

COMMENT

MACHINE INFORMATION: IS IT HEARSAY?

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The law of evidence is based on the decisions of the common law judges of the 17th and 18th centuries. These decisions were a response to the peculiar nature of the English trial: the oath, the jury and the adversary system of justice.¹ The courts placed a heavy value on the oath and on the fear of divine retribution. Evidence of statements made by persons not in court or unable to testify was not subject to the oath; nor was there any opportunity for cross-examination. Such evidence was regarded with suspicion, an attitude that led to the evolution of the rule against hearsay.

This comment discusses the rule against hearsay as it has affected the growth of the law relating to the admissibility of computer print-outs. A distinction will be drawn between print-outs which merely reproduce information previously fed into the computer for purposes of storage (statements made by a person) and print-outs produced after a series of operations performed by the computer: machine information (statements not made by a person). Reference will be made to judicial treatment of evidence that comprises readings from scientific instruments. It is argued that in most instances, the relevance of the rule against hearsay to such evidence has not been recognized.

COMPUTERS

A thorough explanation of the mechanisms and functions of a computer will not be attempted here but certain aspects are relevant to the development of the argument and will be mentioned briefly. The computer's functions may be reduced to four: input, storage, processing, output.² In 1969, K. S. Pope described 'processing' as meaning the following:

the storing of characters and words of information in electronic form so that they may be retrieved at will;

the comparison of selected items of information so as to determine their similarity or dissimilarity, or to distinguish them according to prescribed criteria;

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¹ *Cross on Evidence* (2nd Aust. ed. 1979) 2; Morgan E. M., 'Hearsay Dangers and the Application of the Hearsay Concept' (1948) 62 *Harvard Law Review* 177, 183.

² The Law Reform Commission of Western Australia, *Report on the Admissibility in Evidence of Computer Records and Other Documentary Statements Project No. 27 Part 1* 1980, 55; Comment, 'Evidence: The Admissibility of Computer Print-Outs in Kansas' (1969) 8 *Washburn Law Journal* 330.

the performance of all arithmetic functions on numerical information;
the intake of items of information; and
the printing out of items of information in an English language format.³

The programmes needed to achieve these ends are relatively simple and may be contrasted with programmes written to handle data from a number of sources, perform several functions simultaneously on the data received and create synthesized responses through the logical circuitry. The latter programmes may involve modification of the program controlling this particular function.⁴

Business, too, now demands more of computer technology than just a useful means of record keeping and storage. The West Australian Law Reform Commission gives examples of such uses.⁵ A cooperative that supplies groceries to its members could operate a computer such that each member had a terminal. Orders could be fed in by each member upon receipt of which the computer would select the desired quality and quantity of goods and then instruct another machine to package and despatch the member's order. The computer could also print out an invoice and account for the goods. The statement on the invoice that certain goods were despatched to the member would be an example of machine information.

MACHINE INFORMATION

The simplest use of computers in business is for the storage of information. When such information is recalled and a statement is received as output, that statement would be a reproduction of the information originally fed to the computer. Even if only particular aspects of that information were desired and recalled, the statement received as output would be an exact reproduction of its counterpart in the original information. Often however, a computer is programmed to operate in a manner such that the operator cannot know the result of the operations on information previously fed into the computer until the output is received. The output would be a statement that has not been made by a person. Rather, it has been made by a machine.

The Report introducing the N.S.W. Business Records Legislation, labels as machine information:

Statements in business records which reproduce or are derived from information produced by automatic counting, measuring, identifying or recording machines.⁶

³ Pope K. S., 'The Lawyer and the Computer' (1969) 43 *Australian Law Journal* 463, 464; Sprowl J. A., 'Evaluating the Creditability of Computer Generated Evidence' (1976) 52 *Chicago-Kentucky Law Review* 546.

⁴ Mills L. E., 'Lincoln K. J. and Laughead C. E., 'Computer Output — Its Admissibility into Evidence' (1980) 3 *Law and Computer Technology* 14, 15-8; Harding D. E., 'Modification of the Hearsay Rule' (1971) 45 *Australian Law Journal* 531, 552.

⁵ Law Reform Commissioner of Western Australia, *Project No. 17 Part 1* 19.

⁶ Law Reform Commission of N.S.W., *Report of Evidence (Business Records)* L.R.C. 17 (1973) 15 para. 34.

The operations listed in this definition are extremely simple examples of the types of operations which generate machine information. The operations could be of the type used during the solving of a complex equation. The solutions received as output would be examples of machine information also.

In the above example of the grocery cooperative, if the cooperative had unlimited stocks of goods then the statement recorded on the invoice printed by the computer would be a statement made by a person. If, however, such an order was subject to company policy as to maximum and minimum orders of particular lines of goods and also to the amount of stock on hand (matters that would be a part of the computer's programme), the quantity of goods dispatched could be quite different from the order received and the statement printed on the invoice would be machine information.

Transactions with a business through on-line terminals, connected directly to the company computer will soon be common place. For example, grocery items marked with a bar code could be passed through a sensor which would record the price, the prices would be added up and the customer would pay through the use of the company's credit card which, on insertion into the on-line terminal, would automatically debit the account of the relevant amount. When an automatic teller of the type now installed in banks is used, just such a transaction occurs.

THE RULE AGAINST HEARSAY

This rule has fascinated and bedevilled legal scholars and jurists for centuries. The classic definition of the rule against hearsay is that laid down by Cross:

(E)xpress or implied assertions of persons other than the witness who is testifying, and assertions in documents produced to the court when no witness is testifying, are inadmissible as evidence of the truth of that which was asserted.⁷

There is controversy as to whether implied assertions are within the ambit of the hearsay rule. Cross himself changed his views⁸ upon the question though he included them for the purposes of definition. He distinguished statements which the maker did not intend to be assertive of the fact they are tendered to prove from non-verbal conduct not intended to be assertive of the fact it is tendered to prove.⁹ Most of the controversy is as to whether the latter is hearsay.¹⁰

⁷ Cross, *op. cit.* 456 s. 17.15.

⁸ His earlier views were expressed in 'The Scope of the Rule against Hearsay' (1956) 72 *Law Quarterly Review* 91. They were modified in *Cross on Evidence* and again in 'The Periphery of Hearsay' (1969) 7 *M.U.L.R.* 1.

⁹ Cross, *op. cit.* 456 s. 17.15.

¹⁰ Cross, *supra* n. 8; Morgan E. M., 'Hearsay Dangers and the Application of the Hearsay Concept' (1948) 62 *Harvard Law Review* 177; Weinberg M., 'Implied Assertions and the Scope of the Hearsay Rule' (1973) 9 *M.U.L.R.* 268.

As an example of the former, Cross suggests the tendering of a statement 'Hello X', made by someone unknown and heard by a witness, to show that X was present at that particular place and of the latter, testimony that the witness saw a doctor having X's body placed in a mortuary van after having examined X to show that X was dead at a particular time.

In his early writings, Cross submitted that both non-assertive statements and non-assertive conduct are hearsay. Later, Cross argued that the rule is applicable to assertive statements only. He included in this category statements such as 'Hello X' which he had concluded *are* intended to be assertive by the maker of the statement: 'Hello X' expressing recognition as well as greeting.

The inclusion of non-assertive conduct as hearsay is based upon the proposition laid down by the famous case of *Wright v. Doe d. Tatham* in which it was held that conduct, not intended to be assertive by its maker but from which inferences can be drawn concerning the belief of the maker, is hearsay when the conduct is put in as evidence for the purpose of indicating the truth of the implied assertion.

There are a number of common law exceptions to the hearsay rule. Professor Tapper has discussed them thoroughly, particularly with respect to England, in so far as they are pertinent to the admissibility of computer print-outs as evidence.¹²

Considerable statutory modifications of the rule have taken place in so far as the rule relates to statements contained in documents. In some instances, both computer print-outs and other documentary material has been covered by a single set of provisions relating to business records or, indeed, records generally.¹³ The other approach that has been taken is that of having separate provisions to cover computer print-outs and other documentary material.¹⁴

MACHINE INFORMATION: IT IS HEARSAY?

These above statutory provisions provided a natural basis upon which to develop legislation to cover computer print-outs when the print-out contains

¹¹ (1837) 7 Ad. and E.I. 313; 112 E.R. 488.

¹² Tapper C., *Computers and the Law* (1973) 19-21; Tapper C., *Computer Law* (1978) 152-3; Tapper C., 'Evidence from Computers' (1974) 8 *Georgia Law Review* 562, 568-70.

¹³ *Evidence Act* (N.S.W.) 1898, s. 14CB sets out the requirements of admissibility. Sub-s. (4) states that the statement must be, or form part of, a record of a business and sub-s. (5) states that the statement must be made in the course of, or for the purpose of, the business. 'Business' is defined very widely, cf. Law Reform Commissioner of Western Australia *Project No. 17 Part 1* 17 for a criticism of the N.S.W. reliance on the definition of 'business'. In the W.A. Draft Bill, the requirements of admissibility are only that the Statement be made by a qualified person. For a discussion of the W.A. approach see *Australian Law Reform Commission, Evidence Reference, Research Paper No. 3, Hearsay Evidence Proposal* 71.

¹⁴ *Evidence Act* (Vic.) 1958, 55 (documentary hearsay) and s. 55B (computer print-outs) cf. s. 59a ff. *Evidence Act* 1929 S.A.; for a discussion of the Victorian and South Australian legislation see Tapper, *op. cit.* 169-72.

a statement made by a person. Also, such legislation has been used to cover instances in which the statement was not made by a person. The result has been that statements that are machine information have been held to be admissible according to legislation based upon modifications of the rule against hearsay.

However, there is a line of thought which suggests that machine information is not hearsay at all. The Law Reform Commission of N.S.W. stated: A statement reproducing or derived from facts in such statements (produced by automatic recording devices) is not hearsay if it is not made by a person or does not embody the perceptions of a person,¹⁵ citing *The Statute of Liberty*¹⁶ for this proposition.

In that case, one of the parties sought to tender evidence comprising a film of the radar echoes of two ships and a series of photographs from that film which assisted in showing how a collision occurred. Simon P. ruled that the evidence was not hearsay but was real evidence: evidence afforded by the production of physical objects for inspection or other examination by the court.¹⁷ It was reasoned that if tape-recordings are admissible, it should follow that a photograph or photographs of radar reception would be admissible also. Thus if the photographs were admissible, it would be an absurd distinction to admit photographs taken manually but not those taken through a trip or clock mechanism.¹⁸ This reasoning was extended to include any type of dial recording, the readings of which would be admissible if taken manually. His Lordship concluded by saying that the law must take cognizance of the fact that mechanical means replace effort.¹⁹

The case of *R. v. Maqsd Ali*²⁰ was cited for the rule that tape recordings are admissible and that there was no difference between the recordings and a photograph.²¹ In that case, Marshall J. reasoned that evidence of things seen through telescopes or binoculars which could not be seen by the unaided eye had been admitted and that photographs, the reproduction of a situation by chemical means, had been admitted also.²² There was no difference in principle between a tape recording and a photograph — ‘. . . it does appear to this court wrong to deny to the law of evidence advantages to be gained by new techniques and new devices, provided the accuracy of the recordings can be provided and the voices recorded properly identified’.²³

In *Maqsd Ali*, the tape recordings had been made secretly of two suspects talking. At the time of the recording they had not been charged. They had been speaking in an obscure dialect of Urdu. Three separate

¹⁵ Law Reform Commission of N.S.W., *op. cit.* 43 para. 30.

¹⁶ (1968) 1 W.L.R. 739.

¹⁷ *Ibid.* 740.

¹⁸ *Ibid.*

¹⁹ *Ibid.*

²⁰ (1966) 1 Q.B. 688.

²¹ (1968) 1 W.L.R. 739, 740.

²² (1966) 1 Q.B. 688, 701.

²³ *Ibid.*

transcriptions had been made and then translations of each. In the *voir dire*, it was sought to admit the tape recordings to prove the translations. In this instance hearing the tape recording would have meant little to the court. It was the statements that had been transcribed and translated that were important. Each translation contained certain passages amounting to a near confession of guilt. Marshall J. did not advert to the rule against hearsay in his judgment in *Maqsd Ali*, in any case such statements would have been admissible as an exception to the rule.

Let us consider the question of whether or not the tape recording *was hearsay*. If the conversation between the two suspects had taken place before a shorthand reporter, a transcription of what had been said would have been clearly hearsay. What if the shorthand reporter had listened in the next room? Again, it would be hearsay. What if the shorthand reporter, *unknown to him*, had not listened to the suspects but to a tape recording of the conversations of the two suspects? The knowledge or lack of knowledge of the shorthand writer as to the source of the words which he had transcribed would not affect the quality of his transcription. Whatever the source, it would be still just a transcription of a conversation of two persons neither being the witness testifying in court and would be hearsay.

A tape is a record of a conversation as is a transcription. The difference is that one is heard and the other is read. It is the words themselves that interest the court and not the fact that the conversation took place. A tape recorded conversation can be replayed to the court but it is not the testimony of a witness in court. The conversation is not contemporaneous with the court hearing and the statements made in the conversation are assertions of persons other than the witness testifying. If the tape recording is played to the court for the purpose of bringing into evidence the statements that were made then the tape recording is tendered as hearsay. Cross describes a tape recording as real evidence when the court is treating the information of the words as relevant and as hearsay when the court's attention is to be directed solely to the terms of the recording.²⁴

The N.S.W. Law Reform Commissions cited *The Statue of Liberty* to stand for the proposition that a statement not made by a person is not hearsay. It does not seem that Simon P. founded his judgment on this point. The case upon which he does rely to develop his argument is a case in which the evidence was, in fact, hearsay. In that case, it was said that there was no difference in principle between a photograph and a tape recording.²⁵ Does this mean that a photograph could be hearsay too? It is submitted that the reasons behind the judgment in *The Statue of Liberty* stand on somewhat shaky ground.

²⁴ Cross, *op. cit.* 12 s. 1.22.

²⁵ *R. v. Maqsd Ali* (1966) 1 Q.B. 688, 701 *per* Marshall J.; *The Statue of Liberty* (1968) 1 W.L.R. 739, 740 *per* Simon P. following Marshall J.

The definition of the rule against hearsay posited by Cross refers to 'assertions in documents produced to the court when no witness is testifying'.²⁶ Must the assertions in a document have been made by a person? In an article published in 1969, Cross stated that the hearsay rule was confined to human assertions.²⁷ *The Statute of Liberty* was referred to by Professor Whalan in his lecture entitled 'The Law and Computers'. He said:

In the radar case it was not a process where human agency produced the material introduced in evidence; but where human agency does come into it, we are still in trouble with the hearsay rule.²⁸

It may be inferred from this that Whalan would limit the hearsay rule to evidence produced by human agency. A different conclusion was reached by three Americans, Messrs Mills, Lincoln and Laughhead,²⁹ who discussed hearsay in the context of complex computer programmes that modify the programme itself in the course of their operations. The authors suggest that to tender the output as proof of what it contains is to tender hearsay as there was no opportunity to cross-examine the computer at the time when it performed the operations that altered the input.³⁰ Their argument is based on the definition of hearsay put forward by Wigmore.

A statement, oral or written, made at a time when there was no opportunity to cross-examine the declarant and offered to prove the truth of the words spoken or written.³¹

While Cross emphasized the lack of the witness, Wigmore emphasized the lack of an opportunity for cross-examination. Wigmore did not specify that the statement must have been made by a person, and neither did Cross specify that documents must have been made by a person. The likelihood of statements being made by other non-human agents probably did not occur to Wigmore. As the definitions stand, both are open to the interpretation put forward by Mills, Lincoln and Laughhead.

The rule against hearsay is an exclusionary rule. A species of evidence may be caught by such a rule even though the rule has not been considered in relation to that evidence before. It is not a case of extending a definition, rather it is one of positing a definition and analysing situations to see whether or not they are encompassed by what has been posited. The question is: is the evidence hearsay? I suggest that it is.

Those who first formulated the rule did not turn their minds to machine information — they could not have done — but in the light of the rationale for the rule, that is, the need to exclude certain sorts of evidence, they might have wished to allow evidence such as machine information to

²⁶ Cross, *op. cit.* 456 s. 17.15.

²⁷ Cross R., 'The Periphery of Hearsay' (1969) 7 *M.U.L.R.* 1, 10.

²⁸ Whalan D. J., 'The Law and Computers' *Inaugural Lecture at the University of Queensland* 1970, 10.

²⁹ Mills L. E., Lincoln K. J. and Laughhead C. E., *op. cit.* 16 ff.

³⁰ *Ibid.* 18.

³¹ *Wigmore Treatise on Evidence* (3rd ed. 1940) V s. 1362.

escape the operation of the rule. Exceptions to the rigid rule are of course recognized. To rationalize machine information as another clear exception would seem preferable to denying the true nature of machine information.

These questions of the nature of machine information and of how to handle whatever that nature may be are not just questions of academic debate. A systematic approach must be taken to avoid causing further confusion in an area of law that is already in a dreadful muddle. These questions are part of any thorough understanding of the rule against hearsay and should be part of any reassessment of the rule that takes place. In several instances, machine information is covered by statutory modifications to the rule against documentary hearsay so it is pertinent to consider whether or not such evidence is hearsay at all.

The case of *R. v. Pettigrew*³² has provided the basis for some useful discussions on machine information and hearsay. The case was a criminal trial for theft and as part of its case the Crown sought to adduce evidence of a computer print-out from the Bank of England stating the serial numbers of five pound notes sent out from the Bank of England to a provincial bank. An operator had fed bundles of the notes, numbered sequentially, into a device which recorded the serial number of the first and last note in each bundle. This machine automatically rejected any defective notes and recorded these numbers also. Some of these notes could be traced to the owner of a burgled house. Three five pound notes were found in the possession of the suspect. The English Court of Appeal quashed the conviction on the grounds that this evidence was wrongly admitted. The case turned on the provisions of the *Criminal Evidence Act 1965* regarding the admissibility of documents when the statements in the document are compiled from information supplied 'by persons who have, or may reasonably be supposed to have, personal knowledge of the matters dealt with in the information supplied'. The Court of Appeal, consisting of Lord Widgery, Lord Justice Bridge and Mr Justice Woolf, approved of the argument that no one could have known the information contained in the statement because no one would have known which notes were rejected. No one had personal knowledge of what emerged from the machine.

J. C. Smith³³ has argued that the evidence should have been admitted in the same manner as the evidence was admitted in *The Statue of Liberty*. The computer was likened to other mechanical instruments such as a thermometer, a radar speedometer and a camera. It differs from them only in that it performs a variety of functions.³⁴ Smith referred to Professor Elliott³⁵ who wrote that if accuracy and the conditions of use are made out, even where the results may have to be interpreted by an expert 'the giving

³² *The Times* 21 January 1980; discussed in (1980) *Reform*. 82.

³³ Smith J. C., 'The Admissibility of Statements by Computer' (1981) *Criminal Law Review* 387.

³⁴ *Ibid.* 390.

³⁵ *Ibid.*

of evidence based on such instruments is unobjectionable and gives rise to no legal problems'.³⁶

What does occur when evidence is presented of some scientific measurement? The example of a thermometer, an example put forward by Smith will be useful to consider.

If the operator testifies that the thermometer reads 70°F then he is speaking from the basis of his own knowledge. If he testifies that the temperature was 70°F then there is an assumption made that the thermometer was correctly calibrated. The operator may have made that statement in light of his own tests to check the calibration and in that case the court would be relying on the operator's knowledge. If he had not, then he and also the court would be relying on the representations of the maker who is not testifying or upon the non-assertive statement of the operator since the statement the temperature was 70°F implies that the instrument from which he read the measurement 70°F was accurately calibrated. Machine information can be analysed in a similar way. Unless the person tendering the document knows that the programme is correct and that the computer was operating correctly from his own experience, he is relying on the representations of the programmer. When the document is tendered to prove the truth of its contents, the accuracy of those contents will be dependent upon the correctness of the programme and upon the reliability of the computer. When the programmer is not testifying, such a reliance will be hearsay.

With the advent of motor vehicles and speed laws, the courts were called upon to consider evidence of measurements given by scientific instruments. In 1902, the leading case of *Gorham v. Brice*³⁷ concerned the charge of exceeding the speed limit of 12 m.p.h. On appeal, it was argued that there was no evidence before the Magistrate that the watch used was accurate or had been tested (the speed had been calculated using the second hand of the watch). The Court of Appeal consisting of Lord Alverstone C.J. and Justices Darling and Channell ruled that it was impossible to make such a claim. Subsequent cases derived a rule from this case that the working accuracy of scientific instruments is presumed. In 1972, Piper J. quoted Taylor on *Evidence* and Phipson on *Evidence* to this effect.³⁸ In the later case of *Crawley v. Laidlaw*,³⁹ Lowe J. spoke as follows:

I do not question that such a presumption is frequently and (in general) tacitly acted on by our Courts; but in my opinion it must appear from evidence before the Court, or from something which stands in place of evidence e.g. judicial notice, that the instrument in question is a scientific instrument, before the presumption applies.⁴⁰

³⁶ Elliot D. W., 'Mechanical Aids to Evidence' (1958) *Criminal Law Review* 5, 12-13.

³⁷ (1902) 18 T.L.R. 424.

³⁸ *Peterson v. Homes* (1927) S.A.S.R. 419, 420-1.

³⁹ (1930) V.L.R. 370.

⁴⁰ *Ibid.* 374.

The Court must be satisfied by general information or through the assistance of experts before the presumption will apply. The presumption forestalls difficult questions as to whether hearsay applies.

In *R. v. Pettigrew*, evidence was given to show the nature of the operations of the computer. Evidence may have been given by someone who could swear as to the correctness of the programme and the reliability of the computer. Hearsay in the form just discussed may not have arisen. Smith argued that there was no hearsay and so the print-out should have been admitted. It is submitted that if the legislation that modifies the rule against documentary hearsay adverts expressly to machine information then it would be applicable to machine information even if machine information was not hearsay.

The Chairman of the Australian Law Reform Commission has considered the question of computers and evidence. His Honour said:

The advent of computing, photocopying and electronic communication and their widespread use throughout the community render the maintenance of the hearsay rule in its present form unreasonable and indeed impossible.⁴¹

These words are based on a conclusion that machine information is hearsay.

It has been submitted that machine information is hearsay. Hearsay would appear to arise also when there is no testimony as to the accuracy of a scientific instrument or the correctness of a programme and a statement from one of these is tendered for the truth of its contents.

THE USE OF COMPUTERS BY EXPERTS

Computer analysis has been used by expert witnesses for a number of years. In general, the courts do not reject the testimony of experts on the grounds that he has used computers or some scientific instrument. The expert is considered to have taken into account issues such as accuracy or the correctness of a programme. This is part of his expertise.⁴² However, the case of *English Exporter (London) Ltd v. Eldonwall Ltd*⁴³ has been cited⁴⁴ as expressing a contrary view. Megarry J. ruled that when an expert valuer gives evidence as to comparable values he must confine his examples to those which can be proved by admissible evidence.⁴⁵ The judgment contains a discussion of experts and the way in which they develop their facts. It was acknowledged that they would learn much from text books, journals and the like.⁴⁶ This attitude to experts is an anomaly. The case highlights the inconsistency of the law in this area.

⁴¹ Kirby M. D., 'The Computer, the Individual and the Law' 1981 (55) *Australian Law Journal* 433, 451.

⁴² Law Reform Commission of N.S.W., *op. cit.* 43 para. 29.

⁴³ (1973) 2 W.L.R. 435.

⁴⁴ Law Reform Commission of N.S.W., *op. cit.* 43 para. 29.

⁴⁵ (1973) 2 W.L.R. 435, 440.

⁴⁶ *Ibid.* 439.

CONCLUSION

An analysis has been made of the question as to whether or not machine information is hearsay. If it is not, it will be necessary to decide whether or not machine information ought to be removed from the ambit of legislation directed toward modifying the rule against documentary hearsay.

It has been suggested that questions of hearsay do arise in the context of machine information, scientific instruments and indeed in questions of computers and computer programmes generally. These questions have been unrecognized or tacitly ignored. They must be considered before any attempt can be made to develop a doctrine of law relating to all aspects of evidence arising from computer technology. An assessment of the rule against hearsay must be made in light of new technology.