise proceeds (at least when done well) by way of precise, closed and carefully planned questions.

vi. Re-examination.

Again reflecting Anglo-US roots, re-examination is an opportunity to adduce further evidence from a witness, and respond or repair following the cross-examination, normally by "non-leading" questions (i.e. open questions that do not suggest the answer).

III. JUSTIFICATIONS BEHIND THE CONTEMPORARY MODEL

Before criticising the contemporary process, it is important to recall its justification.

Just as with the Anglo-US model, and perhaps differently to most civil law systems, witness testimony is widely considered in international arbitration as a key source of information alongside a contemporaneous documentary record. There is perceived value in the personal account of those involved in the events in question; in their ability to explain and fill gaps between documents; and to bring colour and context to the issues in dispute.

In part, this is value added by reason of specialised knowledge and experience in the particular case. But in large measure – and critically – all of these attributes rest upon forms of *recollection* of past events and matters that pertain to the dispute. They depend upon the individual witness' own account of his or her own past involvement in the relevant issues, and this essential element of *recollection* sets witnesses apart from experts.

[17] *See*, for example, von Segesser, *Witness Preparation*, 20 ASA Bull 222 (2002).

Similarly, the justification for the use of written witness statements in international arbitration tracks that deployed in national courts. Written witness statements are designed to encourage the orderly adducing of witness testimony. They afford each witness the fairest opportunity to present their evidence. They allow all other parties time to digest the evidence, and to react. They are considered essential in terms of efficiency, saving the otherwise laborious task of adducing evidence-in-chief by way of non-leading open questions. They allow cross-examination to be more focused. Overall they reduce the length of evidentiary hearings and avoid evidential ambushes.[18]

Further, the preparation of witnesses in advance of oral hearings has become a commonly accepted component of this process. In an adversarial system, as with most international arbitrations, the effective preparation of a witness is often said to be one of the advocate's most important tasks, as a means of ensuring that testimony is fairly and effectively adduced, and in protecting a witness from the opposing party:

> "*… Because the evidence presented at trial is the basis on which the fact finder will establish what happened, the manner in which that evidence is presented is of paramount importance. Without direct recourse to any dossier or other investigatory case file, judges and juries can decide the case based only upon what they see and hear in the courtroom. And because deciding what is seen and heard in the courtroom rests primarily upon the parties, preparing the presentation of evidence effectively is one of the adversarial advocate's most important tasks*."[19]

Equally, the process of cross-examination and re-examination is considered essential in international arbitration for the same reason as it is in court. Cross-examination is the critical opportunity to test a witness' credibility and account of the facts, and to put an opposing case.

Over many years, a complex web of codes, rules, protocols and guidelines have emerged throughout the arbitrating world on witness evidence, which have effectively set this model in stone. The process remains flexible as a matter of law, and there is nothing to prevent departures from this model. But the truth is that, in practice, departures are few and far between.

IV. FLAWS IN THE CONTEMPORARY MODEL

The contemporary model for adducing witness evidence, it is suggested, is flawed on two levels.

First, it is frequently flawed in practice. This is not so much an issue of design, but one of implementation. In its day-to-day use, it often now seems to serve very different ends.

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[18] *See*, e.g. Schlaepfer, *Witness Statements*, in Levy & Veeder (supra) at 65.

[19] Karemaker, Taylor & Pittman (2008) (in context of criminal process), *Witness Proofing in International Criminal Tribunals: Response to Ambos*, Leiden Journal of International Law (2008), 21:917-923 (CUP).

Second, and more significantly, it is flawed in terms of theory. The current model is premised upon the adducing of recollections, and yet it reflects a complete lack of understanding of the nature and workings of human memory.

(a) Flaws in Practice

The issue of implementation is not one in every case, and should not be overstated. But it exists, and anecdotal evidence suggests that the problems here are widespread.

Witness Selection: One may start with the first component identified above: the way counsel initially identify and select witnesses. As a practical reality, the witness identification and selection process is not about securing all available evidence in order to allow the tribunal to find the "*truth*". Rather, it is a highly strategic and tactical exercise aimed at selecting witnesses who are best able to present and express themselves; who support the official case; who are resilient enough to withstand cross-examination; and who are able to give a favourable impression to the tribunal. In many cases, this list of requirements may exclude key individuals, and thereby militate against the presentation of a complete evidential record. In such cases, the tribunal may only be left with the blunt and vastly inferior alternative of drawing adverse inferences by reason of a witnesses' absence.

Witness Statements: Next, the well-worn topic of witness statements. Despite their sound foundations as set out above, witness statements have become something very different – namely a major vehicle for advocacy. They are now the product of intense lawyering, just as written submissions. Indeed, they are often indistinguishable from written submissions. They tend to be extensive, exhaustive (and exhausting) in detail and highly polished. They will likely use the same phraseology as legal submissions, in the same law firm in-house format and font, with copious footnotes, and the same lawyers' reference in a corner. The witness may have difficulty stringing a sentence together on the stand, and yet his / her witness statement will frequently be in perfect English, with classical grammar, and the liberal use of terms such as "*aforementioned*" and "*inter alia*". These are documents that have very little to do with the actual words and recollections of the witness. In the words of Johnny Veeder QC:

> "*Written witness statements can bear little relation to the independent recollection of the factual witness, with draft after draft being crafted by the party's lawyer or the party itself, with the witness's written evidence becoming nothing more than special pleading, usually expressed at considerable length. It rarely contains the actual unassisted recollection of the witness expressed in his or her own actual words.*"[20]

And yet the pretence is maintained that the statement is that of a witness, and that it constitutes "evidence".

[20] Veeder, Introduction, in Levy & Veeder (eds), *Arbitration and Oral Evidence*, Dossiers – ICC Institute of World Business Law (2004), at 7-9.

The result of this process is a document that requires heightened cross-examination to test the veracity of the statement and to undo the effects of its preparation. That can impose a daunting task on a cross-examiner, who must "unpack" the statement, and dissect out the elements that may properly constitute the witness' actual evidence. The result, of necessity, is a lengthier and more critical process of cross-examination and subsequent submissions as might be required, for example, had there been a true statement of the witness, or the adducing of direct evidence by the tribunal. This was a scenario never intended by those who first introduced the witness statement procedure, and it raises important questions of proportionality and utility.

Witness Preparation: Then – as the next component – there is witness preparation. Surprisingly, there are no uniform guidelines and no uniform restrictions on the ambit of such preparation. Because different jurisdictions adhere to different approaches, counsel frequently conduct this exercise under constraints different to those binding upon their opponents. Hence one side may feel unable to do more than inform their witnesses of the arbitral procedure, and the broad issues in dispute, while their opponents are engaged in a full-scale mock cross-examination. The existence of diverse approaches obviously raises questions as to procedural equality.

Moreover, this lack of scrutiny and regulation is out of kilter with developments in other fields. For example, there has been a detailed debate in international criminal procedure as to whether to allow witness "*proofing*" at all. This is the subject of a series of articles in the Leiden Journal of International Law (2009-9).[21] A number of international criminal tribunals still allow witness proofing, but the aims and objectives of that process are specifically delimited. As first identified in the *Limaj* Trial Decision by the International Criminal Tribunal for Former Yugoslavia:

> "*… The process of human recollection is likely to be assisted … by a detailed canvassing during the pre-trial proofing of the relevant recollection of a witness … In particular, such proofing is likely to enable the more accurate, complete, orderly and efficient presentation of the evidence in the trial.*"[22]

The International Criminal Tribunal for Rwanda gives specific guidance on witness proofing. In the *Karemata* Trial Decision, the prosecution suggested that proofing be limited to:

> "*… preparing and familiarizing a witness with the proceedings before the Tribunal, comparing prior statements made by a witness, detecting differences and inconsistencies in recollection of the witness, allowing a witness to refresh his or her memory in respect of the evidence he or she will give, and inquiring and disclosing to the Defence additional information*

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[21] *See*, Karemaker, Taylor & Pittman, *Witness Proofing in International Criminal Tribunals: A critical analysis of widening procedural divergence* (2008) 21 LJIL 683; Ambos, *Witness proofing before the International Criminal Court: A reply to Karemaker*, Taylor, and Pittman (2008) 21 LJIL 911; Karemaker, Taylor & Pittman, *Witness Proofing in International Criminal Tribunals: A response to Ambos* (2008) 21 LJIL 917; Jordash, *The Practice of Witness Proofing in International Criminal Tribunals: Why the International Criminal Court Should Prohibit the Practice* (2009) 22 LJIL 501.

[22] *Prosecutor v Limaj*, Decision on Defence Motion on Prosecution Practice of "*Proofing*" Witnesses, Case No IT-03-66-T, 10 December 2004, at para 2.

> *and/or evidence of incriminatory or exculpatory nature in sufficient time prior to the witness testimony.*"[23]

Further, in the *Miluntinović* case, the prosecution at the ICTY asserted that the following additional activities also fall within acceptable proofing activities:

> " *... informing the witness on the areas likely [to] be asked in examination, cross-examination and re-examination as well as the form in which questions are likely [to] be asked and expected to be answered; informing the witness of appropriate and effective witness behaviour ... .*"[24]

In contrast to these general witness proofing guidelines, the International Criminal Court issued a ruling, on 30 November 2007, in the first case against Congolese warlord *Thomas Lubanga*, in which the Trial Chamber of the court departed from the practice in other tribunals, and prohibited the practice of witness proofing or substantive preparation of evidence by the parties.[25]

The Trial Chamber of the International Criminal Court held in particular that preparation of witness testimony by the parties could lead to a distortion of the truth, may come dangerously close to constituting a rehearsal of in-court testimony, could inhibit the "*entirety or the true extent of*"[26] an account, and could "*diminish what would otherwise be helpful spontaneity during the giving of evidence by a witness*."[27]

Critics of the witness proofing approach that is used by the international criminal tribunals have complained that it is far too extensive and that, in effect, it amounts to trial rehearsal and witness coaching. Others complain that such extensive witness proofing is impossible to police, and that it is impossible to draw clear lines between witness coaching and legitimate witness familiarisation when this approach is applied. This leaves the procedure with gaping grey areas and a vulnerability to abuse.

The English Court of Appeal in *R v Momodou* [2005] EWCA Crim 177 summarised these difficulties at para 61:

> "*The witness should give his or her own evidence, so far as practicable uninfluenced by what anyone else has said whether in formal discussions or informal conversations. The rule [against training] reduces, indeed hopefully avoids any possibility that one witness may tailor his evidence in the light of what anyone else said, and equally, avoids any unfounded perception that he may have done so.*

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[23] At para 15.

[24] *Prosecutor v Milutinović, Sainović, Odjanić, Pavković, Lazerević, and Lukić*, Decision on Odjanić Motion to Prohibit Witness Proofing, Case No. IT-05-87-T, Trial Chamber III, 12 December 2006.

[25] *Prosecutor v Lubanga* Decision Regarding the Practices Used to Prepare and Familiarise Witnesses for Giving Testimony at Trial, Case No. ICC-01/04-01/06, T. Ch.I, 30 November 2007. This affirmed an earlier decision by the Pre-Trial Chamber on 8 November 2006 which prohibited the prosecution from witness proofing prior to the confirmation hearing: *Prosecution v Lubanga* Decision on the Practices of Witness Familiarisation and Witness Proofing Case No. ICC-01/04-01/06, PTCI. Ch. I, 8 November 2006.

[26] *Lubanga* Tribal Decision, at para 51.

[27] *Ibid*, at para 52.

> *These risks are inherent in witness training. Even if the training takes place one-to-one with someone completely remote from the facts of the case itself, the witness may come, even unconsciously, to appreciate which aspects of his evidence are perhaps not quite consistent with what others are saying, or indeed not quite what is required of him.*
>
> *An honest witness may alter the emphasis of his evidence to accommodate what he thinks may be a different, more accurate, or simply better remembered perception of events.*
>
> *A dishonest witness will very rapidly calculate how his testimony may be 'improved'.*
>
> *These dangers are present in one-to-one witness training.*"[28]

These dangers, in fact, were recognised far earlier, as per the oft-quoted dictum of Judge Francis Finch of the New York Court of Appeals in 1880:

> "*While a discrete and prudent attorney may very properly ascertain from witnesses in advance of the trial what they in fact do know, and the extent and limitations of their memory, as a guide for his own examinations, he has no right, legal or moral, to go further. His duty is to extract the facts from the witness, not to pour them into him; to learn what the witness does know, not to teach him what he ought to know.*"[29]

Against this, and in support of the approach applied in international criminal procedure, it is said that witness proofing and preparation are essential in order properly to familiarise the witness with the tribunal procedures and to uncover all evidence otherwise unknown to all parties, in an orderly fashion. Further it is said that the risks of distorting evidence are manageable, and may be mitigated by four factors:[30]

1. cross-examination provides for an effective counterweight to the evidence being distorted by excessive preparation;

2. the ability of professional judges to police proofing and to discern the weight of evidence accordingly serves as guarantee that witness evidence will not be distorted by proofing;

3. the existence of ethical codes governing the conduct of counsel and the duties owed by counsel to the tribunal minimise the risks of evidence distortion; and

4. powers of contempt effectively endows judge with the authority to punish those who improperly influence witness evidence.

In international arbitration, the process of preparation of witnesses frequently exceeds even the low threshold applied in international criminal procedure. It is well known that large international law firms spend weeks if not months preparing their witnesses for a hearing. That

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[28] *R v Momodou* [2005] EWCA Crim 177, para 61.
[29] *In re Eldridge*, 37 NY 161 (NY 1880).
[30] *See* articles by Karemaker, Taylor & Pittman, supra.

preparation often entails a rigorous exercise including full scale rehearsals, notes to witnesses on how to answer cross-examiner's questions, scripts, and other techniques. There exist no clear guidelines that would limit this practice. The concern over the excesses of witness preparation in international arbitration brought into existence, on 27 September 2010, The Hague Principles on Ethical Standards for Counsel Appearing before International Courts and Tribunals ("the Principles"). Provision 6.2 of the Principles allows counsel to "*engage in pre-testimonial communication with a witness, subject to such rules as the international court or tribunal may have adopted*." However, the Principles do not offer a mechanism to police the process, nor any of the particular safeguards as relied upon in court and identified above.

Witness Testimony at Evidential Hearings: As a result of this lacuna, a number of negative consequences have emerged in international arbitration. Witness preparation has become a time consuming and expensive exercise. In turn, it requires more time and costs in cross-examination to unwind the preparation process. And the result of the process, at its worst, is evasive and counter-productive witnesses testimony that does not ultimately assist the tribunal. Indeed, stepping back, one may see the evidential exercise having degenerated into something of a farce: each side deploys the individuals best able to give a good impression to the tribunal; to remember their script; and to withstand cross-examination. This is far from the original purpose of "evidence", and – when put this way – is quite difficult to distinguish analytically from historic trial techniques that used proxies for the truth, such as "trial by combat"[31] or "trial by ordeal".[32]

The system of witness examination at hearings, although generally accepted without any question, itself raises a number of issues. Direct or Examination-in-Chief is rarely spontaneous, but rather a carefully choregraphed and prepared exercise. Cross-examination subjects witnesses to a process that can be highly artificial, high pressure, divorced from real life, and - on occasion - culturally inappropriate. It may reward resilience, but as a process

[31] Trial by combat was a method of Germanic law to settle accusations in the absence of witnesses or a confession, in which two parties in dispute fought in single combat; the winner of the fight was proclaimed to be right. It remained in use throughout the European Middle Ages, gradually disappearing in the 16th century. The practice was regulated in various Germanic legal codes and survived throughout the Viking Age in Scandinavia in the form of the "*Holmgang*". Capitularies governing its use appear from the year 803 onwards (Boretius 1.117). Louis the Pious – the Lord Woolf of his day – radically improved the efficiency of the process by prescribing combat between witnesses of each side rather than between the accuser and the accused, and briefly allowed for the ordeal of the cross in cases involving clerics. When Henry II reformed English civil procedure in the Assize of Clarendon in 1166, trial by jury became available, and lawyers, guarding the safety of the lives and limbs of their clients, steered people away from the wager of battle. A number of legal fictions were advised to enable litigants to avail themselves of the jury even in the sort of actions that were traditionally tried by wager of battle. The practice of averting trial by combat led to the modern concept of attorneys representing litigants. In practice, a person facing trial by combat was assisted by a second, often referred to as squire. the role of the squire was not only to attend the battle, but to arrange the particulars of the ceremony with the opposing squire. Over time, squires would meet and resolve the disputes during negotiations over combat.

[32] Trial by ordeal was a judicial practice by which the guilt or innocence of the accused was determined by subjecting him or her to a painful task. In some cases, the accused were considered innocent if they survived the test, or if their injuries healed. In others, only death was considered proof of innocence. If the accused died, they were often presumed to have gone to a suitable reward or punishment in the afterlife, which was considered to make trial by ordeal entirely fair. In the Assize of Clarendon of 1166, the law of the land required that "*anyone who shall be found, on the oath of the aforesaid [a jury], to be accused or notoriously suspect of having been a robber or murderer or thief, or a receiver of them … be taken and put to the ordeal of water.*"

may not be optimum for adducing genuine evidence. And re-examination generally proceeds amidst widespread misunderstanding as to what is a "leading" question. Indeed, at this late stage in the process, after all that a witness has generally been through, the idea that a question might improperly suggest an answer and thereby taint the evidence seems somewhat optimistic.

And so it is that the current model for witness testimony may no longer be serving its intended ends, or at least may not be the optimum means for doing so.

But the flaws in the contemporary model run far deeper – because the intended ends themselves rest upon a fundamentally flawed foundation.

(b) Flaws in Underlying Theory

As stated, the contemporary model is premised upon adducing and testing witnesses' "*recollections*". The entire process is infused with the notion of "*refreshing*" and articulating memory – whether of particular events, or the genesis of particular documents, or general background. And we measure credibility in part in terms of the accurateness of recollection. But this is a model that has been developed with a total disregard for research on the nature and operation of human memory. Psychologists, neurologists, behavioural scientists and many others have generated a vast literature on the intricate workings of the mind, and this has begun to be applied in a number of fields. In criminal procedure in certain countries, this research has given rise to detailed guidelines, which would appear highly relevant in other adversarial contexts.[33] But despite dealing in memory, international arbitral procedure seems to have evolved oblivious to this body of knowledge and experience.

Once one tests the current arbitral model against the scientific research, it is simply unsustainable. It is built upon a basic misunderstanding as to the very nature of memory. It deploys a system for adducing evidence and supposedly "*refreshing*" memory that leaves little or no chance that any recollection will survive untainted. And it allows credibility to be assessed against an incorrect measure.

What follows is a brief and necessarily incomplete distillation of some aspects of this research.

The Nature of Memory

Many of us have a "recording device" conception of memory. But most contemporary neuroscientists agree that memory is not a single organ like the heart or liver, and it does not behave like a video recorder. It lacks record, stop, and playback functions. Rather, memory is a constructive *process* that entails an alliance of multiple interacting structures.[34] Every time a memory is recalled, a *process* occurs which is dependent upon a number of stages of retrieval

[33] *See* e.g. "*Guidelines on Memory and the Law*" Recommendations from the Scientific Study of Human Memory A Report from the Research Board Revised April 2010 Published by The British Psychological Society.
[34] A Baddeley, *The essentials of human memory*, Psychology press, 1999, p.1.

and reconstruction. Overall, this is a fragile, delicate, fallible and unreliable mechanism, prone to elaboration, omission, and distortion each time the process takes place.[35]

To understand the concept of memory, it is helpful to break it down into three sequential categories of activity:

1. perception and acquisition of information;
2. storage, encoding, and retention of information; and
3. retrieval of information.

The weaknesses and variables of the human memory are such that external events may have an adverse impact at each of these three stages. Each is considered in turn.

1. Perception and acquisition of information

The initial stage of capturing information is entirely dependent upon the quality and quantity of the sensory experiences involved. Importantly, we do not receive information passively like a video recorder. Rather, we are constantly engaged in constructive perception. We take an active part in creating the meaning or significance of the data which we take in. Perception is then in itself highly subjective. The constructive nature of perception is greatest when the actual sensory input is weak, unclear, or ambiguous. This explains why several people witnessing the same event can all draw attention to different aspects of what they have witnessed. Everyone will see something slightly differently.

Differences in perception is a highly complex field in its own right, and for reasons of space and patience, this is best left to another lecture.

2. Storage, encoding, retention of information

Short-term memory is thought to be able to store about seven items for few seconds only until new incoming information displaces the old. If the information does not then move into long-term store, it is lost.[36] The recollections retrieved from a long-term memory then depend on retention and retrieval mechanisms.

This leads us to a number of characteristics of long-term memory.

Long term memory is thought to be coded by meaning rather than linked to related information and associations. This is an important first point: what is recorded is not an accurate copy of the actual data but its interpretation, i.e. what we remember is influenced by what we already know. A record of a person's experience of reality is not a record of the reality itself as, for example, a video might be. An experience is a product of a mind interacting with, and making

[35] F.C. Bartlett, *Remembering: a Study in Experimental and Social Psychology*, Cambridge University Press 1932.

[36] *See*, Dr J Cohen, *Errors of Recall and Credibility: Can Omissions and Discrepancies in Successive Statements Reasonably be Said to Undermine Credibility of Testimony?* The medico-legal society 2001.

sense of, the reality. Thus, an experience and a memory of it always contain elements that originate from the experiencing person's own mind rather than from reality.

Secondly, a single memory is not stored in one place in the brain. Rather, it will be disassembled into separate components, each of which will be stored in a different place. Each time it comes to recollecting the memory, the separate parts will be reassembled – but in this process, the reassembly may not take place in exactly the same way on each occasion.

To put this in more technical, anatomical terms, sensory information (vision / touch / taste / smell / hearing) must first pass through the brain stem and onto the thalmus, which acts like a relay station directing the signals to the various sensory lobes of the brain, where they are evaluated. Processed information then reaches the prefrontal cortex where it enters our consciousness forms short-term memory.

To store these memories for longer duration, the information must then run through the hippocampus, and this is where memories are broken down into different categories. Rather than storing all memories in one area of the brain like a hard drive, the hippocampus redirects fragments to different cortices. Science in this area has so progressed that it is now possible to identify which types of memory are directed to which physical areas of the brain. So, for example, emotional memories are stored in the amygdala; words are recorded in the temporal lobe; colours and other visual information are collected in the occipital lobe, and the sense of touch and movement reside in the parietal lobe. More than 20 categories of memory that are stored in different parts of the brain have been identified, including fruits & vegetables; plants; animals; body parts; colours; numbers; letters; nouns; verbs; proper names; faces; facial expressions; and various emotions and sounds.[37]

Hence, a single memory, such as a walk in the park, involves information that is broken down and stored in many different regions of the brain. Reliving just one aspect of the memory (*e.g.* the smell of freshly cut grass) can send the brain racing to pull all the fragments together to form a cohesive recollection.

The accuracy of any such recollection will then depend in large measure on the reliability of the retention and the process of reassembly. Each is subject to a range of vulnerabilities.

To highlight the fragile nature of retention, one may focus, by way of example, on a few particular phenomena.

First, retention is especially vulnerable when people repeatedly experience the same or similar event, for example as part of a routine or daily, monthly or annual occurrence. It is generally accepted that in such situations, a general mental representation of the event is formed in long-term memory, often referred to as a memory "*schema*". People have schemas for a very wide range of events, from having breakfast, to going on holiday, to attending a board meeting, to (arguably most repetitively) attending an international arbitration conference.

[37] Michio Kaku, *The Future of the Mind* (Penguin), Chapt 5.

A schema is not a memory of a single experience or event, but a general mental representation derived from many similar experiences. It is essentially a prediction about how a particular event should unfold over time. Schemas are especially useful as they reduce the mind's processing load, allow us to conduct other activities, such as talking, thinking, socialising, without having to constantly monitor and attend to the environment. Schematic representations have some specific memories associated with them, but there are usually relatively few of these.

Events in which something unusual occurred, something outside the predictions of the schema, are often highly memorable. In general, however, the schema mechanism functions to prevent a detailed encoding of experience. In schematic events, information is highly redundant, and if an event proceeds broadly in line with the schema, then there is no informational value in retaining a specific memory of that event. It seems that our memories have evolved to avoid storing what would be redundant information.

Without knowing of its nature and operation, our arbitral process has no mechanism to accommodate this phenomenon. Neither counsel nor arbitrators are trained to detect it, and the presentation and testing of evidence takes no account of it. Critically, as is the case with every phenomena described in this paper, if a witness recalls a schema rather than a genuine individual memory, this does not entail any dishonesty. It will be retrieved and described as an entirely honest, genuine recollection. But it may bear little or no relation to what actually happened.

Secondly, and perhaps more obviously, retention is subject to time. Details tend to be lost over time and become generalised, sometimes merging with similar memories. This is why when it comes to retrieval (addressed separately below), a further level of processing is required. A longer lasting memory is achieved by attaching meaning and significance to the information that is being retrieved. For example, repeated childhood holidays to the same beach will result in blurred and blended memories, but we can recall the year in which the dog was lost on the beach by attaching other memories to that year, such as the age of the dog, the people present at the incident, the emotions experienced, and so on.

In this regard, experts refer to the "retention interval". This is the period of time that has elapsed between an experience and its recollection.[38] It is one of the most powerful determinants of the durability of human memory.[39] If the process of recollection has taken

[38] *See* generally, A. Baddeley, *Human memory: Theory and practice* (2nd rev. ed.), Hove, Sussex: Psychology Press 1997; C.J. Brainerd & V.F. Reyna, *The science of false memory*, New York: Oxford University Press, 2005; M.A. Conway & C.W. Pleydell-Pearce, *The construction of autobiographical memories in the self memory system*, 2002, Psychological review, 107, 261-288; E.F. Loftus, *Planting misinformation in the human mind: A 30-year investigation of the malleability of memory*. Learning & memory, 2005, 12, 361-366; H.L. Roediger, Y. Dudai & S.M. Fitzpatrick (Eds), *Science of memory: concepts, 2007*, New York, Oxford University Press; D.L. Schachter, *The seven sins of memory: How the mind forgets and remembers*, 2001, New York: Houghton Mifflin Co.; D. Strange, S. Clifasefi & M. Gary, *False memories* (pp. 137-170) in M. Gary & H Hayne (Eds) *Do justice and let the sky fall: Elizabeth Loftus and her contributions to science, law and academic freedom*, 2007, Hillsdale NK: Lawrence Erlbaum Associates.

[39] B.B. Murdock Jnr, *Human memory: Theory and data*, Potomac, 1974; Erlbaum, *The issue of retention interval featured centrally in an important case; R v Powell* (Michael John) (2006) EWCA Crim 3, where it was

place soon after the experience, the recollection will likely be more reliable. If the recollection has taken place long after the event, errors in retention will be more likely. Importantly - and less obviously - each rehearsal of witness evidence, and each reassembly of memory that this entails, will have a cementing and confirming effect, and an impact on subsequent retention and the next recall. Put another way, each subsequent recall offers an opportunity for distortion and error to be assimilated to the memory and incorporated into it on a long-term basis.

Similarly, newer information may be clearer in a subject's mind than older, more hazy information. Loftus, Miller & Burns (1978) demonstrated that if subjects are given misleading information shortly after witnessing an event, both sets of information will fade over time. But if subjects are given misleading information shortly before being interviewed, the new information will be more salient, compelling and generally fresher in their minds, and as such more likely to be recalled, as compared with original memory. The danger is then that, if faced with discrepancy between sources, subjects are likely to trust new information in preference to hazier recollection. And new information may well have been provided before or during each recall.

Translated into the current arbitral model, by the time a witness testifies at a hearing, he or she will have reassembled, recalled and then restored the relevant experience a large number of times. At each occasion, each step would have been with the "benefit" of legal assistance, and common techniques of "refreshing". And by reason of each recollection and restoring, the memory will have attained more acuity. So it is that unlike usual recollections by a person interviewed for the first time, a witness will likely have less "haze", and clearer, more confident recall. But – in truth – despite being articulated as a genuine recollection, this is likely to be recall of a meddly of information from different sources, acquired, processed, stored and made more vivid over a period of time.

3. Retrieval of Information

In the context of the third stage – the retrieval of information upon recalling a memory – there exists a large body of research on potential changes or corruptions that may occur. In general, and in normal populations, it is easy to induce major memory errors and wholly false memories,[40] to mislead witnesses about the details of staged events and to increase the confidence of others in the accuracy of a falsely reported memory.[41]

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concluded that achieving best evidence in a child witness was compromised by a nine-week delay between the alleged incident of abuse and the police video interview.

[40] C.J. Brainerd & V.F. Reyna, *The science of false memory*, 2005, New York: Oxford University Press; M.A. Conway, A.F. Collins, S.E. Gathercole & S.J. Anderson, *Recollections of true and false autobiographical memories*, 1996, Journal of Experimental Psychology: General, 125(1), 69-95; I.E. Hyman, T.H. Husband, Jnr. & F.J. Billings, *False memories of childhood experiences*, 2000, in U. Neisser & I.E. Hyman (Eds), *Memory observed* (2nd ed., pp 335-349), New York: Worth Publishers; E.F. Loftus, *Planting misinformation in the human mind: A 30-year investigation of the malleability of memory*, 2005,. Learning & Memory, 12, 361-366.

[41] H.L. Roediger & K.B. McDermott, *Creating false memories: Remembering words not presented in lists*, 1995, Journal of Experimental Psychology: Learning, Memory, and Cognition, 21, 803-814.

This is of particular relevance in the arbitral context, since the precise manner in which questions are asked and information is obtained from a witness is likely to have a direct and irremediable effect upon the information itself.

Again it is to be noted that the changes and corruptions in memory that may occur at this stage have nothing at all to do with witness dishonesty. In each case, the memory will appear to the witness recalling it as genuine.

What follows, once again, is by way of select example only. For each example, it is plain that the current model for witness testimony in international arbitration is singularly ill-equipped to account for it.

i. Repetition

William Hirst, one of the co-chairs of the 9/11 Memory Consortium, explained that some memories might strike us as convincing not because they are necessarily accurate but because of how often we call them to mind (reassemble them) and how easy it is to do so.

Much research has been done on the effect of repetition on memory. In part, this relates to the point already made earlier about the effect on the acuity of memories of repeated recollection and restoring. But repetition goes beyond this. For example, Anderson, Cohen and Taylor (2000) demonstrated that when people are asked to repeat information they have already given, they usually (and subconsciously) assume that the first account is unsatisfactory in some way and may seek to rectify this by supplying more and different details.[42] Similarly, Tversky and Marsh (2000) showed that when people retell events they take (again subconsciously) different perspectives for different audiences and purposes.[43]

These phenomena reinforce each other. If a recollection has been altered because of repeated requests for it, the recollection will then be restored in its altered state. When next recalled, it will be both changed, and more vivid (because of the number of times it has been reassembled).

Further still, witnesses' memories can be strengthened by bolstering their confidence, and one of the most efficient confidence-related bolstering techniques has been shown to be repeated interviewing**.** The simple act of repeating a statement can strengthen one's belief that the statement is true, bringing about a so-called "*illusory truth effect*".

ii. Subconscious Editing

There is a well-recognised phenomenon whereby recollections are subconsciously edited by the person recalling them, in order to ensure that they conform with assumptions, or do not appear implausible or perverse. The result is an amalgam of what we see and what we subsequently think.

[42] S.J. Anderson, G. Cohen, and S. Taylor, *Rewriting the past: some factors affecting the variability of personal memories*, 2000, Applied Cognitive Psychology, 14:435-54.

[43] B. Tversky, E.J. Marsh, *Biased retellings of events yield biased memories*, 2000, Cognitive Psychology, February 40(1):1-38.

A simple example of this is when a person is presented with a list of words in a logical chain, all related to one link word. But with the key link word missing. For example, a list of different words all connected to weather, without the word "weather". Studies have shown that if subjects are asked to memorise such a list, and return some time later to recall it, they will usually add the missing link word.

In 1932, Sir Frederic Charles Bartlett described an experiment in which subjects were shown drawings of men from different branches of the armed services in the aftermath of World War I, and asked some time later to recall these. An interesting phenomenon transpired. Subjects often exhibited changes in memory by recalling very different faces. Largely contaminated by a stereotype of what the subjects took to be an average soldier, airman, or other military personnel, these stereotypes became interwoven with the original memory. The influence of the stereotypes was so strong that when shown the original drawings, many simply refused to believe that these were the same as those they had originally seen.

This phenomenon results from what is a subconscious misattribution of the source of information, or our inability to discriminate between internal or imagined and external, or seen or heard events (often referred to as "*reality monitoring*"). Confusion or errors in reality monitoring lead to false memories by, for example, incorporating one's thoughts with the perceptual details of an actual event, thereby confusing imagination with actual perception.[44]

We make records of our internal events such as dreams, thoughts, imaginings, and of our perceptions of external events. Often we are not able to make perfect discriminations between the two. This means that an accurate recall of an actual event may be contaminated by details that originate solely from our thoughts, wishes, or imaginings. Our decision about the origin or source of an event that we "*remember*" is made on the basis of various qualities of that memory, on its perceptual, conceptual, emotional, and contextual details.

When a high amount of detail can be recalled, this usually leads to a decision that the event must have happened as remembered. This can influence our judgments not only of the veracity of our own memories, but also that of the memories of others.[45] However, we also evaluate the details that we remember in terms of their plausibility. If the details are consistent with other available information then we tend to accept their veracity. If the details are inconsistent, we would reject their veracity. We also cross-check the details against their realism. If the details are bizarre, then we are likely to reject them.[46]

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[44] M.K. Johnson, *Memory and reality*, 2006, American Psychologist, 61, 760-771.

[45] L.A. Henkel, N. Franklin & M.K. Johnson, *Cross-modal source-monitoring confusions between perceived and imagined events*, 2000, Journal of Experimental Psychology: learning, memory, and cognition, 26, 321-335.

[46] R. Gordon, N. Franklin & J. Beck, *Wishful thinking and source monitoring*, 2005, Memory and Cognition, 33, 418-429; J.W. Schooler, D. Gerhard E.F. & Loftus, *Qualities of the unreal*, 1986, Journal of Experimental Psychology: Learning, Memory and Cognition, 12. 171-181.

iii. The Introduction of Information By Others

As amply demonstrated in the work of Elizabeth Loftus on criminal procedure and eyewitness recollections, depending on the way information is sought, it is comparatively easy to introduce non-existent objects and other information into subject's memories.

By way of simple example, a non-existent object may casually be mentioned in a conversation or as part of a line of questions, and become part of a prior memory. In one experiment on this, subjects were shown a film depicting a car accident. Half of the subjects were then asked "*how fast was the white sports car going while travelling along the country road*"? The other half was asked "*how fast was the white sports care going when it passed the barn while travelling along the country road?*" The way the questions were formulated was deliberately misleading: there was no barn on the country road in the film.

One week later, when the research subjects were asked whether they had actually seen a barn, of those earlier misled 17% said that they had seen a barn, of those not so misled 3% said they had seen a barn.

But this phenomenon is all the more worrying, given that memory may be manipulated much more indirectly. In a 1979 study, a fake theft was staged at a railway station. The supposed victim claimed that her tape recorder had been stolen from her bag. A number of witnesses were asked about what they had seen. One week later the witnesses were interviewed again, and this time they were asked what the tape recorder looked like. More than half of the subjects happily provided a description, even though in reality none of the witnesses had actually seen the tape recorder that was alleged to have been stolen. That was because there never was a tape recorder. The victim had claimed that her tape recorder had been stolen, and the thief had reached into her bag, but he had then pretended to remove something, and to hide it under his coat.

The "*implanting*" of information occurs easily, especially when people who experience the same event talk to one another, overhear each other talk, or gain access to new information from the media, interviewers, parents, friends or other sources.[47]

The significance of this for the arbitral model is manifest.

iv. Compromise Memories

There is a recognised phenomenon whereby information which enters via one sense modality, for example, visually, can be altered by information presented via a different modality, for example, auditorily. Unlike the "*interference with memory*" described above (whereby newly introduced information takes the place of or is added to the original information), this involves a process of "*unconscious reconciling*".

[47] S.J. Ceci & M. Bruck, *Jeopardy in the courtroom: A scientific analysis of children's testimony*, 1995, Washington, DC: American Psychological Association; R.E. Holliday, V.F. Reyna & B.K. Hayes, *Memory processes underlying misinformation effects in child witnesses*, 2002, Developmental Review, 22, 37-77.

In a 1975 study of the compromise memory phenomenon, students were shown a three-minute film in which a group of eight noisy demonstrators disrupt a lecture. After viewing the film, the subjects were asked a series of questions. Half were asked "*Was the leader of the 4 demonstrators who entered the classroom a male?*" Another half were asked "*Was the leader of the 12 demonstrators who entered the classroom a male?*" One week later, all students were asked "*How many demonstrators did you see entering the classroom?*"

Those subjects who were earlier asked about 12 demonstrators reported on average that they had seen 8.9 people. Those subjects earlier asked about 4 demonstrators reported on average that they had seen 6.4 people. This is a perfect example of unconscious reconciling between two sources of information. All students retrieved their recollections as genuine "*memory*". What affected their recollection was the way the questions were formulated.

v. The Phrasing of Questions

This leads to the critical impact of questioning. In a 1974 study by Loftus & Palmer, subjects were shown a video of a car accident. After reviewing the video, the subjects were asked a series of questions, including one question as to the speed of the vehicles at the time of the impact.

The question was, specifically, "*About how fast were the cars going when they hit each other?*" One crucial word, however, was altered in this question for each group of subjects, as follows:

- "*About how fast were the cars going when they **smashed** each other?*"
- "*About how fast were the cars going when they **collided** with each other?*"
- "*About how fast were the cars going when they **bumped** each other?*"
- "*About how fast were the cars going when they **made contact with** each other?*"

Each adjustment in language produced a different recollection of speed – directly connected with the connotation of the words used. For example, those who were asked about the speed of "*contact*" on average estimated that the speed was 30.8 mph. Those who were asked about the cars that "*smashed*", averaged the speed at 40.8 mph.

Some subjects were then invited back one week later and asked "*Did you see any broken glass?*" In fact, there was no broken glass at the scene. Those subjects previously questioned with the word "*smashed*" were more likely to recall broken glass (16 out of 50) than those who had been questioned with the word "*hit*" (7 out of 50).

Similar effects have been recorded when one group of subjects was asked "*How far away was the car when the boy stepped into the road?*" and another was asked "*How close was the car when the boy stepped into the road?*".

Neither of these questions is a leading question, and yet each produces a different result.

vi. Social Desirability

When a memory is retrieved, it becomes part of the present moment. As such, it is subject to the cognitive, emotional, physical, social, cultural, historical, and belief context in which it is recalled**,** with all that entails.

Psychologists measure "*social desirability*" as an indicator of the extent to which subjects attempt to be obliging and give socially acceptable answers. Again, this is often a subconscious dynamic, which will taint the retrieval process.

The common thread throughout these examples is the easy integration of sources of information in one "memory". In the words of Elizabeth Loftus in her 1979 study:

> "*over time, information from [original and external] sources may be integrated in such a way that we are unable to tell from which source some specific detail is recalled. All we have is one 'memory'.*"

Flashbulb Memories

A frequent reaction to this research is that it cannot apply to dramatic, traumatic, or vivid experiences which shock or burn upon the mind, such as John F Kennedy's assassination, or the terrorist attacks of 9/11, or Princess Diana's death – so-called "*Flashbulb Memories*". But even these are vulnerable to the same types of contamination.

On 7 December 1941, a 13 year-old boy named Ulric Neisser was sitting on his father's knee listening to a professional baseball game on the radio. Suddenly, in the middle of the game, the broadcast was interrupted, and a stern voice came on air to announce that the Japanese had just attacked Pearl Harbour. The experience was devastating, as Neisser's world in that instant was turned upside down. For decades to come, he would carry around the memory of that radio announcer, interrupting the baseball game. As with all such shocking moments, the recollection was vivid and intense.

Vivid and intense, that is, until 40 years later, when something dawned on Neisser: professional baseball is not played in December.

By then, as luck would have it, the 13 year old baseball fan had become a psychology professor at Emory University. In mid-1989 he published a ground-breaking study on memory failures. in which he demonstrated the fallibility of flashbulb memories. In his study, Neisser surveyed his students about their memories of the 1986 NASA *Challenger* disaster the day after it happened, and then again 3 years later. Less than 7% of the second reports matched the initial report. 50% were wrong in two-thirds of their assertions, while 25% were wrong in every major detail. Subsequent work by other researchers has confirmed these findings.[48]

[48] *See* K. Schultz, *Being Wrong: Adventures in the Margin of Error*, at pages 71-72.

Assessing Credibility

There is then the question as to how arbitral tribunals can possibly assess the credibility of witnesses' recollections, without an appreciation of the science of memory.

This is an exercise regularly undertaken by arbitral tribunals, and one – it is suggested – based upon many flawed assumptions. In particular, aside from consistency with other evidence, tribunals commonly judge credibility by reference to the confidence with which recollections are recounted, the existence of specific concrete detail in a recollection, and the completeness and coherence of the testimony.

But as should be clear from the references above, none of these are reliable indicia of truth.

Confidence has already been addressed. Witness confidence is not by itself a reliable indicator of memory accuracy. Moreover, witness confidence is malleable. In particular, providing witnesses with feedback confirming their statement leads to inflated confidence.[49]

As for the presence of details, arbitral tribunals are not alone. In an experiment that featured a mock trial of a bank robbery,[50] mock jurors were asked to judge the credibility of the evidence of the witnesses. One set of witnesses described events simply and without any details. For example, the (mock) witness might state "*as the robber ran out of the bank I think he turned right and ran off down the street*". In another version the same witness (to a new mock jury) would state "*as the robber, who I remember was wearing a green jumper, ran out of the bank I think he turned right and ran off down the street*". The jury rated this second version of events as far more likely to be correct than the first. The effect is known as "*trivial persuasion*" because by inclusion of a trivial or irrelevant but highly specific detail, the perceived credibility of the evidence is markedly raised.[51] But the inclusion of incidental or mundane detail does not mean that such detail is correct. On the contrary, as the studies described earlier have shown, a range of dynamics may well have interposed the detail at a subsequent stage, or the detail itself may well simply be wrong.

When it comes to completeness, one must bear in mind that memories for experienced events are always – to some degree – incomplete. Memories are time-compressed fragmentary records of experience. Any account of a memory will feature forgotten details and gaps, but this is no indicator, in itself, of accuracy. On the contrary, accounts of memories that do not feature gaps are highly unusual.

Ultimately, the plausibility of a memory is often judged by the extent to which it fits with expectations about how the world works and how specific kinds of people behave. These are

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[49] D.B. Wright & E.M. Skagerberg, *Post-identification feedback affects real eyewitnesses*, 2007, Psychological Science, 18, 172-178.

[50] B.E. Bell & E.E. Loftus, *Trivial Persuasion in the courtroom: The power of (a few) minor details*, 1989, Journal of Personality and Social Psychology, 56(5), 669-679.

[51] D. Middleton & S.D. Brown, *The social psychology of experience: studies in remembering and forgetting*, 2005, London, Sage. *See also* R.S. Schmechel, T.P. O'Toole, C. Easterly & E.F. Loftus, *Beyond the ken? Testing jurors' understanding of eyewitness reliability evidence*, 2006, Journal of Jurimetrics, 46, 177-214.

expectations which, given their nature, may well be unreliable.[52] And this all the more so when judging witnesses' recollections in the context of international arbitration, with arbitrators, practitioners and parties from often diverse cultural backgrounds.

V. A FURTHER DYNAMIC: BEING WRONG

Once a position has been adopted and labelled (perhaps inaccurately) a "*Recollection*", what are the precise dynamics by which a witness will entrench it *or* stick to it, and how readily will a witness resile from it?

This question has also been the subject of research, and it has been shown that there are further important dynamics at play in this context. In her 2010 study, memorably[53] entitled "*Being Wrong: Adventures in the Margin of Error*",[54] Kathryn Schulz addressed the relationship that we as a society and culture have cultivated with error. At the heart of her research is the following issue:

> "*Being wrong is an inescapable part of being alive. And yet we go through life tacitly assuming (or loudly insisting) that we are right about nearly everything - from our political beliefs to our private memories... But if being wrong is so natural, why are we all so bad at imagining that our beliefs could be mistaken?*"

The research offers a detailed account of how "being wrong" is a state to which we are naturally averse, and how we treat our own perceived "*Margin of Accuracy*" and "*Margin of Error*". Importantly, when data has been categorised within a "*Margin of Accuracy*", many forces will ensure that it stays there.[55] Two key forces (of many) are significant in this regard: (a) an aversion to error and (b) an indiscriminate enjoyment of being right.

The aversion to error is plagued by subconscious negative associations with "*error*", such as that an error is a "*bad*" thing, that it is dangerous, humiliating, distasteful. This set of associations has been summed up by an Italian cognitive scientist Massimo Piattelli-Palmarini, who noted that we err because of, among other things:

> "*inattention, distraction, lack of interest, poor preparation, genuine stupidity, timidity, bragadocio, emotional imbalance... ideological, racial, social or chauvinistic prejudices, as well as aggressive or prevaricatory instincts.*"

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[52] D. Middleton & S.D. Brown, *The social psychology of experience: Studies in remembering and forgetting*, 2005, London*:* Sage; D. Middleton & D. Edwards, *Collective remembering*, 1990, London: Sage.

[53] That is, subject to the likely corruptions described earlier.

[54] K Schultz, *Being Wrong: Adventures in the Margin of Error*, Portobello Books 2010.

[55] *See* in this regard, fridge magnet on author's fridge at home: "*There are two types of people in every marriage: one person who is always right, and another who is called the Husband*".

Further, cultures are developed in such a way that, while there is a handful of established options to help one cope with certain types of error, such as a moral transgression, no obvious mechanism exists for coping with a simple error:

> "*By contrast, if you commit an error - such as realizing halfway through an argument that you were mistaken ... you will not find any obvious, ready-to-hand resources to help you deal with it.*"

In the context of international arbitration, of course, there exists a particular pressure on a witness not to admit error or inconsistency in his or her testimony, and not to depart from his or her written statement, and recollections.

As noted, the second force that drives our error-related perceptions is an indiscriminate enjoyment of being right, matched by an almost equally indiscriminate feeling that we are right:

> "*Occasionally, this feeling spills into the foreground, as when we argue or evangelize, make predictions or place bets. Most often, though, it is just psychological backdrop. A whole lot of us go through life assuming that we are basically right, basically all the time, about basically everything ... [including memories]*".

We go through life experiencing "*a serene faith in our own rightness*". And we positively excel at acknowledging other people's errors. Schulz indicated in her study that this, equally, creates another source of pressure to deny error:

> "*Witness, for instance, the difficulty with which even the well-mannered among us stifle the urge to say 'I **told you** so'. The brilliance of this phrase (or odiousness, depending on whether you get to say it or must endure hearing it) derives from its admirably compact way of making the point that not only was I right, I was also right about being right. In the instant of uttering it, I become right squared, maybe even right factorial, logarithmically right - at any rate, really, extremely right, and really, extremely delighted about it.*"

Knowledge v Belief: Further still, while memories may well be false and inaccurate, it is important to appreciate that to the person doing the recalling, they may well come to "*feel right*". They produce a strong feeling of "*knowing*". None of us capture our memories in perfect, strobe-like detail, but almost all of us believe in them with blinding conviction.

This conviction is most pronounced with respect to flashbulb memories, but it is not so limited. Even with comparatively trivial matters, we believe in our "*recollections*" with sincerity, and defend them with tenacity. And this feeling of "*rightness*" and "*knowing*" is a psychological state. As Schulz summarises in her research, "We feel that we are right because we *feel* that we are right: we take our own certainty as an indicator of accuracy".[56]

[56] *Ibid*, p 74.

In light of this, it becomes critical to distinguish "*knowledge*" from "*belief*". For several millennia, philosophers have tried to identify criteria by which "*beliefs*" might be elevated into a loftier category of "*knowledge*". But philosophy aside, for most of us "*belief*" transcends into "*knowledge*" simply by virtue of a "*feeling of knowing*". As William James wrote:

> "*Of some things we feel that we are certain; we know, and we know that we do know. There is something that gives a click inside of us, a bell that strikes twelve, when the hands of our mental clock have swept the dial and meet over the meridian hour.*"

The feeling of knowing is incredibly convincing and inordinately satisfying - whether we are right or not – but it is not a good way to gauge the accuracy of our knowledge. So what test do we apply to discern belief from knowledge? Schulz notes in her research that:

> "*The barometer we use to determine whether we do or don't know something is deeply, unfixably, flawed. By contrast, our capacity to ignore the fact that we don't know things works extremely well.*" [57]

Again, all of these dynamics bear directly upon the adducing and testing of witness testimony. And they are rarely if ever touched upon.

V. CONCLUSION

The prevailing model for the preparation, adducing and testing of witness testimony can no longer be regarded as optimum in serving its intended goals. At every stage it is vulnerable to abuse in practice, and each stage is indefensible in any event as matter of science. Indeed, given the frailty of memory, it is difficult to conceive of a less suitable process.

But notwithstanding this critique, this is certainly not a call for the abolition of witness testimony in international arbitration. There obviously remains a proper place for such evidence in this process. But the manner in which such testimony is adduced and tested requires fundamental re-thinking. This all the more so given the vast time and expense which the current witness model entails.

By way of initial suggestion, there are a number of key points.

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[57] *Ibid*, page 70. Cf. the famous answer that Donald Rumsfeld gave to an interview question about the lack of evidence linking the Government of Iraq with the supply of weapons of mass destruction to terrorist groups: "*Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones*" (Defense.gov News Transcript: DoD News Briefing – Secretary Rumsfeld and Gen. Myers, United States Department of Defense (defense.gov).

First, there is a pressing need for practitioners, arbitrators and rule-makers in this field to be properly educated and guided in the science of memory as it applies to witness testimony – just as has been done in other fields (such as criminal and asylum law).

Second, there is a need for a root and branch re-evaluation of each stage of our witness procedure, (a) in terms of the way in which each is implemented (and abused) in practice, and (b) against the relevant science.

Third, and most fundamentally: we either need to remove or change all aspects of our process that actively risk or damage recollections, or (perhaps more realistically) move away from a model that pretends to be based upon true memory in the first place, and instead re-focus on educated "beliefs".[58]

Perhaps the last word should go to Lord Griffiths who, after years serving as an appellate judge in the English Court of Appeal and then House of Lords (without any live testimony), on his return to international arbitration commented on how refreshing it was to sit as an international arbitrator, and watch a witness spin a really good "*Whopper*".[59]

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[58] The delivery of this lecture in 2010 prompted the ICC to establish a Task Force on Maximising the Probity of Witness Evidence in international arbitration. At the time of going to press, the work of this Task Force continues.

[59] *See* Oxford English Dictionary: an extravagant or monstrous lie.