July/August 2020 Vol. 35 – No. 7

Butterworths Journal of

International Banking and Financial Law

Loans in the time of COVID-19

Civil litigation on the horizon under the Securitisation Regulation?

The desirability and feasibility of another uniform law on factoring

In Practice

Approaches of lenders and borrowers in the speciality finance space to the COVID-19 pandemic

SONIA and SOFR: a tale of two rates

Distressed debt: antecedent transactions in the UAE

Cases Analysis

3 Verulam Buildings reports on the latest banking law cases

Market Movements

CMS reviews key market developments in the banking sector

KEY POINTS

- There is a widely held misperception that computers are fundamentally reliable.
- In the early days of computers, the Police and Criminal Evidence Act 1984 (PACE) and Civil Evidence Act 1985 required evidence from computers (technically hearsay evidence) to be subject to proof of the reliability of the source.
- The Law Commission recommended the repeal of statutory formalities that were seen increasingly as cumbersome and difficult to comply with – recommendations carried into effect in 1995 and 1999.
- *Bates v The Post Office* [2019] EWHC 606, [2019] EWHC 3408[1] reveal that the evidential presumption of the reliability of computers is unsafe and unjustified.
- In future litigation, banks and financial institutions may be required to evidence the reliability of their systems.

Feature

Author Paul Marshall

English law's evidential presumption that computer systems are reliable: time for a rethink?

In this article Paul Marshall in light of the *Post Office* litigation advocates the removal of the evidential presumption that computer systems are reliable. If the presumption is changed or weakened, banks and financial institutions may be required to affirmatively prove the reliability of their systems.

"An affront to the public conscience."[2]

THE LEGAL PRESUMPTION OF THE RELIABILITY OF THE OPERATION OF COMPUTERS

It has taken a legal fiasco and human tragedy of epic proportions to place the issue of the reliability of evidence produced by computers on the public and legal agenda, having been absent since 1997. It is quite rare that a presumption of law can be linked with avoidable loss of life.[3] That this is a matter of public concern is reflected by the BBC considering the contingently disastrous effects of the presumption to have merited a 12-part BBC series, broadcast on Radio 4 from 25 May 2020 and on 8 June 2020 a BBC1 *Panorama* programme. Residual doubt is dispelled by the fact that the Criminal Cases Review Commission[4] (CRRC) in March 2020 made the single largest group reference of criminal convictions for review by the Court of Appeal in English legal history. Eventually, in the order of some 900 criminal convictions are liable to be reviewed[5] and foreseeably likely quashed. Those convictions, disregarding civil claims, were secured on the basis of a false presumption that the Post Office's "Horizon" computer system was operating reliably at the relevant time, when it was not. The Post Office knew that it was not. The defendants had no means of demonstrating this and the Post Office took steps to prevent them doing so by not disclosing hundreds of thousands of KEL and PEAK[6] system error records until 2019, and even then, not giving full disclosure.[7]

The reliability of computer systems, and the reliability of documents produced by computers, is important – sometimes vitally so. The requirement for reliability is not only important in our daily lives, given the pervasiveness of computer technology, it is important in legal proceedings. Surprisingly, systems for evaluating computer reliability are neither well developed, apart from in safety critical software, nor common. Part of the reason is that such evaluation is difficult and complex.[8]

There is a widely held perception that computers are fundamentally reliable. It is also commonly assumed that most computer errors are readily detectable or the result of user "input" error.[9] That perception and those assumptions have received a warmly enthusiastic embrace by a judiciary that sometimes struggles in evaluating evidence,[10] especially technical evidence (the book to read is Sir Richard Eggleston, *Evidence Proof and Probability*[11]). In the early days of computers, the Police and Criminal Evidence Act 1984 (PACE) required that evidence from computers (technically hearsay evidence) should be subject to proof of the reliability of its source.

A change took place in 1993 and 1997 as the use of computers became more widespread and more people, including some judges, became more familiar with their operation and the fear of unreliability and inaccurate documents diminished. The Law Commission papers *The Hearsay Rule in Civil Proceedings*[12] and *Evidence in Criminal Proceedings Hearsay and Related Topics*[13] recommended the repeal of statutory formalities that were seen increasingly as cumbersome and difficult to comply with. Those recommendations were carried into effect. Section 5 of the Civil Evidence Act 1968 was repealed by the Civil Evidence Act 1995 and s 69 of PACE was repealed by s 60 of the Youth and Criminal Evidence Act 1999. In the absence of formal statutory requirements, as the Law Commission suggested, the courts have since then applied the presumption of the proper functioning of *machines* (for example, *Castle v Cross*[14]) to computers. The practical effect is that, when a party adduces evidence of a computer-based or derived document, that party may rely upon the presumption that the computer was operating reliably at the material time. An evidential burden is then on the party objecting to the admission of the document as evidence of the truth of its contents to produce some evidence that it is not.[15] The importance of this development, and the practical difficulty which it presented to an "objector", painfully exposed in the recent *Bates* litigation, went largely unremarked.

Until the acceptance of the Law Commission's recommendations, PACE provided by s 69 that:

> "(1) In any proceedings, a statement in a document produced by a computer shall not be admissible as evidence of any fact stated therein unless it is shown … (b) That at all material times the computer was operating properly, or if not, that any respect in which it was not operating properly or was out of operation was not such as to affect the production of the document or the accuracy of its contents."

Sub-section 1(b) represented a considerable imposition upon parties wishing to rely upon computer evidence. Section 5 of The Civil Evidence Act 1968 included analogous provisions. It is suggested that the practice adopted by the courts since 1999 was both to eject the baby with the bathwater and to work manifest and serious injustice. This is particularly clear in cases of disparity in available information or resources – or both, as in the Post Office prosecutions and claims.

The Law Commission's perception and suggestion had the *imprimatur* of the highest levels of the judiciary, despite their having no obvious qualification other than the distinction of their office, in making statements accorded weight and respect. Lord Hoffmann in *DPP v McKeown and Jones*[16] expressed his (extraordinary and uninformed[17]) opinion that "[i]t is notorious that one needs no expertise in electronics to be able to know whether a computer is working properly".

Lord Justice Lloyd in *R v Governor of Pentonville Prison Ex p Osman (No 1)*[18] said that:

> "Where a lengthy computer printout contains no internal evidence of malfunction, … it may be legitimate to infer that the computer which made the record was functioning correctly."

Lord Griffiths in *R v Shephard*[19] expressed his beguilingly simple opinion that in the vast majority of cases it would be possible to discharge the burden of showing the computer was operating properly by calling a witness to say that it was doing so. (That course was adopted, disastrously, in Mr Castleton's case, below.)

As will be seen, the evidential presumption of the reliability of computers is as unsafe in practice (below) as it is unjustified in principle.[20] It should be discarded.

THE POST OFFICE AS AN ENGLISH PUBLIC INSTITUTION

The Post Office is an important national institution that provides a crucial service to society. The entire share capital in Post Office Limited is held by UK government Investments on behalf of the Department for Business, Energy and Industrial Strategy. A government minister is responsible for oversight of the Post Office. The Post Office has public status of long-standing. In his *English History 1914-1945* AJP Taylor commented that "[u]ntil 1914 a sensible, law-abiding Englishman could pass through life and hardly notice the existence of the state, beyond the post office and the policeman". Even now, in some rural communities the Post Office is the only way that some individuals and businesses can obtain access to cash, banking services and financial services. Branch Post Offices are operated by sub-postmasters and sub-postmistresses (SPMs) who operate these within retail premises as sole traders.

At the time of its introduction in 1999 the Horizon system was the largest networked non-military IT system in Europe. Horizon was originally incepted as part of a bigger joint Post Office and government scheme for social security payments but, being considered technically and commercially unfeasible, a reduced specification system was left with the Post Office. Horizon was rolled-out in1999-2000 in branch Post Offices that then numbered almost 17,000.[21] As a computer platform, Horizon was more complicated than, say, a standard bank system because a branch sub-Post Office provides a great many more services to Post Office customers than an ordinary retail bank branch provides to its (though these have reduced over time with attendant commercial and financial pressure for the Post Office).

The system was designed so that a dispute about a transactional balancing error (shortfall or surplus) in a branch Post Office operated by its SPMs was not capable of being identified, disputed or resolved on the Horizon system itself, but only through a human service antiphrastically called the "Horizon Helpline". If a balancing shortfall occurred, the operation of the Horizon system was such that the SPM in question was required to make it up immediately out of their own money, or else the issue would be "settled centrally"[22] even where an SPM disputed the error.[23] In order that the next day's trading account could be opened, the account required to be closed and any balancing errors resolved. In practice, this meant that an SPM could ask for time to pay the shortfall. Any surplus from a balancing error was held in a suspense account[24] operated by the Post Office. If no explanation for the surplus became available, the sum was transferred to the Post Office's P&L account.[25]

Shortly after its introduction, numbers of SPMs experienced balancing errors that were inexplicable, even upon meticulous examination of the transaction, the payments received and made, and the inputs on the Horizon system. This resulted in SPMs being required to make-up shortfalls from their own funds, ranging from small amounts to tens of thousands of pounds.

Sometimes SPMs could not, and in some cases would not, make up the shortfalls. The latter included circumstances where an SPM was wholly confident that the shortfall was not due to any error, mistake or fault on their part. SPMs who were steadfast in their refusal, or simply had not the resources to make the payment, were made the subject of criminal or civil proceedings brought by the Post Office. In some cases, SPMs attended court in the expectation and belief that once they were before a judge or jury their innocence of any criminal or civil wrongdoing would be easily established.

Between 2000 and 2018 the Post Office pursued over a thousand SPMs in both criminal and civil proceedings for sums claimed to be owed to it in connection with the operation of their branch sub-post offices. The sums claimed as debts were alleged to arise out of accounting shortfalls at Horizon branch computer terminals.

Liability for unaccounted shortfalls resulted for SPMs in the summary termination of their contracts with the Post Office and the loss of a business, without compensation, in which most had invested their life savings. More than 900 SPMs or Post Office employees were prosecuted by the Post Office and convicted of false accounting or theft. The youngest women, Tracy Felstead, who was a junior employee, convicted on a Post Office prosecution was 19 years' old when sent to Holloway Prison, in 2002. Mrs Seema Misra, who had experienced serious fertility

problems, was eight weeks' pregnant in 2010 when convicted of theft and sentenced to 15 months' imprisonment (below).

Eventually, in 2017, with the benefit of Parliamentary concern and a BBC *Panorama* programme in 2015, more than 500 SPMs, aggrieved by their treatment, banded together and brought claims under a "Group Litigation Order" from 2017. Common issues came on for trials in 2018 and 2019. At the heart of the litigation were the SPMs' contentions that the accounting shortfalls were caused, not by operator error by an SPM or their staff, still less by dishonesty, but rather by bugs and errors in the Horizon system itself. By the time of the trials the litigation had become a titanic trial of strength that had ceased to be just about the ostensible issues. For the Post Office it had become an existential threat to the reputation of its brand as a national institution.[26] The zeal with which the litigation was conducted by the Post Office reflected its importance.

In two trials, designated the "Common Issues"[27] and the "Horizon Issues"[28] trials, Mr Justice Peter Fraser gave judgment for the SPMs on all the main issues. Beneath the forensic neutrality of the case citations lie individual stories of the miscarriage of justice and Post Office mendacity on an epic scale, and the ruin of countless lives (in some cases literal) and livelihoods. Critically, Fraser J concluded that the imposition of both a legal[29] and evidential burden on an SPM, that for almost 20 years the Post Office had successfully contended in civil and criminal claims lay with its SPMs to explain why accounting shortfalls on their Horizon system terminals occurred, constituted a burden that it was impossible in practice for an SPM to discharge.[30] As to the Post Office's contention that the Horizon system was "robust" and "reliable", the contention amounted, in Fraser J's view, "… to the 21st century equivalent of maintaining that the earth is flat",[31] that is to say, a belief adhered to that flies in the face of reality – a species of "denialism".[32]

The evidential presumption in English law, together with the Post Office's public standing and judicial deference to it, enabled the Post Office successfully to prosecute and bring unfounded civil claims. That it has taken 20 years for the unsatisfactory legal position and its consequence to be exposed stands as a reproach both to the legal system and to the judiciary.

VIGNETTES ON INJUSTICE CRIMINAL AND INJUSTICE CIVIL

Injustice criminal: Mrs Seema Misra

On Thursday 11 November 2010, Mrs Misra, formerly sub-postmistress of West Byfleet Post Office from June 2005 to 14 January 2008, was sentenced to 15 months imprisonment for theft and false accounting. She was eight weeks' pregnant.

Mrs Misra's defence was that she thought that there might be errors in the way the Horizon system worked. Her conviction was secured on the basis of evidence from Mr Gareth Jenkins, an employee of Fujitsu and architect of the Horizon system, who gave evidence as an expert for the Post Office. Mrs Misra was convicted and imprisoned because Mr Jenkins asserted the proper working of the Horizon system, an assertion that the jury accepted (q.v. Lord Griffiths, *R v Shephard*, above).

Judge Stewart summarised Mrs Misra's defence as being that "… she didn't take money that belonged to the Post Office at all. There was a shortfall apparent on the tills at the time of the audit, she tells you, but the cause of that was not her taking the money. She thinks it was … problems with the computer system…". As to the reliability of the Horizon system, the judge told the jury "[t]here has been a great deal of time spent on the question of whether the Horizon system is sound or robust. Ultimately you will decide how important all that evidence was". Against that oversimplified formulation, the judge told the jury that an issue it had to decide was: "[d]o you accept the prosecution case that there is ample evidence before you to establish that Horizon is a tried and tested system in use at thousands of post offices for several years, fundamentally robust and reliable?"[33] In essence, not much more than the homespun proposition that Horizon appeared to work pretty well most of the time. Judge Stewart rightly pointed out to the jury that there was no evidence of any kind of Mrs Misra having taken the money or it having been used by her other than at the Post Office. The question of her guilt or innocence turned, therefore, entirely on an inference the jury might draw that she had stolen it. The judge described an inference as a possible "sensible conclusion". The fundamental importance of the logical premise for such an inference went unstressed and unexplained.

Upon her conviction by the jury, Mrs Misra collapsed with shock. On her discharge from hospital the next day she asked the policemen accompanying her to cover her hands with a jacket, so it could not be seen that she was handcuffed.

The Post Office's prosecuting counsel had said of Horizon:

> "… it has got to be a pretty robust system and you will hear some evidence from an expert in the field as to the quality of the system … the Crown say it is a robust system and that if there really was a computer problem the defendant would have been aware of it. That is the whole point because when you use a computer system you realise there is something wrong if not from the screen itself but from the printouts you are getting when you are doing the stock take."[34]

That evidence was given by Mr Jenkins.

That statement in 2010 may be contrasted with the evidence given before Mr Justice Fraser in 2019. Mr Roll, a former employee of Fujitsu and very experienced computer programmer (who had previously worked on defence targeting systems) who worked on Horizon in the early 2000s, who gave evidence for the claimants. Mr Roll was described as a "whistleblower". Mr Justice Fraser accepted his evidence. Mr Roll said: "… issues with coding in the Horizon system were extensive… the coding issues impacted on transaction data and caused financial discrepancies on the Horizon system at Branch level. It was those issues that I, and other colleagues at Fujitsu, were routinely working on daily. Furthermore, remote access to the Horizon system at Branch level was extensive, as was the ability to change data and change transaction information, even while the postmaster was working, without the postmaster being aware of this".

Mr Roll explained that "during the course of resolving the software issues, we would frequently access a Post Office counter IT system remotely". That evidence wholly undermined an important public statement by the Post Office's in 2015 that

this could not be done,[35] and, fatally, contradicted the evidence of the Post Office's witnesses from Fujitsu at the Horizon Issues trial in 2019. Mr Jenkins was not called as a witness by the Post Office at the 2019 Horizon Issues trial on the ostensible ground that his involvement in Mrs Misra's trial might have been a distraction. Nevertheless it emerged that much of the Post Office evidence emanated from Mr Jenkins.[36]

The transcripts of the criminal trial of Mrs Misra are publicly available.[37] These reveal that there was no satisfactory evidence given at her trial of the robustness or quality of the Horizon system. There was no evidence of the operating environment, reconciliations, error rates or controls, internal audits to ensure integrity or evidence of fixes, nor evidence of hundreds of thousands of error records and reports in PEAKs or KELs. Set against those omissions, Mr Justice Fraser in his judgment on the Horizon Issues, referring to the evidence of Mr Coyne, the claimant SPMs' computer expert, said:

> "[781] One of the matters that Mr Coyne relied upon was what he described as 'the sheer volume' of KELs and reconciliation reports (a statement, it should be noted, made prior to discovery of the 5,000 KELs disclosed by the Post Office in October 2019). … this confirmed 'the wide-ranging extent of the impact of such bugs/errors/defects. This evidence demonstrates that such bugs/errors/defects would undermine the reliability of the Horizon system to accurately process and record transactions'… but the PEAKs need to be consulted too. … it is only from the PEAKs themselves that one can gain a better view of the impact of that particular bug … ."

Mr Coyne explained:

> *"I have worked and designed banking systems, stock broking systems. I have never seen the need for tens of thousands of transactions per week to have a human intervention. That suggests that something is going wrong.* It is working outside of process on a larger scale than I would have expected." (Emphasis, the judges own.)[38]

No evidence of PEAKs and KELs of the kind Mr Justice Fraser found so helpful in evaluating the true position was available at Mrs Misra's trial. A pity for Mrs Misra. At her trial, Mr Jenkins, in his cross-examination, was asked:

> "Q … You do not know how many Peak Incident Management Systems problems there had been with the Horizon system?
>
> A. *I've not enquired, no.*
>
> Q *You have not enquired – A. No.*" (Emphasis mine.)

This exchange demonstrates just how unsatisfactory the treatment of computer evidence in the courts is. Despite Mr Jenkins' evidence, the issue of reliability was a question for the jury to decide and on which they could and did convict (as in hundreds of other cases). Plainly none of the judge, prosecution or defence understood the importance of PEAK error records. As to the prosecutor's statement at Mrs Misra's trial that system errors would be manifest to the operator,[39] in his conclusion on the second of the Horizon issues that fell to be determined – *[d]id the Horizon IT system itself alert Subpostmasters of such bugs, errors or defects as described in (1) above and if so how?* Fraser J held:[40]

> "Answer. … , the evidence showed that some bugs lay undiscovered in the Horizon system for years. This issue is very easy, therefore, to answer. The correct answer is very short. The answer to Issue 2 is 'No, the Horizon system did not alert SPMs'. The second part of the issue does not therefore arise."

Mrs Misra went to prison because she couldn't point to any errors in the Horizon system, so that the Post Office was required affirmatively to prove, rather than anecdotally assert, its reliability. She had no means available to her, *in the absence of proper disclosure by the Post Office*, of knowing of the nature of the bugs and errors in the system known to the Post Office to be liable to cause the problems she had experienced. It is particularly unsatisfactory, and disturbing, that Mrs Misra's counsel on three separate occasions sought to have the trial stopped on grounds of abuse of process because of Post Office inadequate disclosure. Three separate judges rejected every one of those applications, believing matters could safely be left to the jury. Under paragraph 6 of its Statement of Reasons to the Court of Appeal, in explaining that the cases referred, including Mrs Misra's, disclosed an abuse of process, the CCRC observed that "[the Post Office] failed to disclose the full and accurate position regarding the reliability of Horizon". The CCRC expressed its view that "it was not possible for the trial process to be fair".

INJUSTICE CIVIL: *POST OFFICE v CASTLETON* [2007] EWHC 5 (QB)

Mr Lee Castleton had invested his life savings in acquiring a sub-Post Office business at 14 South Marine Drive in Bridlington in Yorkshire. He was appointed sub-postmaster on 18 July 2003.

By ill-fortune and through no fault of his, he became the defendant to a civil claim made against him by the Post Office for a shortfall in his branch accounts of £25,858.95. The Post Office was represented by Bond Pearce, (later known as Womble Bond Dickinson, the Post Office's solicitors in the group litigation) and by counsel, Mr Richard Morgan. Mr Castleton was unrepresented.

Mr Castleton almost immediately experienced inexplicable errors. He repeatedly made and logged calls to the Horizon Helpline seeking help and support for the balancing problems he was experiencing. He made 11 long calls over just one two-week period. He received no help, assistance or advice to resolve the problems. He submitted trading accounts for the year 2003-2004 that had built-up substantial discrepancies. He continued to make and log calls to the Helpline until 23 March 2004 when he was suspended following an audit. The audit *revealed what he had been complaining of* – repeated unexplained shortfalls that by then had risen to £25,758.75. His contract as sub-postmaster was summarily terminated by the Post Office without compensation. No substantive response from the Horizon Helpline by that time had been received. Mr Castleton himself had no access to the audit trail. There was no facility available for him to establish whether data at his terminal had reached the Horizon server.

The Post Office brought a civil claim against Mr Castleton on the shortfall as an "account stated". At the start of his judgment in *Post*

Office v Castleton,[41] Judge Havery began his judgment by observing that "the burden of proof lies upon Mr Castleton to show that the account is wrong".

Mr Justice Fraser in the Common Issues judgment (March 2019) pointed out that if this was correct, it placed a burden on a party that it was impossible for them to discharge.[42] Further, Judge Havery required Mr Castleton to provide the answers to the very questions he had been repeatedly raising with the Horizon Helpline, that had gone unanswered – *viz* why was he experiencing balancing errors? Neither the judge nor the Post Office's counsel, Mr Richard Morgan, saw anything amiss in this variant on Joseph Heller's *Catch-22*. The judge, with a tone of slight incredulity, recorded the substance of Mr Castleton's case at para [4] of his judgment as " … that the losses apparently shown … were illusory not real. It was entirely the product of problems with the Horizon computer and accounting system… . The apparent shortfalls were nothing more than accounting errors arising from the operation of the Horizon system". Importantly, given Fraser J's much later findings,[43] Judge Havery QC rightly accepted Mr Castleton's evidence that he had contacted the Horizon Helpdesk over his problems with balancing errors.[44]

A witness called by the Post Office to give evidence of the Horizon system was Ms Anne Chambers, a system specialist employed by Fujitsu. Her evidence was that she found no evidence of any problem. Judge Havery was impressed by her. He described her as a "clear, knowledgeable and reliable witness". But she was not the reliable witness Judge Havery imagined. Mr Justice Fraser was less impressed. Among several other criticisms of her, damagingly for the case as it was put by the Post Office before Judge Havery in 2006, Fraser J said this:[45]

> "At least Anne Chambers in *early 2006*, and all those with whom she was corresponding, knew that this problem – now admitted to be a software bug, – had been around 'for years'. Horizon support were telling the SPM, whose branch accounts were affected by discrepancies, that 'they cannot find any problem. The SMC – the part within Fujitsu responsible for providing corrective action for the "event storms" – would not always notice these had occurred in time and by then "the damage may have been done'. *I find by 'the damage' this can only mean impact upon branch accounts.*" (My emphasis.)

Judge Havery in *Castleton* set out the final balances from the cash account and held that:

> "Since Mr. Castleton accepts the accuracy of his entries in the accounts and the correctness of the arithmetic, and since the logic of the system is correct, the conclusion is inescapable that the Horizon system was working properly in all material respects, and that the shortfall of £22,963.34 is real, not illusory."

The conclusion was not "inescapable" at all, it was an assumption presented by the judge as a conclusion. Devastatingly for Mr Castleton, Judge Havery said this:

> "I am satisfied that the substantial unexplained deficiencies incurred in weeks 42 to 51 and in week 52 up to the close of business on 22nd March 2004 are real deficiencies and as such are irrefutable evidence that Marine Drive was not properly managed at the material time."[46]

That conclusion was wrong, both within its own terms and in the light of what is now known. Within its own terms, the deficiencies were not "irrefutable evidence" – or *only* upon the unstated (false) premise that the Horizon system was reliable and not susceptible to generating errors of the kind that Mr Castleton complained of. On this there was no evidence, nor could there have been, given Fraser J's later finding. Reliability as a conclusion proceeded from reliability as an assumption, supported by Ms Chambers' anodyne evidence that she could not find anything wrong. That is neither good logic nor, with utmost respect to the learned judge (and Lord Griffiths (above *R v Shephard*)), good law.

Mr Castleton lost his business and his home and was made bankrupt. The Post Office was awarded its costs, claimed in the sum of £321,000.

At trial of the Horizon Issues, the fundamental issue for the judge to determine was *whether it was possible or likely for bugs, errors or defects to have the potential to cause apparent or alleged discrepancies or shortfalls relating to SPMs' branch accounts or transactions, or to undermine the reliability of Horizon accurately to process and to record transactions*.

An important factual witness for the SPMs was Mr Andrees Latif, a long-serving former SPM. Mr Latif's evidence was that he had recently experienced sums that, after being received and entered at his terminal, "simply disappeared from Horizon"'.[47] He explained that this would lead to a shortfall in the branch account for that sum. Fraser J rejected the Post Office's suggestion that this was his error, finding Mr Latif to be very experienced (he was an SPM for 17 years and had trained other SPMs) and him to be "consistent, considered and credible".[48]

Twenty years after the introduction of Horizon, and 13 years after Judge Havery's judgment against Mr Castleton, Mr Justice Fraser answered the first, and central, issue in the Horizon Issues trial, affirmatively concluding that it was possible for bugs, errors or defects of the nature alleged by the claimants to have the potential both to cause apparent or alleged discrepancies or shortfalls relating to SPMs' branch accounts or transactions and also to undermine the reliability of Horizon accurately to process and to record transactions, as the SPMs alleged.[49] He further accepted, that "in terms of likelihood, there was a significant and material risk on occasion of branch accounts being affected in the way alleged by the claimants by bugs, errors and defects".[50]

Mr Castleton had been right about the "illusory" balances he experienced. Mrs Misra had been right in her feeling that there was something wrong with the Horizon system. The scale of the injustice thereby exposed as having been done by the Post Office and by the courts remains to be fully ascertained. The CCRC in its Statement of Reasons for the Court of Appeal, in relation to the first tranche of 35 convictions referred, expressed its view that, given Fraser J's judgment, "there were significant problems with the Horizon system and with the accuracy of the branch accounts which it produced. There was a material risk that apparent branch shortfalls were caused by bugs, errors and defects in Horizon". The CCRC concluded (paragraph [7]) that, not only was it not possible, given Fraser J's judgment, for

the trial process for those convicted of offences to be fair, but that "it was an affront to the public conscience for the Post Office applicant [to the Court of Appeal] to face criminal proceedings". It is impossible to avoid the conclusion that that observation will apply, in the absence of some unusual circumstance, to every conviction secured by the Post Office and, equally, to the judgment entered against Mr Castleton in the civil claim brought against him and to other similar judgments.

THE UNRELIABILITY OF COMPUTER SYSTEMS

The Law Commission in its recommendations that the requirements of s 35 of the Civil Evidence 1968 and s 69 of PACE 1984 should be removed for being inconvenient did not undertake any scientific evaluation, still less empirical assessment of the actual reliability of computers. On this issue, the article by Ladkin *et al* 'The Law Commission presumption concerning the dependability of computer evidence'[51] referred to at the start of this article is likely to become required reading.

Ladkin *et al* adopt a definition of a software defect as being "any flaw or imperfection in a software work product or software process", in which by software work product is meant any artefact created as part of the software process, which itself is "a set of activities, methods, practices, and transformations that people use to develop and maintain software work products".[52] They continue: "defects can arise in a number of ways in this process of writing source code in a higher-level language and translating. They may occur in the source code itself, or be introduced by the largely-automated processes of implementation, and lastly by the computer hardware not quite executing the machine code the way its designers intended or expected … ."[53]

Referring only to source code (there are a variety of other sources of error and malfunction), the authors discuss what defect numbers look like in terms of a thousand lines of code (coding instruction free of commentary):

> "Humphrey[54] considered data derived from more than 8,000 programs written by industrial software developers. He wrote, 'We now know how many defects experienced software developers inject. On average, they inject a defect about every ten lines of code.' The average number of defects per kLOC[55] was about 120. The best 20% of programmers managed 62 defects per kLOC; the best 20% [*sic* 10%?], 29 defects per kLOC. Even the top 1% still injected 11 defects per kLOC.."[56] Typical OT[57] and IT software has many kLOCs, even thousands of kLOCs, and hence very many defects. The evidence implies that all software can be considered to have multiple faults.
>
> McDermid and Kelly reported on the defect densities in safety-critical industrial software:[58] 'There is a general consensus in some areas of the safety critical systems community that a fault density of about 1 per kLoC is world class. Some software … is rather better but fault densities of lower than 0.1 per kLoC are exceptional. The UK [Ministry of Defence] funded the retrospective static analysis of the [Hercules] C130J [transport aircraft] software, previously developed to [civilian aerospace software standard RTCA] DO-178B, and determined that it contained about 1.4 safety-critical faults per kLoC (the overall flaw density was around 23 per kLoC … whilst a fault density of 1 per kLoC may seem high it is worth noting that commercial software is around 30 faults per kLoC, with initial fault injection rates of over 100 per kLoC'."

"Safety-critical faults" means faults whose possible consequences include system failures causing damage including injury or death and/or damage to the environment.

Ladkin *et al* express their view that a court should start with the presumption that any software system contains or is influenced by errors that make it fallible. It will therefore fail from time to time when a combination of circumstances lead to an erroneous path of execution through the software – and such failures may not be obvious, and may even be perverse. In assessing the weight to be placed on specific computer evidence, it follows from this that the trier of fact should ask "how likely is it that this particular evidence has been affected in a material way by computer error? Providing an answer to this question involves, first, reviewing any available evidence for the number, frequency and nature of errors that have been reported in the particular system previously".

There is insufficient space here to summarise the authors' discussion of their recommendations. Suffice to say, at neither Mrs Misra's or Mr Castleton's trials was *any* consideration given either to the number or frequency of errors in the Horizon software.

At a US civil trial in a case reported in *Bookout v Toyota Motor Corporation*, Case No. CJ-2008-7969, Mr Michael Barr,[59] an expert in embedded software, gave evidence for claimants in connection with the unexpected, sometimes fatal, acceleration in Toyota motor cars. Mr Barr attributed this to possibly faulty coding in the throttle module. He explained "… the code complexity for Toyota's code is very high. There are a large number of functions that are overly complex. By the standard industry metrics some of them are untestable, meaning that it is so complicated a recipe that there is no way to develop a reliable test suite or test methodology to test all the possible things that can happen in it. Some of them are even so complex that they are what is called unmaintainable, which means that if you go in to fix a bug or make a change, you're likely to create a new bug in the process. Just because your car has the latest version of the firmware – that is what we call embedded software – doesn't mean that it is safer necessarily than the old one".

So far as complexity of the Post Office's Horizon system is concerned, in the Technical Appendix to the Horizon Issues judgment, Mr Justice Fraser explained[60] that:

> "'There are a very wide number of other computing companies involved in the evolution of this system, not only in terms of software. Oracle, Escher Group, ICL/Fujitsu, ATOS, Computacenter and many more. It is a bespoke system that uses different encryption to other systems, such as Link. The complexity of the different interfaces, as a result, is very high. There have also been a total of some 19,842 release notes (in relation to software changes) in the life of Horizon. This is consistent with each of these notes being a change to the Horizon system."

CONCLUSION

Though the foregoing barely touches upon the scale of the problem, less the enormity of the injustice wreaked, it will be apparent that the law requires, more, *demands*, review and change. The miscarriages of justice now going to the Court of Appeal are a direct result of a presumption that is as unsafe in practice as it is unsound in principle. Ladkin *et al* suggest a "third way" between s 69 of PACE and s 35 of the Civil Evidence Act 1985 and the Law Commission's recommendation of "the presumption". I concur. Readers are referred to their article. There is a requirement for a public debate. That debate is relevant to the present discussion of – and sometimes uninformed enthusiasm for – technology-led justice systems.

There are important further questions that require to be addressed, not least the all-too-apparent *systemic* vulnerability of English criminal and civil proceedings to being skewed by inadequate and unsatisfactory documentary disclosure. In one case, a document has subsequently emerged that at the time of the prosecution of an SPM, it was recorded by the Post Office that there was no evidence of fraud. The SPM concerned was nevertheless prosecuted and convicted. It took 10 years' for the objection to inadequate disclosure identified by Mrs Misra's defence in 2010 to be validated by Fraser J's judgment and to be taken up by the CCRC. Fraser J commented that, but for the group litigation (557 claimants) many of the problems he identified would not, in his words, "have seen the light of day" (Horizon Issues para [459]). That observation should cause widespread disquiet amongst judges and lawyers. At present (as is all-too obvious) there is no satisfactory sanction for disclosure failures. A claim for malicious prosecution 10 or more years after a criminal conviction and imprisonment is neither an effective sanction nor deterrant. It should not require group litigation by over 500 claimants and the engagement of the CCRC to highlight this problem – a problem well-recognised but too long accepted as "just one of those things".

CODA

On 16 December 2019, having handed-down his judgment on the Horizon Issues, Fraser J said this:[61]

> "Based on the knowledge that I have gained both from conducting the trial and writing the Horizon Issues judgment, I have very grave concerns regarding the veracity of evidence given by Fujitsu employees to other courts in previous proceedings about the known existence of bugs, errors and defects in the Horizon system. These previous proceedings include the High Court in at least one civil case[62] brought by the Post Office against a sub-postmaster; and the Crown Court in a greater number of criminal cases, also brought as prosecutions by the Post Office against a number of sub-postmasters and sub-postmistresses.
>
> After very careful consideration, I have therefore decided, in the interests of justice, to send the papers in the case to the Director of Public Prosecutions, Mr Max Hill QC, so he may consider whether the matter to which I have referred should be the subject of any prosecution."

Those civil and criminal cases include, specifically Mr Castleton's trial and Mrs Misra's trial.

The settlement reached between Freeths and Herbert Smith Freehills for the Post Office, *before* judgment was given on the Horizon issues, resulted in payment of some £57m by the Post Office. After legal and funding (Therium) costs, the 557 claimants, who variously lost their businesses and homes, were sued or prosecuted, and in many cases served terms of imprisonment, are understood to have received some £11.5m. It is understood, that out of the successful group litigation, Mr Castleton is likely to receive in his hands less than £20,000, Mrs Misra a little more. This is not, recognisably, justice. The Department for Business Energy and Industrial Strategy has indicated that there is no present intention to take any further action against the Post Office. If that position is maintained, it reflects a well-established difficulty, so well-established as almost to be conventional, in holding corporations and their responsible officers to account. The prosecution of SPMs was a corporate policy, devised and pursued – over 20 years – by the individuals who directed and controlled the Post Office.

Paula Vennells, the Post Office's former CEO, was awarded a CBE for her services to the Post Office.

Epitaph

In 2015 there was an inquest into the death of Mr Martin Griffiths, 59, an SPM from Chester. He had stepped out in front of a bus one morning in September 2013. The inquest heard that, at the time, Mr Griffiths was being pursued by the Post Office for an alleged shortfall of tens of thousands of pounds. It is not known if he had been provided with a copy of the judgment of Judge Havery QC in *Post Office Ltd v Castleton* [2007] EWHC 5 (QB).

Many ordinary people will share a hope that his death was not in vain. As will be apparent, the Post Office scandal is a manifestation of a wider evidential issue in English law. ■

1 Queen's Bench Division, respectively, "Common Issues" and "Horizon Issues". For convenience, references to paragraphs of judgments are simply to "Common Issues [XX]" etc.

2 The view expressed by the Criminal Cases Review Commission (CCRC) of the prosecutions of the first tranche of 35 Post Office convictions referred to the Court of Appeal in its "Statement of Reasons" 3 June 2020 – exceptionally without there having been prior unsuccessful appeals.

3 See the end of this article. Mr Griffiths' case is by no means unique.

4 A public body established in the wake of well-known cases of miscarriages of justice, the "Birmingham Six" "Guildford Four" and "Maguire Seven" cases, to investigate alleged miscarriages of justice.

5 More than 900 convictions are understood to have been voluntarily referred by the Post Office for review by a law firm.

6 KEL "Known Error Log". PEAK despite capitalisation, is not an acronym. Horizon Issues paragraph [621]: "PEAKs record a timeline of activities to fix a bug or a problem. They sometimes contain information not found in KELs about specific impact on branches or root causes – what needs to be fixed. … It is also agreed, and indeed can be seen from the actual PEAKs themselves, *that some of them record observations of financial impact*."(My emphasis.) The derivation was explained in the Misra trial (below). The previous Fujitsu error system was called "Pinnacle".

7 Common Issues [560], Horizon Issues [941].

Feature

Biog box

Paul Marshall is a barrister practising commercial, financial and company law at Cornerstone Barristers, 2-3 Gray's Inn Square, Gray's Inn, London. He is writing a book on the Post Office scandal. Email: paulm@cornerstonebarristers.com

8 Peter Bernard Ladkin, Bev Littlewood, Harold Thimbleby and Martyn Thomas CBE, 'The Law Commission presumption concerning the dependability of computer evidence' 17 *Digital Evidence and Electronic Signature Law Review* (2020) 1 – 14 referred to here as Ladkin *et al*.

9 A view lent intellectual authority by Professor Tapper in 'Discovery in Modern Times: A Voyage around the Common Law World' (1991) 67 Chicago-Kent Law Review 217, 248 cited by the Law Commission in its 1997 paper (below) at para 13.7 and Ladkin *et al* (ibid).

10 For a spectacular recent example of this startling proposition, see the Supreme Court decision *Stocker v Stocker* [2019] UKSC 17, [2019] 2 W.L.R. 1033.

11 Weidenfeld & Nicholson (2nd edn., 1983). (Eggleston was a judge of the Supreme Court of the Australian Capital Territory and Chancellor of Monash University.)

12 1993 Law Com. 245.

13 1997 Law Com. No. 216.

14 [1984] 1 WLR 1372, [1985] 1 All ER 87, [1984] Crim LR 682.

15 Paragraph 13.14 of the Law Commission's recommendation in its 1997 paper.

16 [1997] 1 WLR 295 at 301C-D.

17 See footnote 8 and text to note 51.

18 [1990] 1 WLR 277 at 306H.

19 [1993] AC 380 at 387B-D as to this suggestion see Fujitsu's witnesses in *Castleton* and *Bates*, below, and the end of this article.

20 For a technical analysis of why see Ladkin *et al* footnote 8 above.

21 By 2015 this had reduced to some 11,500.

22 The meaning of this important expression only became clear in the course of the Common Issues trial, [438].

23 Eg Common Issues [782].

24 Horizon Issues [813] and [816]-[818]. The judge was severely critical of the Post Office's expert's failure to understand the importance of the point.

25 In many cases there was in fact no loss to the Post Office that benefited from unattributed receipts: Horizon Issues [818].

26 Eg Common Issues [28] and [32] and the "challenge" of the Post Office's counsel, David Cavendeer QC, to the court.

27 *Bates and Others v Post Office Limited (No 3)* [2019] EWHC 606, https://www.bailii.org/ew/cases/EWHC/QB/2019/606.html (288 pages, 1,121 paras).

28 *Bates v the Post Office Ltd (No 6: Horizon Issues) (Rev 1)* [2019] EWHC 3408 (QB) https://www.bailii.org/ew/cases/EWHC/QB/2019/3408.html (168 pages, 1,030 paragraphs – the Technical Appendix alone extends to 452 paras).

29 On grounds that liability was in contract for "an account stated" – an important issue beyond the scope of the present discussion but important in Mr Castleton's case, below.

30 A conclusion in the Common Issues trial on the issue of the (mis)characterisation by the Post Office of its claims for shortfalls as in law a claim on "an account stated".

31 Horizon Issues [929].

32 Wikipedia: "In the psychology of human behavior, denialism is a person's choice to deny reality as a way to avoid a psychologically uncomfortable truth. Denialism is an essentially irrational action that withholds the validation of a historical experience or event, when a person refuses to accept an empirically verifiable reality."

33 A formulation subverted by Fraser J at [826] of the Horizon Issues. Of the Post Office's expert, Fraser J said: "The … analysis is, in my judgment, so riddled with plainly insupportable assumptions as to make it of no evidential value. It is the mathematical or arithmetic equivalent of stating that, given there are 3 million sets of branch accounts, and given there are so many sets of branch accounts of which no complaint is made, the Horizon system is mostly right, most of the time. It is a little more sophisticated than that, but not by very much."

34 Transcript Day 1 Monday 11 October 2010. Contrast Fraser J's rejection of that assertion (below).

35 Referred to by Fraser J, Horizon Issues, [519].

36 Horizon Issues [512], [514].

37 *Digital Evidence and Electronic Signature Law Review* 12 (2015) 45.

38 [782].

39 Transcript Day 1 Monday 11 October 2010.

40 Paragraphs [972]-[973].

41 [2007] EWHC 5 (QB), available at https://www.bailii.org/ew/cases/EWHC/QB/2007/5.html.

42 Fraser J's analysis might be described as "trenchant": see Common Issues [822].

43 This was very important in Fraser J's conclusion on the incorrect characterisation of the claim as a claim for an account.

44 [2007] EWHC 5 (QB) at [23].

45 Paragraph [413] Horizon Issues.

46 Paragraph [40].

47 Day 2: 12 March 2019, 15.

48 Day 2: 12 March 2019, 17-18.

49 Horizon Issues. Paragraph [968].

50 Ibid [970].

51 Note 8 above.

52 Carnegie Mellon's Software Engineering Institute, Brad Clarke and Dave Zubrow, *How Good is the Software: A Review of Defect Prediction Techniques*.

53 Executable source code – programmes written in imperative language, eg C, Ada, Java, Python.

54 Watts S Humphrey, 'The *Watts New?* Collection: Columns by the SEI's Watts Humphrey', Special Report CMU/SEI-2009-SR-024.

55 kLOC – thousand lines of code – a very small program.

56 'The *Watts New?* Collection: Columns by the SEI's Watts Humphrey', p 132.

57 Operating Technology – effectively for present purposes hardware/operating systems. The distinction is not always drawn.

58 John McDermid and Tim Kelly, 'Software in Safety-Critical Systems: Achievement and Prediction', *Nuclear Future* 02(03), 2006, 3.1.

59 Who wrote critically on an investigation by the US National Highway Traffic Safety Administration and National Aeronautics and Space Administration (NASA) 'Study of unintended acceleration in Toyota vehicles' published in April 2011 in an article 'Firmware forensics: best practices in embedded source code discovery' 8 *Digital Evidence and Electronic Signature Law Review* (2011) 148. This compelling illustration is to be found in one of the few full – and therefore valuable - treatments of the subject: Stephen Mason and Daniel Seng, editors, *Electronic Evidence* (4th edition, Institute of Advanced Legal Studies for the SAS Humanities Digital Library, School of Advanced Study, University of London, 2017). See, in particular, Ch 6 'The presumption that computers are "reliable"'.

60 Paragraphs [81] (5), (6), [82].

61 16 December 2019.

62 *Post Office Ltd v Castleton* [2007] EWHC 5 (QB).

Further Reading:

- Piercing the tech veil: personal liability for deterministic code (2020) 6 JIBFL 378.
- Artificial intelligence and decision making in financial services (2020) 6 JIBFL 366.
- LexisPSL: High Court critical of approach to evidence in Post Office litigation (*Bates v Post Office*).