

The Law Commission and section 69 of the Police and Criminal Evidence Act 1984

By James Christie

Introduction

In 1995 the Law Commission released a consultation paper *Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper*¹ which provisionally proposed that section 69 of the Police and Criminal Evidence Act 1984 (PACE 1984)² should be repealed without replacement. Section 69 stipulated that computer evidence was not admissible in court unless it could be shown that the computer was operating properly at the relevant time.

After considering the responses to the consultation the Law Commission published in 1997 a report *Evidence in Criminal Proceedings: Hearsay and Related Topics*,³ which recommended the repeal of section 69 without mentioning the possibility of any replacement. Following repeal, a common law presumption would come into effect that in the absence of evidence to the contrary, the courts would presume that computer evidence was reliable.

A study of the papers and articles quoted in the consultation paper and final report reveals that the Law Commission misunderstood, or misrepresented, the opinions of the sources cited as being in favour of repeal. The Law Commission failed to address the strongest arguments against repeal without replacement, and it focused instead on the issue of the admissibility of evidence. It ignored the advice of the experts they cited who all argued that the focus of courts should be on the reliability of computer evidence, rather than its admissibility. The Law Commission's comments and conclusions showed that it had not understood the nature of computers and complex software systems as described in the sources upon which they relied.

This article will focus on identifying and assessing the evidence that the Law Commission presented that was related to computers and software in support of its recommendation, and it will demonstrate that the Law Commission either misunderstood or misrepresented these sources. The article will not address the legal issue of real, as opposed to, hearsay evidence. Nor will it discuss in any detail whether the Law

¹ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', No 138, 1995. <https://www.lawcom.gov.uk/app/uploads/2016/08/No.138-Criminal-Law-Evidence-in-Criminal-Proceedings-Hearsay-and-Related-Topics-A-Consultation-Paper.pdf>.

² Police and Criminal Evidence Act, 1984. <https://www.legislation.gov.uk/ukpga/1984/60/section/69/enacted>.

³ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics', 1997. https://s3-eu-west-2.amazonaws.com/lawcom-prod-storage-11jxou24uy7q/uploads/2015/03/lc245_Legislating_the_Criminal_Code_Evidence_in_Criminal_Proceedings.pdf; responses were made to the Law Commission Consultation No 138 'Evidence in Criminal Proceedings' by the following, all of which sought to repeal s 69 without replacement: Post Office, 31 July 1995; Inland Revenue, 16 October 1995; BT, 27 October 1995; Crown Prosecution Service, 1 November 1995; Department of Trade and Industry, 9 November 1995. These responses are published in the 2023 issue of the journal under 'Documents Supplement'.

Commission's recommendation was wrong, or whether the presumption of computer reliability is appropriate. There is ample literature dedicated to these issues.⁴

The distinction between the admissibility of evidence and its reliability is crucial to the theme of this article. It is therefore necessary to define what 'admissibility' and 'reliability' mean in this context.

According to the Health and Safety Executive evidence is 'admissible if it relates to the facts in issue, or to circumstances that make those facts probable or improbable, and has been properly obtained'.⁵

The reliability of all evidence is tested in court under examination and cross-examination. Evidence emanating from computer systems will be the subject of expert evidence, and the experts are in turn examined and cross-examined. There are three forms of reliability which are relevant to computer evidence: hardware reliability, software reliability, and data reliability. They are linked and all are necessary if a court is to place weight on the evidence. None is individually sufficient.

Courts must be satisfied that computer evidence has been produced by computer hardware and software systems that are technically reliable. In electrotechnical terms, reliability means 'ability to perform as required, without failure, for a given time interval, under given conditions'.⁶ That is a statement of perfection. Whereas computer hardware is nowadays extremely reliable, software is less so. It is therefore important to maintain that distinction. The Law Commission did not distinguish between hardware and software in its deliberations, as I shall discuss later. It therefore failed to understand the vital difference between hardware reliability and software reliability.

In practice software practitioners take a pragmatic approach to reliability:

'Software reliability does not deal in perfection (... we do not know of any practical instance of perfection in non-trivial software), but in estimating the chance of failure in operation, over a given time interval, to a given level of confidence (usually expressed either as a percentage or as a probability, equivalently).'⁷

Both hardware and software reliability pertain to the purposes of the organisation that owns or manages the system. Safety critical systems must be more reliable than routine administrative systems.

A computer system's hardware and software can be technically reliable for its business purposes, but its data might not be reliable for the purposes of the court, which takes us to the concept of data reliability. The computer evidence such a system produces might not be sufficiently relevant to the case being argued in court for it to be considered reliable. The system might not hold the right data, or data at the required level of detail. The system's margins of error might be acceptable for its business purposes, but not for a court. A user might have entered incorrect data to a system whose software is technically reliable. Data

⁴ Chapter 5 'The presumption that computers are 'reliable'' in Stephen Mason and Daniel Seng, editors, *Electronic Evidence and Electronic Signatures* (5th edition, Institute of Advanced Legal Studies for the SAS Humanities Digital Library, School of Advanced Study, University of London, 2021), open source at <https://ials.sas.ac.uk/publications/electronic-evidence-and-electronic-signatures>

⁵ Health and Safety Executive 'Key rules of evidence'. <https://www.hse.gov.uk/enforce/enforcementguide/court/rules-key.htm>

⁶ International Electrotechnical Vocabulary, definition 192-01-24. <https://www.electropedia.org/iev/iev.nsf/display?openform&ievref=192-01-24>

⁷ Peter Bernard Ladkin, Bev Littlewood, Harold Thimbleby and Martyn Thomas CBE, 'The Law Commission presumption concerning the dependability of computer evidence', 17 (2020) *Digital Evidence and Electronic Signature Law Review*, 1. <https://journals.sas.ac.uk/deeslr/article/view/5143>

might be missing, thus leaving a gap in the continuity of evidence, also known as the chain of evidence.⁸ These considerations, and others, should all be taken into account.⁹

However, if either the hardware or software of a system is not technically reliable for the context in which it operates it is unlikely that a court would consider it to be a reliable source of evidence regardless of whether its data superficially appeared to be reliable. Data reliability therefore depends on the technical reliability of hardware and software.

In its work the Law Commission confused these different forms of reliability. Indeed, the Commission showed no sign that it even understood such nuance. The Law Commission clearly did not understand the difference between hardware and software, the concept of technical reliability and the significance it has, or the importance of the distinction between the technical reliability of computer systems and the legal reliability of data.

The Law Commission thought that computers were mechanical instruments, that they were relatively simple machines. It failed to grasp the reality of massive, complex software systems, which were already prevalent in the mid-1990s, and the nature of system error. This failure of understanding undermined its conclusion and recommendation.

PACE 1984 section 69 ‘Evidence from computer records’

Section 69 of PACE 1984, until its repeal, provided 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—
 - a. that there are no reasonable grounds for believing that the statement is inaccurate because of improper use of the computer;
 - 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;and
 - c. that any relevant conditions specified in rules of court under subsection (2) below are satisfied.
- (2) Provision may be made by rules of court requiring that in any proceedings where it is desired to give a statement in evidence by virtue of this section such information concerning the statement as

⁸ Stephen Mason and Lynn Townley make the distinction between data reliability and computer reliability in chapter 10 ‘Competence of witnesses’, 10.4 in Stephen Mason and Daniel Seng, editors, *Electronic Evidence and Electronic Signatures* (5th edition, Institute of Advanced Legal Studies for the SAS Humanities Digital Library, School of Advanced Study, University of London, 2021), open source at <https://ials.sas.ac.uk/publications/electronic-evidence-and-electronic-signatures>

⁹ Data reliability was a feature of the Post Office Horizon prosecutions. The Post Office, and the prosecuting counsel, assumed and argued that data that was considered reliable for the corporation’s purposes could therefore be presumed to be reliable as evidence in court. The reality was that the Horizon system had several purposes with different levels of accuracy and reliability. Quite apart from Horizon’s low level of technical reliability, which was subsequently revealed, the level of reliability considered acceptable in a corporate accounting system is much lower than a court would expect. This problem was ignored. See James Christie. ‘The Post Office IT scandal – why IT audit is essential for effective corporate governance’. 19 (2022) *Digital Evidence and Electronic Signature Law Review*, 19. In particular see the section ‘Performing system audits’. <https://journals.sas.ac.uk/deeslr/article/view/5425>. Also see James Christie. ‘The mysterious role of external audit in the Post Office Scandal’, author’s blog, 2023. <https://clarotesting.wordpress.com/2023/02/14/the-mysterious-role-of-external-audit-in-the-post-office-scandal/>.

may be required by the rules shall be provided in such form and at such time as may be so required.’

The five problems with section 69 identified by the Law Commission

In its 1997 report, the Law Commission summarised the concerns expressed in the 1995 consultation paper into five problems:¹⁰

1. Section 69 failed to address the major causes of inaccuracy in computer evidence.
2. Advances in computer technology made it increasingly difficult to comply with section 69.
3. Recipients of computer evidence who wished to rely on it were in no position to satisfy the court about the operation of the computer.
4. It was illogical to apply section 69 when evidence was produced directly from a computer but not when experts relied on computers.
5. At the time of the publication of the consultation paper there was a problem arising from the interpretation of section 69. The Divisional Court (a senior court of the Queen’s Bench Division that typically sits as two High Court judges) in *McKeown v DPP*¹¹ held that computer evidence is inadmissible if it cannot be proved that the computer was functioning properly. On appeal to the House of Lords, this interpretation was overturned. All that was required for a computer-generated statement to be admissible as evidence in criminal proceedings was positive evidence that the computer had properly processed, stored, and reproduced whatever information was received. In that case, the malfunctioning of the clock did not affect the way in which the Intoximeter processed, stored, or retrieved information used to generate the statement tendered in evidence. The House of Lords’ ruling therefore resolved this fifth problem identified in the consultation paper.

The Law Commission quoted Professor Colin Tapper in relation to the first and third problems, and Dr Stephen Castell for the second. The Law Commission’s description of the second problem was based on a quote in the consultation paper from a book written by Alistair Kelman and Richard Sizer. In its discussion of the five problems, the Law Commission did not mention any other sources or experts in relation to the nature of computers and how it might affect evidence. The sources cited were credible and respectable, but it is remarkable that the Law Commission drew on such a narrow range of experts to help them shape the law relating to a large, complex, technical subject.

The fourth problem involved an anomaly between the admissibility of evidence emanating directly from a computer and the admissibility of evidence that was relayed from a computer via an expert. If there was such an anomaly, I find it surprising that the Law Commission chose not to explain why it should be resolved by ensuring the admissibility of both classes of computer evidence without addressing the issue of whether the evidence that is admitted is reliable.

A noticeable feature of the Law Commission’s work was that it focused on the admissibility of evidence but neglected the vitally important issue of reliability, in its various forms, despite the recommendations made

¹⁰ Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics, 1997. [Para 13.7-13.11].

¹¹ *DPP v McKeown (Sharon), DPP v Jones (Christopher)* [1997] 1 All ER 737. Lord Hoffmann made the following comment at 743b: ‘It is notorious that one needs no expertise in electronics to be able to know whether a computer is working properly’. Mason says in *Electronic Evidence and Electronic Signatures* at 5.245 that this ‘can be considered to be the extreme view that will not be shared by any computer experts – or indeed lay people. His comment is not merely dangerous but also vacuous. It is like saying that you do not need to know the chemistry of ink to know whether writing works. This is not relevant, because you can still write nonsense, regardless of the chemical properties of the ink.’

by the sources that the consultation paper and the final report cited concerning computers. I shall discuss the first three problems in turn, and show how the Law Commission ignored, or misunderstood, these sources' explanations of the nature of computer evidence and their recommendations about how such evidence should be treated by the courts.

The Law Commission's misrepresentation of Professor Colin Tapper

The Law Commission cited only Professor Colin Tapper in support of the first and third problems with PACE 1984 section 69, i.e. that it failed to address the major causes of computer error, and that recipients of evidence were in no position to vouch for its accuracy.

Professor Tapper, of Magdalen College, the University of Oxford, was certainly an apt choice as an expert author. He has been described as 'the academic father of computers and law'.¹² The Law Commission relied on two articles written by Professor Tapper. It did not do justice to either. The Commission misrepresented Tapper's arguments in both, and wholly disregarded his conclusions.

Problem 1 – failure to address the major causes of inaccuracy

The Law Commission, in its final report to Parliament, set out the first problem as follows:

'13.7 First, section 69 fails to address the major causes of inaccuracy in computer evidence. As Professor Tapper has pointed out, "most computer error is either immediately detectable or results from error in the data entered into the machine"¹³.'

In the 1995 consultation paper the Law Commission cited this text by Tapper, and provided a brief argument about why it was relevant to the repeal of section 69, at 14.17:

'We believe that a major problem with computer evidence ... arises where incorrect data have been fed into the computer, as opposed to there being a defect in the software. We were not surprised when people told us that this sometimes happened. This evidence lends support to Professor Tapper's view that "most computer error is either immediately detectable or results from error in the data entered into the machine". Thus section 69 fails to address the main problem with computer evidence, that is, data errors. Instead, it deals with matters which would usually be apparent in any event.'

There are several problems with this. Firstly, whether or not Professor Tapper's statement in the *Discovery* article about computer errors was correct, the Law Commission's treatment of it is hard to justify. GIGO is the famous acronym describing input error: garbage in, garbage out. GIGO provides an important reminder about the need to prevent or limit incorrect input, and help users to detect it. Although incorrect input is sufficient to produce garbage output, it is not necessary. Input errors that were not detected might be a small minority or a large majority of total errors, but knowing whether or not they do represent most computer errors does not take us far. The more important question is: how significant are these input errors in the particular context? A large majority might be trivial. A small minority might be catastrophic errors. The apparent assumption of the Law Commission that they must be important because they are many is misguided.

¹² Professor Richard Susskind OBE, 'Recollections of SCL in the 1980s and Early 1990s'. Society for Computers and Law, 2013. <https://www.scl.org/articles/2777-recollections-of-scl-in-the-1980s-and-early-1990s> .

¹³ Professor Colin Tapper, 'Discovery in Modern Times: A Voyage around the Common Law World', 67 Chi.-Kent L. Rev. 217 (1991), 217, 248, <https://scholarship.kentlaw.iit.edu/cklawreview/vol67/iss1/8/> .

Also, the Law Commission does not make it clear what significance should be attached to the sum of detectable errors plus input errors. This does not seem to be a meaningful number. They are not discrete categories of error; they overlap. It is like saying most UK citizens are either English or women. It might be true but what does that mean? The significance of the statement must be explained if it is to carry any weight.

Further, the apparent assumption that errors ‘would usually be apparent’ is questionable. It is certainly valid if one counts errors produced by coding mistakes that are fixed before systems are released, or which are detected and fixed quickly following release. System developers and testers know that such errors are many, but these are not the type of errors that are likely to feature in litigation and prosecutions. It is latent errors that will trouble the courts when they are triggered, as happened in the Post Office cases.

Even experts, such as developers, testers, and IT auditors, face great difficulty in assessing with confidence the accuracy and reliability of complex computer systems. Mistakes in processing are often very hard to detect. The Law Commission seems to have assumed that this was a straightforward task. Judging accuracy requires an analysis of critical assumptions, acceptable margins of error, confidence levels, the nature and availability of any oracles against which accuracy can be assessed, and the business context of the application.¹⁴ This all demands domain knowledge, technical expertise and, crucially, unrestricted access to the system and data. It is beyond the ability of ordinary users, outsiders, and lay people, such as lawyers, who can comment reasonably only on trivially simple errors.

If errors are ‘immediately detectable’ then they are unlikely to be the problems that trouble courts. They will not be the errors that lead to expensive, damaging litigation, or that might result in erroneous and unreliable evidence being given in criminal prosecutions. The Post Office Horizon Issues trial in 2019 highlighted a Horizon error, the ‘receipts and payments mismatch’ bug,¹⁵ which resulted in Post Office branch users being told their account was in balance when the central system recorded a discrepancy for which users were liable. Such an error was impossible for users to detect.

The Law Commission, by citing Professor Tapper, might cause readers with little experience of corporate IT to infer that errors are not a cause for concern if they are neither input errors nor easily detectable. That would be a serious mistake. The hardest, most intractable errors to detect and fix are those buried within the heart of complex systems, errors arising from erroneous coding, and elements of the system combining in ways that were never anticipated, in ways that might be unpredictable. Also, even when code has been written correctly, serious problems can arise if a poorly designed user interface induces error by the user.

Courts are much less likely to deal with prosecutions or civil litigation that involve routine, trivial computer errors than errors arising from complex, perhaps freakish, ‘edge cases’ or ‘corner cases’,¹⁶ such as the Post

¹⁴ James Christie, ‘Facing the dragons – dealing with complex unknowable systems’, EuroSTAR (2018), <https://huddle.eurostarsoftwaretesting.com/resources/functional-testing/facing-facing-dragons-dealing-complex-unknowable-systems/>.

¹⁵ *Bates v Post Office Ltd (No 6: Horizon Issues) Rev 1* [2019] EWHC 3408 (QB), [427]-[434]. <https://www.bailii.org/ew/cases/EWHC/QB/2019/3408.html>.

¹⁶ An edge case is ‘a rare situation that will occur only occasionally, but still needs specific design attention to be dealt with in a reasonable and safe way.’ A corner case is a set of normal operational factors, but which might combine in unpredictable ways leading to error. Philip Koopman, Aaron Kane and Jen Black. ‘Credible Autonomy Safety Argumentation’ Safety-Critical Systems Symposium, Bristol UK, Feb. 2019. https://users.ece.cmu.edu/~koopman/pubs/Koopman19_SSS_CredibleSafetyArgumentation.pdf. The Post Office receipts and payments mismatch bug seems to be an example of a corner case. It would occur if users took certain legitimate actions in an attempt to clear a discrepancy.

Office Horizon receipts and payments mismatch bug. Even when Professor Tapper wrote his article in 1991 the complexity of corporate IT was intimidating. UK financial institutions had been building massive systems for 30 years. By 1991 banks and insurance companies had UK-wide distributed systems using networks of mainframes and mid-range computers. Few people had home computers and non-IT people, including the Law Commission, had little conception of what was being done in corporate IT.

The arrival of web technology piled intractable new complexity onto a fearsomely complex foundation. The Law Commission did not understand the nature of computer errors in this environment, which is not surprising given its failure to grasp the differing concepts of hardware reliability, software reliability and data reliability, as explained in the introduction.

To understand the implications of repealing section 69, the Law Commission should instead have consulted much more widely to obtain the opinions of IT academics and practitioners who could have warned of the dangers of repealing section 69 without an appropriate replacement.¹⁷

A second problem with the Law Commission's argument is that it is unhelpfully vague and lacking in any clear logic. 'People told us that this sometimes happened' is not a persuasive observation about input errors. Moreover, Professor Tapper does not distinguish in the quote between data that is wrong because the person entering does not know it is wrong, and data that is wrong because the person makes an error in entering it. How relevant are such errors? If they are relevant, the Law Commission should have explained why and cited credible sources. If they are not relevant to the argument being made by the Law Commission, there is no need to include such a vague comment as 'people told us'. Also, stating that input error 'sometimes' happens is a statement of the obvious. It provided no basis whatsoever for repealing section 69, and it provides no basis for the current presumption that computer evidence is reliable.

Regardless of whether Professor Tapper was correct that most errors were either caused by erroneous input or were obvious, it was unreasonable for the Law Commission to infer and argue that 'data errors', an absurdly imprecise phrase, are 'the main problem with computer evidence'. It is equally unreasonable to infer that section 69 'deals with matters which would usually be apparent in any event'. Even if the Law Commission's reasoning were correct it is questionable whether errors usually being apparent is sufficient justification for a presumption that computer evidence is reliable. Professor Tapper's *Discovery* article does not mention PACE 1984 section 69.

The only justification for the Law Commission citing the quote about 'most computer errors' is that it mistakenly considered it to be an authoritative statement, a general rule, about the nature of computer evidence.

It is arguable whether or not Professor Tapper's statement about 'most computer errors' was correct, but he was offering a point of view that was not material to the main argument of the *Discovery* article in which it appears. The Law Commission did Professor Tapper a serious disservice by taking a questionable quote out of context from a 26,000 word article and then placing a degree of emphasis upon the quotation that cannot possibly be justified. The whole *Discovery* article takes a far more nuanced and realistic approach to computers than is implied by the Law Commission's chosen quote. Professor Tapper's article rewards careful reading by anyone interested in the history of the repeal of section 69.

¹⁷ This article by distinguished IT experts explains in more detail the problems with Tapper's claim and the Law Commission's conclusions. Their arguments are not made with the benefit of hindsight. They would have argued the same case if they had been consulted in the 1990s. Peter Bernard Ladkin, Bev Littlewood, Harold Thimbleby, Martyn Thomas. 'The Law Commission presumption concerning the dependability of computer evidence', 17 (2020) *Digital Evidence and Electronic Signature Law Review*, 1. <https://journals.sas.ac.uk/deeslr/article/view/5143> .

The full paragraph from which the Tapper quote is taken reveals a different argument from the one made by the Law Commission in its use of the quote:¹⁸

‘The most surprising feature of section 5 is that it makes no requirement that the originator of the information processed by the computer should have had, or even be reasonably capable of being supposed to have had, personal knowledge of the truth of that information. This seems quite extraordinarily lax, given that most computer error is either immediately detectable or results from error in the data entered into the machine. So widely has this been accepted that it has become institutionalized into the acronym “GIGO,” or “garbage in, garbage out”.’

This passage refers to section 5 of the Civil Evidence Act 1968 (CEA 1968)¹⁹ which concerns the admissibility of computer evidence in civil proceedings. This is the civil law equivalent of PACE 1984 section 69.

As Dinah Rose KC (of Blackstone Chambers and President of Magdalen College, Oxford since 2020) pointed out to me:²⁰

‘That passage criticises legislation as too lax because it permits the use of computer records where the person who input the information couldn’t vouch for its truth.’

It was highly tendentious to take an argument criticising lax admissibility of computer evidence in civil cases to justify more liberal admissibility of computer evidence in criminal cases.

Professor Tapper’s stance becomes clearer later in the *Discovery* article. I am again grateful to Dinah Rose KC for this contribution. She wrote:²¹

‘In a later passage he addresses the issue that went wrong in the Post Office case. He strongly advocates for the opposite of a presumption of accuracy.’

In that later passage Professor Tapper wrote:²²

‘A further twist to the skein becomes apparent if the file is going to be used to provide evidence at the trial, as then information should be provided. This is, at least in part, so as to provide a basis upon which cross-examination can be conducted, as it has been remarked that:

“any use of computerized data presents some obstacles to effective cross examination, even if otherwise admissible, because of the difficulty of knowing the precise methods employed in programming the computer as well as the inability to

¹⁸ Professor Colin Tapper, ‘Discovery in Modern Times: A Voyage around the Common Law World’. Page 248.

¹⁹ Civil Evidence Act, 1968, section 5. https://www.legislation.gov.uk/ukpga/1968/64/pdfs/ukpga_19680064_en.pdf.

²⁰ Correspondence from Dinah Rose to the author via Twitter, and used with her permission.

²¹ Correspondence from Dinah Rose to the author via Twitter, and used with her permission.

²² Professor Colin Tapper, ‘Discovery in Modern Times: A Voyage around the Common Law World’. Pages 274-276.

determine the effectiveness of the persons responsible for feeding data into the computer.”²³

Such objections are likely to be particularly strong in a case where the computer is to be used in a more sophisticated pre-trial application than merely storage of material, and is instead to be used to conduct some operation on the materials it contains, for example modelling of the subject-matter of the dispute. In a case involving the computation of the exhaustion of stocks it was said that

“(i)t [sic] is quite incomprehensible that the prosecution should tender a witness to state the results of a computer’s operations without having the program available for defense scrutiny and use on cross-examination if desired. We place the Government on the clearest possible notice of its obligation to do this and also of the great desirability of making the program and other materials needed for cross examination of computer witnesses, such as flow-charts used in the preparation of programs, available to the defense a reasonable time before trial.”²⁴

This has remained the firmly expressed view in civil cases as well as criminal and in *City of Cleveland v. Cleveland Electric Illuminating Co.*, it was said that where

“expert reports are predicated upon complex data, calculations and computer simulations which are neither discernible nor deducible from the written reports themselves, disclosure thereof is essential to the facilitation of ‘effective and efficient examination of these experts at trial’... .”²⁵

Similarly in *Dunn v. Midwestern Indemnity*²⁶ the Court permitted discovery of

“any material relating to the record holder’s computer hardware, the programming techniques employed in connection with the relevant data, the principles governing the structure of the stored data, and the operation of the data processing system. When statistical analyses have been developed from more traditional records with the assistance of computer techniques, the underlying data used to compose the statistical computer input, the methods used to select, categorize, and evaluate the data for analysis, and all of the computer outputs normally are proper subjects for discovery.”²⁷

Dinah Rose commented:

²³ *United States v Cepeda Penes*, 577 F.2d 754 (1978), 760-61. (Editorial note: subsequent negative treatment by the Supreme Court of Oregon in *State v Edmonds*, 435 P.3d 752 (Or. 219)).

²⁴ *United States v Dioguardi*, 428 F.2d 1033 (1970). (Editorial note: subsequent negative treatment: the most negative by United States Court of Appeals, Seventh Circuit in *U.S. v Bastanipour*, 697 F.2d 1700 (1982), 12 Fed. R. Evid. Serv. 392; the Court of Appeals of Georgia in *Young v State*, 749 S.E.2d 423 (Ga. App 2013), 13 FCDR 3149, and the Court of Appeals of Maryland in *State v Yancey*, 442 Md. 616, 113 A.3d 685 (Md. 2015)).

²⁵ 538 F. Supp. 1257 (1980). (Editorial note: subsequent negative treatment before the Supreme Court of Montana in *In re Marriage of Hart*, 360 Mont. 308, 258 P.3d 389 (Mont. 2011), 2011 MT 102).

²⁶ 88 F.R.D. 191 (1980).

²⁷ 88 F.R.D. 191 (1980) at 194.

‘I don’t know whether it’s right that the Law Commission relied on this article in the way that you say.²⁸ But if they did they misunderstood it.’

Professor Tapper’s *Discovery* article was the only source cited by the Law Commission to support its assertion that section 69 ‘fails to address the major causes of inaccuracy in computer evidence’. The Law Commission therefore did rely on the article. Any doubt that the Law Commission misrepresented Professor Tapper is removed by studying section E of the article:²⁹

‘E. Authenticity of Evidence

Any evidence adduced to a court must be authenticated in some way. A witness normally gives his name and describes his involvement with the facts in issue. A document or other thing cannot authenticate itself at common law, but must be introduced to the court by a human being whose task it is to explain its identity, its nature, its provenance and its relevance. Only if these matters are satisfactorily put before the Court and acceptable to it can such a thing be admitted in evidence. The establishment of such foundations is necessary, and the rules governing this process constitute the rules relating to the authentication of things considered in evidence.

These topics are likely to be particularly contentious and difficult in their application to evidence derived from computers. In many, if not most, cases the evidence is produced from the custody of a party to the proceedings, who will have an interest to serve and may have an inducement to tamper with the evidence.

In many cases the thing produced to the court, most often a print-out, will have been printed for the purposes of the proceedings. Any alteration will have taken place not on the thing produced in court, but on the storage medium from which it has been derived. This storage medium may well itself be, or be derived in its turn from, a record on a magnetic disc. The whole point of such discs is that they should be easy to alter, and unless specific precautions are taken they normally keep no record of having been altered.

This means that much less weight can be given on the question of authentication to the appearance of the thing itself, and much more must depend upon the testimony describing the operation of the computer system, and the provenance of the particular things before the court.’

The *Discovery* article was published in 1991. In 1992 Lord Griffiths expressed the opinion in *R. v Shephard*³⁰ that in the vast majority of cases it would be possible to satisfy the court that the computer was operating properly by calling a witness who was prepared to say that it was doing so. In that case the witness testifying to the reliability of the computer was a store detective with no technical expertise.³¹ Lord Griffiths thereby settled the interpretation of section 69, rendering it ineffective as a safeguard.

²⁸ Dinah Rose was responding to the author’s statement that ‘the reason Tapper’s opinion still carries huge significance is that the Law Commission cited it to justify the presumption that computer evidence should be considered reliable in English and Welsh courts.’

²⁹ Professor Colin Tapper, ‘Discovery in Modern Times: A Voyage around the Common Law World’. Page 251.

³⁰ *R. v Shephard* [1993] AC 380 at 384E.

³¹ Paul Magrath, ‘Law Report: Computer evidence did not need expert backing: *Regina v Shephard* – House of Lords (Lord Griffiths, Lord Emslie, Lord Roskill, Lord Ackner and Lord Lowry), 16 December 1992’ *The Independent*, 21 January 1993.

In its 1995 consultation paper the Law Commission showed that it understood Lord Griffith's opinion that technical expertise was unnecessary by quoting his comment that:³²

'It will very rarely be necessary to call an expert and ... in the vast majority of cases it will be possible to discharge the burden by calling a witness who is familiar with the operation of the computer in the sense of knowing what the computer is required to do and who can say that it is doing it properly.'

At the time the implications of the Lord Griffiths opinion were obvious to those computer experts who took an interest in the issue of computer evidence. In January 1993 Michael Turner, a forensic computer examiner and expert witness, wrote letters that were published in *Computer Weekly*, *The Lawyer*, and *Computing* arguing that:³³

'... the law will in future follow the dictum "it's been printed by a computer, so it must be true".

Clearly something has gone very wrong in this case. If there is to be no effective test of the admissibility of computer evidence in future, defence lawyers will have to adduce expert evidence of the reliability of computer documents, whenever there is any reason to question their authenticity.'

As Dinah Rose noted, Professor Tapper was arguing in the *Discovery* article for the *opposite* of a presumption that computer evidence should be considered reliable. He took a line that clearly contradicted Lord Griffiths' opinion in *R. v Shephard*, yet the Law Commission presented both sources as if they were aligned, and supported their own conclusion seemingly unaware of the fact that they and Lord Griffiths were lamentably ignorant of the reality of complex computer systems.

The Law Commission's report therefore fails to provide any support for its assertion that section 69 did not address the major causes of inaccuracy in computer evidence. Indeed, the only source that was cited contradicted the Law Commission's conclusion.

Problem 3 – recipients of computer evidence were in no position to vouch for its reliability

The misrepresentation of Professor Tapper was not confined to the first problem that the Law Commission identified with section 69. Tapper was again the sole source cited in support of the third problem, that it was impractical for recipients of computer evidence, who might wish to rely on it, to satisfy the court that it was reliable:

'13.9 A third problem lies in the difficulties confronting the recipient of a computer produced document who wishes to tender it in evidence: the recipient may be in no

<https://www.independent.co.uk/news/uk/law-report-computer-evidence-did-not-need-expert-backing-regina-v-shephard-house-of-lords-lord-griffiths-lord-emslie-lord-roskill-lord-ackner-and-lord-lowry-16-december-1992-1479886.html> ; note the comments in Chapter 10 'Competence of witnesses' in *Electronic Evidence and Electronic Signatures* at 10.12: 'the store detective was only capable of demonstrating the method by which the prices of goods were added to the till, not whether the software accurately replicated the list of goods purchased.'

³² Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995. [Para 14.7].

³³ Michael Turner, 'Is computer always right?', *The Lawyer*, 1993. <https://clarotesting.files.wordpress.com/2023/07/michael-turner-letters-to-computer-weekly-the-lawyer-and-computing.-january-1993.pdf> .

position to satisfy the court about the operation of the computer. It may well be that the recipient's opponent is better placed to do this.'³⁴

The Law Commission cited Professor Tapper's article on evanescent evidence (the *Evanescent* article), but précised the relevant section, which I quote here:³⁵

'Sect. 5 applies a special set of conditions for the admission of hearsay in the form of the output of computers which prevail over those applying to other categories of document. This decision seems increasingly to have been mistaken. Original documents are more usually produced by their recipients than by their generators, and it is accordingly they who must show satisfaction by the generator of the elaborate conditions under which the documents so generated are admissible. They are clearly less likely to be able to do so than their opponents.'

Professor Tapper is unambiguously talking about civil evidence. Section 5 is part of CEA 1968. The distinction between civil and criminal evidence is crucial if one wishes to rely on Professor Tapper's *Evanescent* article to justify repeal of PACE 1984 section 69. Tapper also wrote in this article:³⁶

'The rules relating to the admissibility of the output of scientific devices, like the computer in such a case, are the same in civil and criminal proceedings. Unfortunately the statutes which have amended the rules relating to the admissibility of hearsay have affected such evidence incidentally, and differently in the two classes of proceedings. Neither set of provisions explicitly adverts to the distinction between the reception of print-out as hearsay and as original evidence, but both apply to "a statement in a document produced by a computer" [quoting CEA sect 5 and PACE section 69]. This seems clearly to apply to both types of use.

The problem then is that the conditions set out in the Civil Evidence Act 1968 sect. 5 seem unduly restrictive in their reference to the nature of the information contained in the printout, while section 69 of the Police and Criminal Evidence [sic] which applies in criminal proceedings concentrates on the means of recording the evidence, and is in terms very similar to the common law rules relating to the reception of scientific evidence.

The result is satisfactory in the case of criminal proceedings on account of the divorce between conditions relating to hearsay and to electronic means, but unsatisfactory in the case of civil proceedings because of the marriage of these two quite different notions. The final result is that evidence in electronic form which is quite unexceptional on scientific grounds may be excluded in civil proceedings on hearsay grounds, even when it is tendered as original evidence without any hearsay element at all, and even though it would satisfy the normal test for the reception or any other form of automatically generated evidence.'

'Satisfactory in the case of criminal proceedings' is an eye catching phrase in an article cited by the Law Commission to justify a major change in the law relating to criminal evidence on the grounds that the status quo was highly unsatisfactory. Tapper thought that the criminal statute, PACE section 69, produced

³⁴ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics', 1997. Paragraph 13.9.

³⁵ Professor Colin Tapper, 'Evanescent Evidence' (1993) *International Journal of Information and Technology Law*, 1(1), 1993. Page 52. <https://www.deepdyve.com/lp/oxford-university-press/evanescent-evidence-EPCcn0FVDG?articleList=%2Fsearch%3Fquery%3Devanescent%2Bevidence> (payment required).

³⁶ Professor Colin Tapper, 'Evanescent Evidence' (1993). Page 55.

results that were satisfactory while the civil statute, CEA sect 5, produced unsatisfactory results. The Law Commission cited an opinion about the statutes governing civil evidence and presented that as Professor Tapper being unhappy with a statute governing criminal evidence. The most generous verdict would be that the Law Commission took Tapper's opinion out of context.

Further, the Law Commission made no attempt to explain why it was problematic that civil litigants who wished to rely on computer evidence could not vouch for its reliability, but it would not be a problem in criminal cases if defendants were equally poorly placed if they wished to challenge computer evidence.

Misrepresenting Professor Tapper once may have been careless. To do it twice was deplorable and fatally undermines the Law Commission's conclusion and recommendation.

It is hard to escape the conclusion that the Law Commission had already decided that section 69 should be repealed: it quoted selectively from authoritative sources in order to create a veneer of credibility and respectability for its report. As I shall show later in this article the Law Commission did not understand computers or software, and was therefore unable to see the flaws in its thinking.

Problem 2 – advances in computer technology made compliance with section 69 increasingly impractical

The Law Commission relied on Professor Tapper, a distinguished legal academic, for its analysis in the final report of the first and third problems it identified with section 69. For the second problem the Commission used sources more familiar with computers:³⁷

'13.8 Secondly, advances in computer technology make it increasingly difficult to comply with section 69: it is becoming "increasingly impractical to examine (and therefore certify) all the intricacies of computer operation".³⁸ These problems existed even before networking became common.'

The direct quote used by the Law Commission is from Dr Stephen Castell. The comment made about the problems that existed before networking comes from a book written by Alistair Kelman and Richard Sizer. This book was quoted in the consultation paper. Both sources were misrepresented. The Law Commission failed to take full account of Professor Tapper's views on the need to establish the authenticity of computer evidence, and this failing was repeated in its treatment of the works of Castell and of Kelman and Sizer. All these experts argued that the courts should focus on the reliability of computer evidence rather than its admissibility. They were ignored.

'The Computer in Court' by Alistair Kelman and Richard Sizer

*The Computer in Court*³⁹ was published in 1982. Alistair Kelman was a barrister with a keen, and well informed, interest in IT. He trained as an engineer. Richard Sizer was Chairman of the Professional Advisory Board of the British Computer Society.

Although the subject matter of the book was directly relevant to the Law Commission's consideration of the treatment of computer evidence, the authors, Kelman and Sizer, made a completely different, and

³⁷ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics', 1997. Paragraph 13.8.

³⁸ Stephen Castell, 'Evidence and Authorisation: is EDI [Electronic Data Interchange] "legally reliable"?' (1990) 6(5) Computer Law and Security Report 2. https://www.researchgate.net/publication/256522438_Electronic_data_interchange. This is the document cited by the Law Commission. However, this is the summary for a presentation by Dr Castell rather than the transcript itself, of which there no longer seems to be a copy available.

³⁹ Alistair Kelman and Richard Sizer, 'The Computer in Court' (1982), Ashgate Publishing Limited.

powerful, argument, which directly contradicted the Law Commission's conclusion and its resulting recommendation to Parliament. The authors were writing before PACE 1984 was enacted, and they argued for more effective safeguards than PACE section 69 eventually provided. It is remarkable that the Law Commission chose not to explain that the book it cited was so clearly at odds with its recommendation that section 69 should be repealed with no replacement.

To repeat the main points of the explanation above, the second problem with section 69 alleged by the Law Commission in its final report was that advances in computer technology made it increasingly difficult to comply with section 69 and that it was increasingly impractical to examine and certify the working of computer systems. The Law Commission then stated that 'these problems existed even before networking became common'. This comment refers to a quote in the 1995 consultation paper:⁴⁰

'14.15 Problems existed even before networking became common:

"The Data Processing Manager, when producing, as evidence, a print-out from the computer he is in charge of, frequently says in a deposition that the computer was working properly. This is an opinion and, with a large and complex computer system, it is doubtful whether such a manager could have sufficient knowledge about the computer system to be capable of forming such an opinion based on fact. In any event it has been pointed out that computer malfunction or an act of unauthorised tampering might be almost impossible to detect by all but experts in the field."

This gives the impression that the views of Kelman and Sizer were similar to the Law Commission, but their analysis of a genuine problem led them to the same conclusion as Dr Castell (as I shall explain later), namely that developers and managers of computer systems needed a new, more rigorous approach. Their book sets out 'Seven Statements' that should apply to anyone wishing to rely on computer evidence in court proceedings:

'In our view a new form of affidavit or deposition should be used to produce computer evidence in both criminal and civil cases so that the question of reliability of computer evidence can be adequately argued in court. We suggest that to do this the person in charge of the computer system who, naturally, wishes the evidence to be relied upon should highlight the key features of the system that go to the issue of reliability. We believe this could be done by use of an affidavit or deposition in seven parts – The Seven Statements.⁴¹

The Seven Statements

Statement One should deal with the qualifications and experience of the person in charge of the computer system. This is to establish that he is capable of swearing such a document.

⁴⁰ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995.

⁴¹ Alistair Kelman, 'The Computer in Court', 2nd edition. Pages 55-56.

https://www.researchgate.net/publication/269279234_The_Computer_in_Court_-_a_Second_Edition. Mr Kelman has confirmed to the author that the second edition contains the same seven statements as the first edition, which the Law Commission cited. The first edition is out of print, but the second edition is available at no charge on the internet, so the quotes in this article refer to that edition.

Statement Two should consist of a description of the computer system with reference to each of the components in the system by brand and model number, e.g. a Kamikaze DDB7 with the Asthma 2.6 operating system running custom written payroll programs.

Statement Three, a long statement, should deal with the quality of the individual components by reference to the development time involved in their creation. For example reference could be made here to any technical literature or manuals which were used, giving the number of man hours involved in their original development. Manufacturers of quality products would gladly assist in producing technical evidence of this kind.

Statement Four should deal with the testing and documentation standards applied to any custom written software. If the software had been bought-in, the software house, if reputable, should be willing to provide information on its testing and documentation standards.

Statement Five should deal with the procedures for logging updates to the software and the qualifications of the subordinate staff involved in the computer system.

Statement Six should deal with the physical and electronic security features of the installation.

Finally, Statement Seven should indicate how the particular computer printout came into existence and what it purports to show. In this section the person in charge can say that no faults manifested themselves during the material time which would indicate to him that the computer evidence could not be relied upon.

In a criminal case a deposition made by the person in charge of the computer system containing the Seven Statements would greatly assist both counsel and the judge in determining, the reliability of the computer system and hence whether the evidence could be put before a jury.

A document containing the Seven Statements would be extremely lengthy but much of it could and, we believe, should, be prepared by an organisation using computers prior to any incident requiring the organisation to go to law or to assist in a prosecution. The first six of the Seven Statements could be kept in draft form on file. It would then be a simple and inexpensive process finally to add the Seventh Statement and engross the document attaching any relevant computer printouts to it as exhibits.'

The book was published in 1982, two years before PACE 1984 came into force. Kelman and Sizer were arguing for a more rigorous, realistic, and effective approach to the treatment of computer evidence than PACE 1984 section 69 offered.

However, the introduction to the book's second edition,⁴² produced solely by Alistair Kelman, explains that he and Richard Sizer had argued in the early 1980s for a change in the law relating to computer evidence and they had made a submission to the Home Office that contributed to the drafting of section 69. In a

⁴² Alistair Kelman, 'The Computer in Court', 2nd edition. Page 4.

1998 article in the Law Society Gazette, Kelman made it very clear that he was opposed to the repeal of section 69:⁴³

‘As many will have heard the government proposes to abolish s 69 of PACE

Last July in a UK Cryptography Newsgroup Dr Ross Anderson of the Cambridge Computer Laboratory commented that:

“Many if not most of the victories that have been won on computer matters, including notorious miscarriage-of-justice cases like *R v Munden*⁴⁴, hinged on this.

With it gone there will be very little leverage as the state will be able to interpret any convenient computer evidence more or less as it wants, and whenever anyone wishes to challenge it they will have to argue *ab initio*”.

... Dr Anderson is correct that this proposed change in the law is one which, indeed, has very serious consequences.’

In 2006, in the second edition of *The Computer in Court*,⁴⁵ Alistair Kelman wrote:

‘Although ... the documentary evidence provisions of the Criminal Evidence Act 1965 have been replaced by the Police and Criminal Evidence Act 1984 which was repealed in 1999 by Section 60 of the Youth Justice and Criminal Evidence Act 1999⁴⁶ unreliable computer evidence is still put before the court. Today there are virtually no controls over putting computer evidence before the court ...

The opportunities for fabricating computer evidence and for destroying or altering audit trails are growing.

Yet lawyers have found that it has become increasingly difficult to obtain Legal Aid⁴⁷ to cover the costs of investigating the reliability of computer evidence. Although both Richard (Sizer) and I believe that nobody has yet been convicted in the United Kingdom of a crime they did not commit owing to inaccurate computer evidence being placed before the courts, well publicised miscarriages of justice such as the Birmingham Six and the Guildford Four show how dangerous it can be to accept technical evidence in the courtroom at face value.’

⁴³ Alistair Kelman, ‘Documentation security and computer evidence’, Law Society Gazette, May 1998. <https://www.lawgazette.co.uk/news/documentation-security-and-computer-evidence-/20781.article> .

⁴⁴ *R v Munden*, Mildenhall Magistrates’ Court, 8-11 February 1994. Described by Kelman in the Law Society Gazette as follows: ‘Munden was the case where a serving police officer who reported to his bank that sums had been withdrawn from his bank account was charged and convicted of attempting to obtain money by deception from the bank. The case was thrown out on appeal to the Divisional Court when the reliability of the bank computer records and the testimony of the bank’s computer expert witnesses was questioned and the prosecution had to drop the charge owing to the refusal of the bank to supply any evidence to substantiate the statements it was making.’

⁴⁵ Alistair Kelman, ‘The Computer in Court’, 2nd edition. Pages 67 and 69.

⁴⁶ Youth Justice and Criminal Evidence Act 1999, <https://www.legislation.gov.uk/ukpga/1999/23/section/60/enacted> .

⁴⁷ This was a contributing factor to the Post Office Horizon scandal. Defendants could not obtain enough money from Legal Aid to hire experts who could rebut the presumption that Horizon evidence was reliable. See the Conclusion to this article.

Alistair Kelman wrote this in 2006, 13 years before the Post Office Horizon Scandal was exposed. Tragically, there have been hundreds of false Post Office convictions and miscarriages of justice ‘owing to inaccurate computer evidence being placed before the courts’. That scandal has been well publicised. Less well known is the Princess of Wales Hospital case⁴⁸ in which 70 nurses were disciplined, with some charged with wilful neglect contrary to the Mental Capacity Act 2005. Some of the nurses received custodial sentences. Unreliable IT evidence was at the heart of this case.

Mr Kelman made this statement in correspondence with the author:

‘Neither Richard Sizer nor I were approached by the Law Commission at any time to contribute to their consideration of computers and complex systems. Our book, *The Computer in Court*, had been written by us to be a book which could highlight the real risks with computer systems in a way which could be understood by everyone – not just by a legal priesthood or a technologist. We wanted the book to be cheap and easily accessible but the legal publisher, Gower, insisted that our little book sold for £30 to a rarefied market of lawyers “who would know what to do”.

In truth the Law Commission at the time had no idea what they were dealing with and failed to address, or even understand, the issue of reliability of computer evidence because they did not have the basic knowledge of management of risk through engineering. The Law Commission focussed on admissibility which was a subject for lawyers rather than make enquiries of engineers who were skilled in the design of safe systems. In doing so they misrepresented our positions as engineers which was never in support of their recommendations.’

Dr Stephen Castell’s APPEAL and VERDICT reports

In its 1995 consultation paper, the Law Commission cited two reports by Dr Castell, the VERDICT Report of 1987 and the APPEAL Report of 1990.⁴⁹ The quote that it is ‘... increasingly impractical to examine (and therefore certify) all the intricacies of computer operation’⁵⁰ that the Commission used in its final report appeared in both Castell reports.

However, rather than citing either of those reports, the Law Commission stated that the quote was taken from a 1990 presentation⁵¹ by Dr Castell of which there now seems to be no copy publicly available. Although the VERDICT and APPEAL reports were government confidential and classified when they were

⁴⁸ Harold Thimbleby, ‘Misunderstanding IT: Hospital cybersecurity and IT problems reach the courts’. 15 (2018) Digital Evidence and Electronic Signature Law Review, 11. <https://journals.sas.ac.uk/deeslr/article/view/4891> .

⁴⁹ The two reports were described by Dr Castell as follows: ‘Major study commissioned by the Central Computer and Telecommunications Agency (CCTA, H M Treasury), and funded by five Departments of State, viz, Defence, Home Office, Treasury, Foreign Office and Industry, on the admissibility of computer evidence in court and the legal reliability/security of IT systems. Done in the main by field research (with civil servants, lawyers, technical specialists, ‘records management’ personnel, and business people), high-level interviews, confidential brainstorming seminars and what would today be called ‘focus groups’. The work resulted in the VERDICT Report, with a follow up APPEAL Report, both government confidential (and classified), later permitted by the government to be published, in edited/sanitized form, as *The Appeal Report* (Dr Stephen Castell, 1990, May, Eclipse Publications, ISBN 1-870771-03-6)’. This is taken from Stephen Castell, ‘The Fundamental Articles of I.AM Cyborg Law’, Beijing Law Review Vol.11 No.4, December 18, 2020. <https://www.scirp.org/journal/paperinformation.aspx?paperid=105930> .

⁵⁰ Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics’, 1997. Paragraph 13.8.

⁵¹ Stephen Castell, ‘Evidence and Authorisation: is EDI [Electronic Data Interchange] “legally reliable”’ (1990) 6(5) Computer Law and Security Report 2. See footnote 32.

produced, they were published in a combined and sanitised form in 1990⁵² (APPEAL Report), complete with the relevant quote, and there was nothing to prevent the Law Commission citing them.

The Law Commission did not mention the APPEAL Report in connection with this second problem, i.e. relating to advances in computer technology. This is surprising given that the consultation paper refers to the APPEAL Report in other contexts, and the quote is part of a paragraph explaining problems with PACE 1984 section 69:⁵³

‘The issue which was clearly identified by that original study [i.e. the 1987 Verdict Report] was the position of hearsay evidence and its admissibility in court: both the Civil Evidence Act 1968 (CEA) and the Police and Criminal Evidence Act 1984 (PACE) regard “computer documents” as hearsay and set conditions and procedures which must be followed if such material is to be admissible as evidence. These requirements, being an attempt to impose standards of verification and certification on computer-generated evidence, were noted as being potentially problematic where, for example, developments in computer networking and the difficulty of adequate access control, monitoring and system security were likely to make it increasingly impractical to examine (and therefore certify) all the intricacies of computer operation.’

It is worth reproducing the full paragraph because there was a subtle, but crucial, difference between the original and the way that the quote was presented by the Law Commission. Castell was indeed unhappy with section 69, but he was concerned about the difficulties of ‘verification and certification on computer-generated evidence’ and the increasing impracticality of examining and certifying the workings of computer systems. He believed that section 69 should be replaced by relevant safeguards that would require computer systems to be developed and managed in such a way that courts could have confidence in the reliability of computer evidence despite the difficulties of verification and inspection identified in the VERDICT and APPEAL reports.

Dr Castell commented⁵⁴ on the Law Commission’s treatment of the APPEAL Report⁵⁵ in an article in the Barrister Magazine in 2023:

‘Almost certainly on grounds of perceived cost-saving to the National Exchequer, my 1990 recommendations were not fully implemented by the UK government. To the contrary, and to the astonishment of concerned expert ICT and legal professionals, an incorrect “presumption of the reliability of computer evidence” later passed into UK law. This, still current, legal rule was introduced in 1999 after a Law Commission recommendation that courts presume a computer system has operated correctly unless there is explicit evidence to the contrary. This replaced Section 69 of the 1984 Police and Criminal Evidence Act (PACE), which stated that computer-based evidence should be subject to proof that the computer system was operating properly.’

⁵² Stephen Castell, ‘The Appeal Report’, Eclipse Publications, (1990).

⁵³ Stephen Castell, ‘The Appeal Report’. Page 17.

⁵⁴ S. Castell. ‘Computer Evidence: presume nothing, trust no software or data, engage an expert. Costly? Just look at the cost if you don’t.’ Barrister Magazine, January 2023. <https://barristermagazine.com/computer-evidence-presume-nothing-trust-no-software-or-data-engage-an-expert-costly-just-look-at-the-cost-if-you-dont/>.

⁵⁵ Dr Castell referred to the 1990 *Eclipse* version in the article in the Barrister Magazine.

In correspondence with the author of this article Dr Castell confirmed that the Law Commission's failure to mention his full argument and selective quotation of his criticism of section 69 'was a misrepresentation of my reports'.

Dr Castell also explained to the author that his stance in the Appeal Report was, and remains, that:

'Computer "documents" should not be subject to the "hearsay rule" but be admissible as direct evidence. But this did not mean that such materials should automatically be presumed to be reliable (reliability and admissibility were/are not the same thing) – any more than for any other evidence. All evidence should always be open to challenge, to probing and proving for verification, integrity, relevance, accuracy, credibility, weight, completeness etc. Computer evidence was/is no different.'

Dr Castell's emphasis on the distinction between reliability and admissibility, and the need for courts to be satisfied about the reliability of evidence was consistent with the views of Alistair Kelman and Richard Sizer, whose book was misrepresented by the Law Commission, and also with the arguments made by Professor Tapper.

The alignment between Professor Tapper and Dr Castell was confirmed in the *Eclipse* version of the APPEAL and VERDICT reports:⁵⁶

'Tapper ... contributed highly supportive views to the VERDICT study ...

Tapper once again emphasised that setting artificial criteria for admissibility of computer evidence was not the real issue: the reliability of the evidence (as for any other form of evidence) - which should ideally be admitted as direct evidence, not "hearsay" – was the key factor and the way forward to educational and other practical programmes to understand, set standards for, and ultimately, improve dramatically computer evidential reliability; then, and only then, could one properly assess the weight of such evidence in a particular case.'

In the 1995 consultation paper, the Law Commission quoted a passage from Dr Castell's VERDICT Report in which Professor Tapper argued for emphasis to be placed on the weight of computer evidence in the particular context of the computer system, rather than on admissibility. Remarkably the Law Commission used this passage to support repeal of section 69 without commenting on the need to address the reliability of computer evidence.⁵⁷

'The importance of stressing the distinction between weight and admissibility is that it allocates genuine concerns about the ease of altering records held in computers to their proper place, namely the weight to be attached to the evidence once adduced. It must, in principle, be preferable to have any such concern addressed in the context of the particular record-keeping system involved and the particular circumstances of that system, rather than to apply necessarily blanket and general overall provisions at the stage of admissibility.'

⁵⁶ Stephen Castell, 'The Appeal Report', Eclipse Publications, (1990). Page 32.

⁵⁷ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995. [Para 14.25]. Original quote is from *The VERDICT Report* (1987) p 85.

The Law Commission's mistreatment of Dr Castell's work becomes even clearer, and harder to justify, if one examines in detail, and in its proper context, a problem which the Law Commission identified in the 1995 consultation paper, but which was not mentioned in the final report.

'Open season' and 'smoke screens' – the problem and recommendations that disappeared

The 1995 consultation paper identified a further problem with section 69 in addition to the five listed in the final report. Defence lawyers could exploit the unrealistic treatment of computer evidence under the provisions of section 69 to waste court time. When the final report was written the alleged problem seemed to have been accepted as valid but there was no further analysis or discussion. It was referred to obliquely in 'Part 1 – Introduction and summary of principal recommendations'.⁵⁸

It is worth examining this problem in detail in the context of the consultation paper and the APPEAL Report. Scrutiny of the two documents reveals that the Law Commission did not give the Castell reports the careful consideration that they deserved. There is such an obvious discrepancy between Dr Castell's conclusions and recommendations, and the way that they were presented by the Law Commission that it is hard to understand the Commission's conduct.

In the Law Commission's 1997 final report Dr Castell was cited only to support the second alleged problem, that advances in computer technology made it harder to comply with section 69. However, the 1995 consultation paper also cited Castell's VERDICT Report in connection with what I shall refer to as the 'open season' problem:⁵⁹

'14.19 Another significant criticism that has been made of the present law is that it can be effectively exploited by the defence so as unjustly to undermine a prosecution. Thus when Dr Castell delivered The VERDICT report to the Treasury in 1987, he was troubled that there would be "open season" on challenges to computer evidence admissibility once there had been a sufficiently high profile case illustrating the inherent difficulties in truly satisfying section 69. He wrote:⁶⁰

"... because computer systems are not generally speaking, designed, operated and managed according to a rigorous set of acknowledged standards of security ensuring the reliability and 'trustedness' of their transactions and output at all times, the ability of the appropriate person honestly to verify and certify such evidence in the manner formally laid down by Statute is actually readily open to challenge".'

It is instructive to read the relevant section of the *Eclipse* version of the VERDICT Report to understand the context of that quote. Section 2.2 is 'Findings'. Dr Castell refers to the 'open season' problem on page 24 in the final paragraph of section 2.2.5, 'Suggested "solutions"'.⁶⁰

The following section in the *Eclipse* version of the VERDICT and APPEAL Reports is '2.3 Conclusions', the fourth paragraph of which, on the same page as the 'open season' comment, provides the quote beginning

⁵⁸ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics, 1997. 'Financial implications of our recommendations': '1.57 Thirdly, our recommendation that section 69 of PACE should be repealed would mean that less time would be spent receiving evidence about the operation of a computer where there is no reason to doubt that it was working properly.' (footnote 87). Footnote 87. 'In *Newbury and Teal* (1995, Isleworth Crown Court), a case drawn to our attention before the consultation paper (see para 14.16), 15–20 hours of a five-week trial were spent hearing evidence about whether s69 was satisfied.'

⁵⁹ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995. [Para 14.19].

⁶⁰ Stephen Castell, 'The Appeal Report', Eclipse Publications, (1990). Page 24.

‘because computer systems’, which is concerned with the poor standards of development and management of computer systems.

The final paragraph of page 24 links the ‘open season’ problem to the finding that ‘computer systems are not generally speaking, designed, operated and managed according to a rigorous set of acknowledged standards of security ensuring the reliability and ‘trustedness’ of their transactions and output at all times’.⁶¹

‘Such a situation [i.e. ‘open season’] could rapidly degenerate into a total discrediting of the statutory verification and certification provisions and a serious jamming up of the legal process in cases where such evidence was intended to be used. The view was that the “solution” to this future problem was not to tighten up still more the wording of the relevant provisions in legislation. On the contrary, a strong argument was recorded to dispense completely with the somewhat “artificial” treatment of computer evidence as hearsay in UK statutes but, at the same time, assiduously to address the real problem: that of achieving guidelines and codes of practice (perhaps eventually having legally enforceable weight) aimed at ensuring an objectively high standard of computer system reliability and security.’

In neither the consultation paper nor the final report did the Law Commission mention the ‘real problem’ identified in the conclusions of Dr Castell’s report, i.e. ‘achieving guidelines and codes of practice ... aimed at ensuring an objectively high standard of computer system reliability and security’.⁶²

The Castell reports therefore clearly argued for the need to move away from treating computer evidence as hearsay and from the issue of admissibility and instead focus on the pressing need for greater reliability, and also the importance of being able to demonstrate why courts should attach weight to computer evidence that was reliable.

The following page of the APPEAL Report lists the recommendations that flowed from Dr Castell’s conclusions:⁶³

‘2.4 Recommendations

The VERDICT report 1987 made the following specific recommendations:

2.4.1 Immediate consideration should be given to repeal of ss. 13-15 of the Law Reform (Miscellaneous Provisions) (Scotland) Act 1968, s.5 of the Civil Evidence Act 1968, and (notwithstanding the reform of hearsay evidence then in prospect through the Criminal Justice Bill), s.69 Of the Police and Criminal Evidence Act 1984.

⁶¹ Stephen Castell, ‘The Appeal Report’, Eclipse Publications, (1990). Page 24.

⁶² Dr Castell’s identification of the need to ensure an ‘objectively high standard of computer system reliability and security’ has echoed down the years. Experts have made similar calls. All have been ignored.

See Paul Marshall, James Christie, Peter Bernard Ladkin, Bev Littlewood, Stephen Mason, Martin Newby, Jonathan Rogers, Harold Thimbleby and Martyn Thomas CBE. ‘Recommendations for the probity of computer evidence’. 18 (2021) Digital Evidence and Electronic Signature Law Review, 18. <https://journals.sas.ac.uk/deeslr/article/view/5240>

⁶³ Stephen Castell, ‘The Appeal Report’, Eclipse Publications, (1990). Page 25.

2.4.2 This should not be in isolation, however, but in conjunction with the setting up of a formal body, officially recognised, which was there christened “The VERDICT group” whose main objectives would be:

- to draw up guidelines, standards, methodologies and/or codes of practice with regard to the design, security and management of computer and communications systems;
- to ensure the widest representation and co-ordination in achieving, for such guidelines, broad acceptance and willing support;
- to formulate an appropriate and workable Scheme for ensuring the widest possible implementation of and adherence to such guidelines; and if, on further research, thought feasible and desirable, to seek appropriate legislative or (self-) regulatory mandate for ensuring compliance with such guidelines - say, by the establishment of a body of independent “compliance officers”;
- to consider ways of making technology skills and experience more accessible to practising lawyers and to the courts;
- to consider the establishment of a UK “computer crimes database” and the related issue of whether companies should be required by law to register all computer crimes/frauds perpetrated.’

The insistence at the beginning of section 2.4.2, that repeal of section 69 should not be carried out ‘in isolation’, is eye-catching. The Law Commission did exactly what the APPEAL Report warned against. Dr Castell argued that the development and management of computer systems was insufficiently rigorous, and significant improvement would be required if computer evidence was to be reliable.

One might defend the Law Commission by arguing that they were implementing Castell’s recommendations in part. That would be a weak defence. If a security survey of a shop found that the locks were all insecure Yale locks and recommended that these locks should be replaced by more secure mortice locks, an insurer would hardly think it reasonable to remove all the locks without replacement on the grounds that the survey had indeed recommended that the Yale locks should be removed.

One could also point out that the Law Commission would have strayed beyond its remit if it had recommended the creation of a ‘formal body’ to promote improvement of the development and management of computer systems. That would be accurate but again it would be a weak line of defence. Dr Castell explicitly recommended that repeal of section 69 ‘should not be in isolation’. If the Law Commission had wished to act responsibly it should have noted that warning in its report. Failure to mention the warning inevitably misled readers.

The Law Commission did not reject, or argue against, the detailed proposals in the Castell reports for replacement of section 69. It simply ignored them and cited passages that were more convenient to the argument put forward by the Law Commission. Rather than accepting that the problems Dr Castell identified with reliability required a practical response, the Law Commission seems to have assumed that they would disappear if computer evidence were to become more readily admissible. It was a failure of both understanding and logic. In direct correspondence with the author, Dr Castell confirmed that he had ‘never seen or heard anything formally that suggests that the full recommendations were other than essentially ignored’.

It is possible to see a clear link in the argument from Dr Castell, setting out the contemporary problems that can be identified with section 69, which in turn lead to conclusions that flow from analysis of these

problems, through to appropriate recommendations. It is also possible to see that the Law Commission only cited text that suited its own conclusions and allowed readers to misunderstand Dr Castell's conclusions.

Anyone reading the Law Commission's consultation paper and final report without looking at the two Castell reports could only arrive at the conclusion that Castell had reached the same conclusion as the Law Commission, that section 69 should be repealed without replacement, rather than observing that the Law Commission's conclusion contradicted Dr Castell's conclusions.

It becomes even harder to reach a generous verdict on the Law Commission's handling of the Castell reports if one reads a footnote in the 1995 consultation paper:⁶⁴

'39. In 1987 Dr Castell presented to the Treasury a report called The VERDICT Report, which addressed the legal admissibility of digitally transmitted and processed data and information in the United Kingdom. He had consulted, amongst others, trade and professional organisations, legal practitioners, European and international organisations, and police and investigative or enforcement agencies. This report was followed up in 1990 by a second report, The APPEAL Report, which confirmed the conclusions of the first.'

The APPEAL Report did indeed confirm the conclusions of the VERDICT Report but, as I have shown, the Law Commission ignored those conclusions. Whereas the Law Commission focused on admissibility, confusing it with reliability, Dr Castell drew a clear distinction between admissibility and reliability. That distinction was the basis for his conclusions and recommendations.

The Law Commission's conduct was extraordinary. Dr Castell has clear views on the matter. He has confirmed in direct correspondence with the author that he believes:

'The Law Commission may have failed fully to understand my analysis and that of Professor Tapper. Whether or not that is so, the Commission seems to have employed false logic to reach a conclusion leading to its misguided presumption that admissibility automatically implies or signifies reliability. However, just as for any evidence adduced in court, admitting computer evidence has no bearing on, and cannot be used to disregard, the fundamental forensic principle and practice of examination of, and challenge to, all such evidence once admitted. So, the Law Commission's unfounded presumption failed to recognise that the extent to which computer evidence can be trusted, and the weight to be given to it, depends not on its admissibility, but on all the facts and circumstances pertaining to the evidence adduced. This includes the software, systems, networks, and databases from and through which that evidence is created. It is vital for these matters to be carefully examined in any given instance by appropriate independent computer expert professionals.'

It is puzzling that the Law Commission should have argued strongly for repealing section 69 on grounds of cost and convenience in the consultation paper, then dropped the alleged problem from the final report while implicitly accepting the associated conclusion and recommendation. In the 1995 consultation paper the Law Commission stated its concern:⁶⁵

⁶⁴ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995. Page 205.

⁶⁵ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics – A Consultation Paper', 1995. Paragraph 14.20.

‘... about smoke-screens being raised by cross-examination which focuses in general terms on the fallibility of computers rather than on the reliability of the particular evidence. The absence of a presumption that the computer is working means that it is relatively easy to raise such a smoke-screen.’

Examination of the Castell reports confirms that the Law Commission did not represent crucial sources accurately, and failed to address the issue of reliability of computer evidence – the very issue about which it claimed to be concerned in that quote. It is hard to avoid the conclusion that the Law Commission wished to achieve the desired end of repealing section 69 but realised that the ‘open season’ argument presented in the consultation paper would not withstand scrutiny.

‘The response on consultation’

The 1995 consultation paper recommended, at 14.32;

‘Option 2: Repeal section 69 and leave it to the common law, relying on the presumption that the machine works’.⁶⁶

Option 1 was to ‘Do nothing’, i.e. to retain section 69. There was not a third option. The Law Commission did not discuss, or even mention, the possibility of replacing section 69 with a measure to address the issue of reliability of computer evidence. The 1997 report informed us that:⁶⁷

‘13.15 On consultation, the vast majority of those who dealt with this point agreed with us. A number of those in favour⁶⁸ said that section 69 had caused much trouble with little benefit.’

The Law Commission’s discussion of the responses only dealt with legal aspects of evidence. The nature of computers and complex software systems were not mentioned. Are we to believe that nobody commented on these matters? If anyone did, we are entitled to ask why the Law Commission ignored these submissions. If nobody commented, then we could also ask whether the consultation process was effective.

⁶⁶ In support of option 2, at paragraph 14:29, the Law Commission quoted Lloyd LJ in *R v Governor Ex p Osman (No 1)*, sub nom *Osman (No 1)*, Re4, ‘Such an approach would be consistent with the judgment of the Divisional Court that: “where a lengthy computer printout contains no internal evidence of malfunction and is retained, eg by a bank or stockbroker as part of its records, it may be legitimate to infer that the computer which made the record was functioning correctly”.’ Computer experts would consider this statement to be as absurd as that of Lord Hoffman in *DPP v McKeown (Sharon)*, mentioned earlier.

⁶⁷ Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics, 1997. Paragraph 13.15.

⁶⁸ Footnote 29 of the Law Commission’s report listed the bodies who had complained about the problems that section 69 caused them: ‘The Inland Revenue, the Post Office, the Crown Prosecution Service, BT and the Department of Trade and Industry.’ The Post Office’s presence in that list is significant in the light of the Horizon IT scandal. The repeal of section 69, and the resulting presumption that computer evidence was reliable contributed to the scandal. It made it easier for the Post Office to prosecute and obtain convictions and placed defendants in an invidious position; they had to demonstrate why the Horizon system was wrong without having the expertise or system knowledge to do so.

The Post Office’s submission to the consultation contained a statement that reveals astonishing ignorance about complex software systems like the Horizon accounting system. It asserts that only users can certify whether such systems are working correctly. ‘The Sub-Postmaster is often the only person working in the Sub-Post Office or the only person using the computer. In the event of the Sub-Postmaster being prosecuted for theft or false accounting, the Post Office may need to rely upon the computerized accounting records. The Sub-Postmaster is frequently the only person who can give the evidence required by Section 69 of the Police and Criminal Evidence Act 1984. In the absence of admissions or other direct evidence the Post Office may not be able to prove the case solely on the ground of being unable to satisfy the technical requirements of the Police and Criminal Evidence Act 1984.’ <https://www.whatdotheyknow.com/request/submissions-to-law-commission-re-2>.

According to the Law Commission, ‘the most cogent argument’ against repeal of section 69 came from Professor David Ormerod, then a lecturer at Nottingham University. Ormerod contended that the presumption of regularity⁶⁹ could not be extended to computer evidence:⁷⁰

‘13.16 In his helpful response,⁷¹ he contended that the common law presumption of regularity may not extend to cases in which computer evidence is central. He cites the assertion of the Privy Council in *Dillon v R*⁷² that “it is well established that the courts will not presume the existence of facts which are central to an offence”.’

The Law Commission’s argument against Ormerod’s contention was revealing (continuing to quote paragraph 13.16):

‘If this were literally true it would be of great importance in cases where computer evidence is central, such as Intoximeter cases.⁷³ But such evidence has often been permitted to satisfy a central element of the prosecution case. Some of these cases were decided before section 69 was introduced; others have been decided since its introduction, but on the assumption (now held to be mistaken) that it did not apply because the statement produced by the computer was not hearsay. The presumption must have been applicable; yet the argument successfully relied upon in *Dillon* does not appear to have been raised.’

13.17 It should also be noted that *Dillon* was concerned not with the presumption regarding machines but with the presumption of the regularity of official action.⁷⁴ This latter presumption was the analogy on which the presumption for machines was originally based; but it is not a particularly close analogy, and the two presumptions are now clearly distinct.’

The Law Commission’s argument is strange. In the consultation paper the Law Commission argued that the presumption of regularity was an analogy that justified repeal of section 69. When Ormerod countered with the contention that the presumption concerned action by officials rather than machines, the Law Commission’s response was to concede that point and assert that the presumption of machine reliability was distinct from the presumption that officials acted reliably. However, the Law Commission failed to address the issue that it had abandoned a foundation of its recommendation without providing any

⁶⁹ In the 1995 consultation paper the Law Commission argued that the presumption of regularity would apply to computer evidence: ‘14.28 If there were no pre-condition for the admission of computer records, the parties would be able to rely on the presumption of regularity. [Footnote 51] According to Phipson, “In the absence of evidence to the contrary, the courts will presume that mechanical instruments were in order at the material time.” Footnote 51 ‘Sometimes expressed by the maxim *omnia praesumuntur rite esse acta* (“things are presumed to have been done properly”); but the maxim is sometimes confined to the context of action by officials in the course of their duties.’

⁷⁰ Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics’, 1997. Paragraph 13.16-13.17.

⁷¹ David Ormerod, ‘Proposals for the Admissibility of Computer Evidence’. *Computers & Law* 22, Oct/Nov 1995.

⁷² *Dillon v R* [1982] AC 484.

⁷³ The Intoximeter was a device to detect alcohol on the breath. It was defined by the Law Commission in footnote 33 as ‘a computer which is currently subject to the provisions of s 69: *R v Medway Magistrates’ Court, ex p Goddard* [1995] RTR 206’.

⁷⁴ ‘Official action’ means actions taken by officials in the course of their duties. Footnote 38 explained that ‘the case (i.e. *Dillon*) concerned a prison officer’s liability for negligently permitting an escape, and the issue was whether the prosecution could rely on a presumption that the prisoners were in lawful custody.’

alternative argument in support. Without the presumption of regularity the Law Commission was left with unsubstantiated assertion.

‘Cases where computer evidence is central, such as Intoximeter cases’

The Law Commission did not understand the true nature of computers and complex software systems. That is a reasonable inference to draw from their inability to distinguish the issue of reliability from that of admissibility and their failure to distinguish between the different forms of reliability. The inference is supported by its stated belief that computer evidence was the product of machinery, a remarkably naïve approach to complex software systems.

The quote in the title of this section refers to their treatment of Ormerod’s response to the consultation paper. Machines, such as Intoximeters, that test for alcohol on the breath were considered a form of computer. The Law Commission dealt with its lack of understanding of computers and software by assuming that complex software systems were essentially the same as mechanical instruments, like early breathalysers. The Law Commissioners repeatedly framed their arguments in terms of those early breathalysers rather than software. In effect, breathalysers became analogies, or proxies, for software systems. The 1997 report mentions problems relating to drink-driving evidence eight times. ‘Software’ is mentioned only once,⁷⁵ quoting Steyn J’s comment that ‘software systems often have “bugs”’.⁷⁶ The Law Commission did not explore the significance of this.

Admissibility of evidence would have been familiar territory for the Law Commission. Reliability of computer evidence was well outside their area of expertise. To understand the importance of reliability and the need for computer systems to be demonstrably reliable, they would, at the very least, have had to understand the significance of the difference between computer hardware and software. They were warned about this in both the Castell reports and the book by Kelman and Sizer.

Castell wrote:⁷⁷

‘The early bad error experience of many firms in the use of computers lay partly in the quality control of the hardware itself and partly in the inexperience in designing software. These are no longer the source of constant frustration they once were; the hardware is highly reliable, and software, while still a problem, is of a much better quality than before.’

Kelman and Sizer also emphasised the importance of the distinction between hardware and software:

‘Understanding the difference between hardware (the boxes and the electronics therein) and software is important and germane to the purpose of this book.’⁷⁸

‘In the Civil Evidence Act 1968 the computer is defined only in terms of hardware – not a tenable definition as we attempt to show in this book.’⁷⁹

⁷⁵ Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics’, 1997. Paragraph 13.1.

⁷⁶ *R v Minors (Craig), R v Harper (Giselle Gaile)* [1989] 1 WLR 441 at 443D–E.

⁷⁷ Stephen Castell, ‘The Appeal Report’, Eclipse Publications, (1990). Page 82.

⁷⁸ Alistair Kelman, ‘The Computer in Court’, 2nd edition. Page 6. The quotes in this article have been taken from the second edition, but Alistair Kelman has confirmed that they were in the first edition, which the Law Commission used.

⁷⁹ Kelman. ‘The Computer in Court’, 2nd edition. Page 10.

Kelman and Sizer pointed out that while hardware was fallible, it was produced to higher standards than the software that was developed to run on it:

‘In the course of manufacturing, rigorous quality and testing procedures are employed by most manufacturers. Nonetheless hardware can fail in service, often through external causes such as sudden high voltages or extreme heat.’⁸⁰

‘Program designing and coding can have a great deal in common with experimental scientific research or engineering design; all three have their share of design faults and errors, but in the last, a part of the instilled professional discipline is to organize and justify changes in design and error-correction procedures. Such practices are not yet widespread in the software aspects of the computing industry although determined efforts are being made by educational and professional bodies to introduce courses on “software engineering”, which imposes discipline on systems analysts and programmers.’⁸¹

Kelman and Sizer also made the vitally important point that⁸²

‘Both the application software and the operating system software can contain errors in themselves but errors can also be created by the way they interact with each other and the hardware.’

Computer software containing incorrect coding is sufficient to produce system errors, but it is not a necessary condition for errors. Software that has been written correctly, according to the requirements and circumstances at the time of development, can produce errors when it combines in unexpected ways with other elements that were thought to be operating correctly, or when the business problem changes without the system being brought into line. Configuration error, network intrusions, and user error are examples of further sources of problems that can arise from the use of ‘correct’ systems.

It is therefore wholly inappropriate to think of complex computer software systems as being simply ‘machines’ or as being analogous to equipment like breath testing devices. Clearly the Law Commission did not understand the subject it was dealing with, but it nevertheless reached firm conclusions and made clear recommendations to Parliament. Given its ignorance of the subject it is hardly surprising that the Law Commission did not appreciate the implications of its recommendations.

Conclusion

The Law Commission, in both its consultation paper and final report, failed to understand the nature of computers, and either failed to pay attention to the highly qualified experts who warned about the difficulty of working with computer evidence or misrepresented these experts.

As this article has shown, all the experts and sources used by the Law Commission relating to the nature of computers and computer evidence to justify repeal of section 69 had offered opinion and advice that failed to support the Law Commission, and which indeed explicitly contradicted its recommendation of repeal without replacement. If one examines the Law Commission’s case and discounts the sources it misrepresented, then one is left with nothing but unevidenced assertion. The Law Commission

⁸⁰ Kelman. ‘The Computer in Court’, 2nd edition. Page 12.

⁸¹ Kelman. ‘The Computer in Court’, 2nd edition. Page 19.

⁸² Kelman. ‘The Computer in Court’, 2nd edition. Page 13.

recommended repeal of section 69 without replacement because that is what it wanted to achieve from the start of the exercise. No other conclusion is credible.

This leaves two questions. First, how did this come about, and second, what should be done about the result of the repeal of section 69, and the resulting default presumption that evidence produced by a computer is reliable?

Alistair Kelman believes that the legal profession lacks sufficient practitioners who are familiar with engineering practices.⁸³ He wrote to the author that:

‘Eight years before Richard and I wrote *The Computer in Court* I was dining “in hall” at Middle Temple as a student after gaining an engineering degree from Birmingham University. After dinner, Lord Diplock came to sit with our mess of four post-grad students and I expressed my fear that because I was an engineer I was not a suitable candidate to come to the Bar. “Nonsense,” said Lord Diplock, “we want to see 10 per cent of barristers with science and engineering pre-Bar qualifications – it is the only way that we can keep the law relevant and modern”. More than forty years later, while ethnicity and diversity has improved within the profession, the number of science and engineering qualified practitioners remains far below the level desired by the late Law Lord.’

The failure of the Law Commission to deal responsibly with the issue of computer evidence lends support to Alistair Kelman’s belief that the legal profession lacks the basic technical knowledge to ‘keep the law relevant and modern’. The Law Commission’s consultation paper and final report made no mention of any citations or advice from relevant bodies such as the British Computer Society, the Institute of Electrical Engineers (now the Institution of Engineering and Technology), the Royal Society, or the Royal Academy of Engineering. That is astonishing. The Law Commission’s judgment was poor and that should have been obvious at the time. Its members should have shown sufficient humility to understand the limits of their own expertise and consulted more widely. It is hard to see how the Law Commission could have justified its reliance on such a narrow range of experts, even if it had represented their views fairly.

The inability of the legal profession to grasp the nature of evidence from complex computer systems has meant that the presumption of reliability has been interpreted and applied in damaging ways, notably in the Post Office Horizon prosecutions. The result has been miscarriages of justice and widespread human tragedy. The transcript of the trial of *Regina v Seema Misra* in 2010 reveals a series of flawed arguments and assertions by Mr Warwick Tatford, appearing on behalf of the prosecution, which relied on the presumption of reliability of computer evidence and show no understanding of complex systems such as Horizon.⁸⁴

Tatford revealed no awareness of the distinct issues of technical reliability and data reliability or the differing levels of reliability that should be required for different purposes of a system. He argued that an accounting system that was considered reliable for the overall management of the Post Office’s branch

⁸³ For calls for legal education, see Denise H Wong, ‘Educating for the future: teaching evidence in the technological age’ 10 (2013) Digital Evidence and Electronic Signature Law Review 16. <https://journals.sas.ac.uk/deeslr/article/view/2018> ; Deveral Capps, ‘Fitting a quart into a pint pot: the legal curriculum and meeting the requirements of practice’ 10 (2013) Digital Evidence and Electronic Signature Law Review 23. <https://journals.sas.ac.uk/deeslr/article/view/2019> .

⁸⁴ Transcript of the trial of *Regina v Seema Misra*, T20090070, in the Crown Court at Guilford, Trial dates: 11, 12, 13, 14, 15, 18, 19, 20, 21 October and 11 November 2010, His Honour Judge N. A. Stewart and a jury, was published in full in 12 (2015) Digital Evidence and Electronic Signature Law Review, Introduction 44; Documents Supplement. <https://journals.sas.ac.uk/deeslr/issue/view/328> .

network should be considered reliable for producing evidence in a criminal trial in which the system's behaviour at a particular location at a specific time was in question:

'I conceded in my opening speech to you that no computer system is infallible. There are computer glitches with any system. Of course there are. But Horizon is clearly a robust system, used at the time we are concerned with in 14,000 post offices. Mr Bayfield (a Post Office manager) talked about 14 million transactions a day. It has got to work, has it not, otherwise the whole Post Office would fall apart? So there may be glitches. There may be serious glitches. That is perfectly possible as a theoretical possibility, but as a whole the system works as has been shown in practice.'⁸⁵

No-one with practical experience of developing, testing or auditing complex IT systems would make such a confused statement.⁸⁶ It is shocking that a barrister could successfully make that argument before a court with the result that a person was convicted and subsequently sentenced to a term of imprisonment on such flimsy evidence. The legal profession's lack of practitioners familiar with engineering practices contributed to the Law Commission's recommendation that computer evidence should be considered reliable and subsequently ensured that its consequences would be tragic.

Dr Castell has raised an interesting point in correspondence with the author. He is less concerned with the Law Commission's conduct than the system within which it operates:

'It is what happened "politically", i.e. within government, and by whom, and through what (arcane, unaccountable) process, resulting in the ludicrous "presumption of the reliability of computer evidence" passing into law, that is the far more interesting issue to my mind, than anything the Law Commission may or may not have done, whether or not based on grasp of the nature of computers and complex software. Is there any record of how that political, governmental process and decision was executed? Did any House of Commons Committee get involved at any stage of the process, for example?'

These are important and relevant questions. What does this episode say about the process by which laws are drafted, and about the way that governments, politicians and legal systems deal with complex subjects?

It is possible to answer the specific question about parliamentary committees by consulting the record of the House of Commons' Standing Committee E's discussion of the proposed repeal of section 69. It shows that the government accepted the Law Commission's reasoning, conclusions and recommendations in their entirety.⁸⁷ The Home Office minister at the time, Paul Boateng, repeated the problems listed by the Law Commission which I have shown to be lacking in any supporting evidence. The discussion concerned only admissibility, not reliability. The tone was jocular, bordering on the flippant; apparently the only real

⁸⁵ Transcript of the trial of *Regina v Seema Misra*, Day 7, 19 October 2010, 23G – 24A. <https://journals.sas.ac.uk/deeslr/article/view/2204/2139>.

⁸⁶ See James Christie. 'The mysterious role of external audit in the Post Office Scandal', author's blog, 2023. <https://clarotesting.wordpress.com/2023/02/14/the-mysterious-role-of-external-audit-in-the-post-office-scandal/>. This explains how auditors could justify a verdict that a financial system with numerous flaws is reliable. The system might provide a 'true and fair' view of the corporate finances but be unreliable as a source of evidence in court.

⁸⁷ House of Commons Standing Committee Debates. Standing Committee E, Tuesday 29 June 1999. 'Youth Justice and Criminal Evidence Bill [Lords]. <https://publications.Parliament.uk/pa/cm199899/cmstand/e/st990629/am/90629s06.htm>.

computer experts are eight year old children. See the Appendix for the exchange between parliamentarians.

The Committee did not critically evaluate or question the Law Commission's findings and recommendation. The Law Commission clearly enjoyed, and enjoys, a level of respect, and indeed deference, that meant its recommendations were considered unimpeachable. The former city solicitor Diana Faber (later a Circuit Judge) was one of the Law Commissioners who produced the consultation paper and report. She obviously believed that the Law Commission should aspire to that level of excellence and authority. On her appointment to the Law Commission in 1993 she gave an interview to the Independent:⁸⁸

'The tradition of the Commission is to get things absolutely right, Ms Faber says, which is why its papers are noted for being excellent expositions of the law. This means that the job of a commissioner entails a great deal of academic research. It also involves talking to everyone and anyone: chairmen of large public companies, their accountants and legal advisers, small businessmen, government departments and trade associations.'

Ms Faber set a reasonable standard for the Law Commission's work. It fell far short of those admirable aspirations when it dealt with computer evidence. It disregarded the advice of the experts. The result is a legal presumption that computer evidence is reliable, a flawed presumption that defies reality and is wholly unwarranted.

The Law Commission recommended to Parliament that section 69 'serves no useful purpose' and that a 'presumption of proper functioning' of computers would create a regime that 'would work fairly'.⁸⁹ In fact the repeal of section 69 in 2000 fits almost exactly the timeline of the Post Office scandal and the repeated prosecution of hundreds of innocent postmasters by the Post Office (as a private prosecutor) on the basis of incomplete and unreliable computer evidence. The consequence is possibly the most extensive miscarriage of justice in English legal history.

This article has shown that the Law Commission's recommendation that PACE 1984 section 69 should be repealed without replacement lacked any factual or evidential basis. What will be the response?

On 17 May 2022 James Cartlidge, Parliamentary Under Secretary of State (Ministry of Justice), made this statement in the House of Commons, when asked 'whether he has plans to assess the legal presumption of reliability of computer evidence':⁹⁰

'We have no plans to review the presumption, as it has wide application and is rebuttable if there is evidence to the contrary.'

The Law Commission acknowledged in its 1997 report that it might be difficult in practice to rebut the presumption.⁹¹

⁸⁸ Sharon Wallach. 'Law: A job with prospects: Sharon Wallach talks to Diana Faber, a newly appointed Law Commissioner, about her responsibilities and what she hopes to achieve.' The Independent, 19 November 1993.

<https://www.independent.co.uk/news/uk/law-a-job-with-prospects-sharon-wallach-talks-to-diana-faber-a-newlyappointed-law-commissioner-about-her-responsibilities-and-what-she-hopes-to-achieve-1505306.html> .

⁸⁹ Law Commission, "Evidence in Criminal Proceedings: Hearsay and Related Topics", 1997. Paragraph 13.23.

⁹⁰ UK Parliament: written questions, answers and statements. 'Admissibility of Evidence: Computers. Question for Ministry of Justice' 17t May 2022. <https://questions-statements.Parliament.uk/written-questions/detail/2022-05-10/79> .

⁹¹ Law Commission, 'Evidence in Criminal Proceedings: Hearsay and Related Topics', 1997. Paragraph 13.18.

‘The question is, what sort of evidence must the defence adduce, and how realistic is it to suppose that the defence will be able to adduce it without any knowledge of the working of the machine?’

Despite the Law Commission’s persistent confusion between hardware and software, it raised a valid question. The Law Commission answered it as follows:⁹²

‘... a party cannot be required to produce more by way of evidence than one in his or her position could be expected to produce. It could therefore take very little for the presumption to be rebutted, if the party against whom the evidence was adduced could not be expected to produce more.’

‘Very little’ might seem like a reasonable threshold, but the practical problems of doing so with complex software systems are insurmountable unless the party providing the evidence makes full disclosure of problems and defects that would allow the presumption to be rebutted, thus undermining the prosecution case or their own case in litigation.⁹³

In practice rebutting the presumption requires the expertise of expert witnesses, the cost of which is usually beyond the means of defendants in criminal prosecutions. In 2006 Alistair Kelman wrote, when discussing the implications of repealing PACE section 69:⁹⁴

‘... lawyers have found that it has become increasingly difficult to obtain Legal Aid to cover the costs of investigating the reliability of computer evidence.’

This has been the experience of defendants in the Post Office Horizon prosecutions. In 2021 Tracy Felstead was one of 39 people cleared by the Court of Appeal. The Court found in favour of all 39 on two grounds:⁹⁵

i) Ground 1: the reliability of Horizon data was essential to the prosecution and, in the light of all the evidence including Fraser J’s findings in the High Court, it was not possible for the trial process to be fair;

ii) Ground 2: the evidence, together with Fraser J’s findings, shows that it was an affront to the public conscience for the appellants to face prosecution.’

Tracy Felstead’s case highlights a fundamental flaw with the presumption that computer evidence should be deemed reliable. If defendants are to receive a fair trial they must have access to the expertise that is essential to rebut the presumption that computer evidence should be deemed reliable. That was impossible, as Paul Marshall, her defence counsel, explained:⁹⁶

⁹² Law Commission, ‘Evidence in Criminal Proceedings: Hearsay and Related Topics’, 1997. Paragraph 13.18.

⁹³ For an account of the practical problems involved in rebutting the presumption that computer evidence is reliable see Harold Thimbleby, ‘Misunderstanding IT: Hospital cybersecurity and IT problems reach the courts’. 15 (2018) Digital Evidence and Electronic Signature Law Review, 11. <https://journals.sas.ac.uk/deeslr/article/view/4891>.

⁹⁴ Alistair Kelman, ‘The Computer in Court’, 2nd edition. Page 69.

⁹⁵ *Hamilton v Post Office Ltd* [2021] EWCA Crim 577, [59], <https://www.bailii.org/ew/cases/EWCA/Crim/2021/577.html>.

⁹⁶ Paul Marshall, ‘Failed Justice – how commercial interests displaced the interests of justice in the Post Office Case’, Queen’s University Belfast, Institute of Professional Legal Studies, 2022. <https://www.postofficescandal.uk/wp-content/uploads/2022/09/Queens-University-Belfast-Paper-30-3-22F.pdf>.

‘In the course of her prosecution, a technically skilled expert was instructed on her behalf. His name is Michael Turner⁹⁷. I have spoken with him. He is very experienced. I have seen the detailed request for disclosure he prepared and provided to Fujitsu and the Post Office that, remarkably, he still retains. The response of the Post Office to his requests, at a meeting, was to ask who was expected to pay for the Horizon disclosure he wanted to see? It was suggested that it would cost £20,000 to produce. Mr Turner was not called at Tracy’s trial. In 2002 Tracy was convicted and imprisoned in Holloway women’s prison. She was 19 years’ old.’

Tracy Felstead could not afford to pay £20,000 to rebut the presumption and secure a fair trial. Her experience was not unique. Researchers reported in 2023 that difficulties in obtaining legal aid to commission experts who can examine computer evidence in England and Wales was making it increasingly difficult for defence teams to represent defendants effectively:⁹⁸

‘... providing forensic expertise for a defendant relies on the ability of the defence team to secure the legal aid funding necessary to commission expert service and the timeliness of their application. This process is subject to competitive bidding, with teams having to submit three expert quotes to the Legal Aid Authority (LAA), detailing the work required. However, the low expert payment rates and “demobilising [sic – source says ‘demoralizing’] interactions with the LAA” (Welsh and Clarke, 2021: 468)⁹⁹ have led defence lawyers and expert witnesses to query the quality of casework provided, to question the long-term sustainability of the criminal defence profession and to highlight the increase in the risk of miscarriages of justice.’

To make a repetition of the Horizon tragedy less likely judges need guidance about how the reliability of computer evidence can be assessed. The sources cited by the Law Commission in its 1997 report offered useful advice. There have been more recent, constructive recommendations about how computer evidence should be handled.¹⁰⁰ These have been ignored, rather than addressed or refuted.

Will the government persist in its stance that the presumption of reliability for computer evidence should be retained? How can it justify such a presumption? The Law Commission had an inadequate understanding of a complex technical subject and provided no credible justification for the presumption. Its 1997 report was incompetent, with conclusions and recommendations only loosely connected to findings, and findings that had no basis in fact. The report shows a consistent pattern of sources that were misunderstood or misrepresented, and a persistent failure to appreciate the significance of the distinction between admissibility of computer evidence and its reliability. The resulting change to the law has had

⁹⁷ Michael Turner wrote to *The Lawyer*, *Computer Weekly* and *Computing* about Lord Griffiths’ opinion in *R. v Shephard* that expertise in computers was not required in order to testify that computer evidence was reliable. See earlier.

⁹⁸ Dana Wilson-Kovacs, Rebecca Helm, Beth Grown, Lauren Redfern, ‘Digital evidence in defence practice: Prevalence, challenges and expertise’, *The International Journal of Evidence & Proof* 2023, Vol. 27(3) 235–253. <https://journals.sagepub.com/doi/10.1177/13657127231171620> .

⁹⁹ Lucy Welsh, Amy Clarke, ‘United by cuts: exploring the symmetry between how lawyers and expert witnesses experience funding cuts (Version 1)’. University of Sussex, 2022. Page 468. <https://hdl.handle.net/10779/uos.23489345.v1> .

¹⁰⁰ Paul Marshall, James Christie, Peter Bernard Ladkin, Bev Littlewood, Stephen Mason, Martin Newby, Jonathan Rogers, Harold Thimbleby and Martyn Thomas CBE. ‘Recommendations for the probity of computer evidence’. 18 (2021) *Digital Evidence and Electronic Signature Law Review*, 18. <https://journals.sas.ac.uk/deeslr/article/view/5240> ; Michael Jackson. ‘An approach to the judicial evaluation of evidence from computers and computer systems’. 18 (2012) *Review*, 50. <https://journals.sas.ac.uk/deeslr/article/view/5289> .

devastating consequences for thousands of people. It is shocking that this was brought about by a report of such abysmal quality.

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Appendix

House of Commons Standing Committee E discussing repeal of PACE section 69

On 29 June 1999 Standing Committee E of the House of Commons met to consider the Youth Justice and Criminal Evidence Bill. Paul Boateng, Minister of State at the Home Office spoke for repeal of section 69:

New Clause 2

Removal of restriction on use of evidence from computer records

‘Section 69 of the Police and Criminal Evidence Act 1984 (evidence from computer records inadmissible unless conditions relating to proper use and operation of computer shown to be satisfied) shall cease to have effect.’--[Mr. Boateng.]

Brought up, and read the First time.

Mr. Boateng: I beg to move, That the clause be read a Second time.

The Chairman: With this we may discuss Government amendments Nos. 29 to 39.

Mr. Boateng: This group of amendments implements a Law Commission recommendation that section 69 of the Police and Criminal Evidence Act 1984 should be repealed. New clause 2 will repeal that provision; Government amendments Nos. 29 to 39 are consequential amendments, relating to that repeal.

Section 69 of PACE provides that a document produced by a computer may not be adduced as evidence unless it is shown that the computer was operating properly and was not used improperly. The provision was based on the recommendations in the 1972 Criminal Law Revision Committee report and was intended to clarify the law on the admissibility of computer evidence in response to the growing importance and use of computers. Of course, comparing computer technology in 1972 with that of today is a bit like comparing the spinning jenny with a modern high-powered loom. [Interruption.]

Although sorely tempted, I shall not respond to sedentary mutterings. However, I am stung by the reference to spin-doctoring made by the hon. Member for Meirionnydd Nant Conwy (Mr Llwyd).

Technology has moved on, which is why we need new clause 2. The rapid advances in computer technology have made section 69 of PACE an increasingly difficult hurdle for the prosecution and defence

to overcome. Before computer evidence can be used, the party seeking to adduce it must prove that the computer was reliable at the material time.

Computer developments have made it increasingly impractical to examine all the intricacies of computer operation and certify that they comply with the requirement. Indeed, most Committee members know from domestic experience that one's eight-year-old child is the only person on whom one can absolutely rely to tell one how one's computer works. The younger one's children, the better they are at that.

We have been taking steps to keep eight-year-olds out of court. [Laughter.]

Mr. Greenway: What laws would be contravened if the Under-Secretary of State for the Home Department, the hon. Member for North Warwickshire (Mr. O'Brien), employed eight-year-olds to work in the passport office.

Mr. Boateng: We try to extend the hand of friendship, and what do we get? That'll learn me.

Greater use of modern technology places a growing burden on business to supply section 69 certificates for criminal trials and provide members of staff to give evidence in court. For example, everyday till receipts showing the purchase of goods have required certificates under section 69.

That is a complete waste of time for the court, the prosecution and defence. In the case of evidence from the defendant's computer, it is plainly impossible for the prosecution to provide an operator's certificate that the computer was working correctly. Frankly, it is absurd that such evidence should be excluded as the result of the unavailability of a section 69 certificate.

Of course, those problems apply equally in relation to the defence. A defendant could be prevented from using computer evidence that might exculpate him, merely because he could not prove that the computer was reliable. That would be grossly unfair. The Law Commission therefore concluded that present law was unsatisfactory and recommended that the section be repealed without replacement--a view supported by the vast majority of respondents to the Law Commission's consultation on hearsay. In Scotland, New Zealand, the United States and Canada there is no separate scheme for computer evidence and no problems appear to have arisen.

The effect of repeal will be that common law will apply and, in the absence of evidence to the contrary, the courts will presume that computer systems are in order. If there is evidence that a computer may not have been working correctly, the party seeking to adduce the evidence will still need to prove the point. That is how the law currently deals with evidence from mechanical sources--for example, traffic lights and speedometers--and it works perfectly well. The Government believe that the repeal will redress the balance and enable the courts to take proper account of the increasing value of computer-related evidence. I therefore support the new clause.

Question put and agreed to.

Clause read a Second time, and added to the Bill.