

ELECTRONIC SIGNATURES: UNDERSTAND THE PAST TO DEVELOP THE FUTURE

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ABSTRACT

The digital age is now upon us and this has resulted in a globalisation of commerce unsurpassed in history. This has opened up the possibility for start-up corporations to effectively compete against major corporations in the global market. Being digital,¹ has demanded that commerce establish new mechanisms to effect commercial transactions. These new mechanisms will enable transactions to be recorded and preserved without the need for paper. One of the central issues facing this global commercial activity is the implementation and recognition of electronic signatures. Presently, technology is being developed to electronically sign electronic documents with the same integrity and trust that paper based mechanisms possess.

It is argued that in order to be accepted by commerce, the judiciary and the general public; electronic signatures must at the very least emulate the minimum security and trust requirements that are embodied in traditional signatures. Not surprisingly, proposals for a legal framework to support this global electronic commercial activity are beginning to emerge.²

This paper does not analyse the proposed Global Information Infrastructure (GII) nor does it primarily investigate the technology involved in electronic

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1 N Negriponte, *Being Digital*, Hodder Headline Australia Pty Ltd (1996).

2 For example: OECD, *Electronic Commerce: Opportunities and Challenges for Government*, June 1997 ('The Sacher Report'), available at: <<http://www.oecd.org/dsti/iti/ec/act/SACHER.htm>>; European Commission, *Legal and Regulatory Issues for the European Trusted Services Infrastructure*, June 1997; *European Initiative in Electronic Commerce, Communication to the European Parliament, the Council, the Economic and Social Committee of the Regions*, 15 April 1997, available at: <<http://www.ispo.cec.be/Ecommerce>>.

commerce. Rather it asserts that governments and the framers of laws must understand the implications of electronic signatures,³ which commences with an understanding of the role of traditional signatures in the existing legal framework in which commerce is conducted.

I. INTRODUCTION

Commerce and its accompanying commercial legal infrastructure have developed over a substantial period of time a set of well defined rules governing the use of traditional signatures. However, due to the emergence of the digital age, commerce and legislators are at a crossroads.⁴ The path leading to electronic commercial transaction solutions will make irrelevant some of the traditional procedures used in the signing of paper based documents. New and improved methods will be established to take account of the emerging technologies for effecting the signing of electronic documents. Electronic signatures, it is suggested, will be the foundation of this new global commerce, providing they possess not less than the minimum security features possessed by traditional signatures. If an electronic signature does not possess these minimum features then it will not enjoy the joint trust of commerce and the judiciary and the potential benefits of this technology will be undermined.

Because traditional signatures are almost universally utilised by individuals, the origins of their recognition, usage and meaning are rarely considered. Yet these origins appear to offer guidance for the digital age. According to one eminent authority:⁵

[t]he obscure origins of the art of writing must be regarded as dating back to the picture writing which first appears on the implements and the cave walls of the middle and late Palaeolithic periods. Before these pictograms could be regarded as real writing, however, it was necessary that they should pass through three well-defined stages of development. In the first place, the pictures had become conventionalised so that they always had the same appearance and designated the same object.

It was necessary that they should not only refer to a concrete object but also become the symbols of abstract conceptions. Finally, it was essential that these conventionalised symbols should pass into that stage with a combined

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- 3 This paper does not direct its attention solely to digital signatures as that term is generally understood. The term 'electronic signature' is used to encompass both digital signatures that use asymmetric cryptography and other technologies that create a unique identifier authenticating the signer of the electronic document. Certain Biometric technology can achieve this, but such technology is still being evaluated.
 - 4 There are occasions in history when legislators arrive at policy crossroads where the choice taken will have profound implications. As an example, Noah Webster wrote to Jedidiah Morse on 30 July 1806 concerning critical reviews of the *Compendious Dictionary*, in the following terms "I think this is an important crisis in our literary history. The question at issue is whether an American citizen shall be permitted to correct and improve English Books or whether we are bound down to receive whatever the English give us." Webster's *Letter 268-9*: see D Mellinkoff, *Language of the Law*, Little Brown and Co (1994).
 - 5 HE Barnes, *History of Historical Writings*, Dover Publications Inc (2nd ed, 1890).

representation of an abstract conception and the sound of the human voice. The last stage itself went through a number of developments.⁶

Thus, before an appropriate legal and commercial environment embracing electronic signatures can emerge, it is likely that conventionalisation of electronic signatures should first occur. The first step in this process is the widespread recognition that the digital age equivalent of the traditional signature is available.

In view of the central importance of signatures to the traditional process, it is highly likely that the conventionalisation (standardisation) of electronic signatures is an indispensable step in establishing comparable electronic processes and infrastructure. Until this occurs it is doubtful that the judiciary and commerce will embrace such technology.

Moreover, it is not unreasonable to expect that those entering into commercial transactions will require assurances that the signing of electronic documents will be at least as, if not more, secure than conventional methods. Without such assurances it is likely that people will not contract as freely electronically as they might otherwise do by conventional means in which they can repose their trust in the actual or perceived security of that process.

The element of trust, it is argued, is a fundamental element. In this sense, trust comprises three elements: commercial trust, technological trust and behavioural trust.⁷ Their importance and their relationship to the nature and role of signatures cannot be underestimated as they are an integral part of building confidence in the processes used in commerce and ultimately in the GII. Moreover, such confidence cannot be enacted by legislation but will have to be achieved by the participants in commerce satisfying themselves that this new commercial paradigm at least meets the minimum functional properties of traditional signatures.

The functional properties of traditional signatures may be ascertained by determining answers to the following questions:

- (a) What signature convention (if any) has been established?
- (b) Why was the convention established in the first place?
- (c) What inadequacies (if any) exist in the convention?

This paper analyses the established traditional signature conventions and identifies the properties that an electronic signature convention must possess.

II. TRADITIONAL SIGNATURES

A. What is a Signature?

Surprisingly, there has been very little published research on what a signature is from a legal perspective. There has been some historical research dealing with the

⁶ *Ibid.*, p 10.

⁷ This will be the subject of a subsequent article.

concept of witnessing⁸ and in particular notaries⁹ but by and large it is a subject that appears to have been taken for granted or assumed.

The classic authority in Australian judicial statements on the meaning of a signature appears in *R v Moore; Ex Parte Myers*,¹⁰ where Higginbotham J made the following comment:

It was observed by Patterson J in *Lobb v Stanley*, that the object of all Statutes which require a particular document to be signed by a particular person is to authenticate the genuineness of the document. A signature is only a mark, and where the Statute merely requires a document shall be signed, the Statue is satisfied by proof of the making of the mark upon the document by or by the authority of the signatory ... In like manner, where the Statute does not require that the signature shall be an autograph, the printed name of the party who is required to sign the document is enough ... or the signature may be impressed upon the document by a stamp engraved with a facsimile of the ordinary signature of the person signing ... But proof in these cases must be given that the name printed on the stamp was affixed by the person signing, or that such signature has been recognised and brought home to him as having been done by his authority so as to appropriate it to the particular instrument.

This case establishes three important points. First, it constitutes recognition by the Australian judiciary that a person's signature, in order to bind them to the contents of the document, does not require the physical act of them putting pen to paper, but can be achieved via an agent or through the used of some mechanical means, such as an impress stamp bearing a facsimile of the persons signature.¹¹ It is unclear whether the printed name of the ostensible signatory is sufficient especially if the document is signed pursuant to a statutory obligation. In the case

8 WS Holdworth, *History of English Law*, Methuen, Vol I (3rd ed, 1932); Vol II (4th ed, 1936) p 29, 78-87, 107-8; Vol III (5th ed, 1942) p 231; Vol IV (3rd ed, 1944) pp 167-211; and JH Wigmore, *Evidence in Trials at Common*, Little Brown and Co (Revised ed, 1974), chapters 42 and 52.

9 NP Ready, *Brooke's Notary*, Sweet & Maxwell (11th ed, 1992).

10 (1884) 10 VLR 322. This case dealt with a pawnbroker's pledge ticket that was not signed by the pawnbroker in accordance with the relevant legislation but was signed by an authorised agent, even though the name of the pawnbroker was printed on the pledge ticket.

11 See *Lazarus Estates Ltd v Beasley* [1956] 1 All ER 341 where Denning LJ (as he then was) made the following comment in relation to a company stamp: "The statutory forms require the documents to be 'signed' by the landlord, but the only signature on these documents (if such it can be called) was a rubber stamp 'Lazarus Estates Ltd', without anything to verify it. There was no signature of a secretary or of any person at all on behalf of the company. There was nothing to indicate who affixed the rubber stamp. It has been held in this court that a private person can sign a document by impressing a rubber stamp with his own facsimile signature on it ... but it has not been held that a company can sign by its printed name affixed with a rubber stamp." As for the position in the United States of America see *Joseph Denunzio Fruit Company v Crane* 79 F Sup 117 (DC Cal 1948) where the Court made the following comment: "The Court must take a realistic view of modern business practices, and can probably take judicial notice of the extensive use to which the teletype machine is being used today among business firms particularly brokers, in the expeditious transmission of typewritten messages. No case in point has been called to the Court's attention on this particular point and a diligent search of the authorities has failed to uncover a status of teletype machines as satisfying the California Statute of Frauds. The point appears to be res nova but this Court will hold that the teletype messages in this case satisfy the Statute of Frauds in California." See further *Smith v Greenville County* 188 SC 349, where it was held: "A signature may be written by hand, printed, stamped, typewritten, engraved, photographed or cut from one instrument and attached to another, and a signature lithographed on an instrument by a party is sufficient for the purpose of signing it: it being immaterial by what kind of instrument a signature is made."

of a company, because it is an artificial legal entity and can only act through a human agent, there should be a general requirement for the affixer of a company seal or stamp to identify him or herself not only by printed name but also by an accompanying mark.

Secondly, the case determines that the object of a signature affixed to a document is to authenticate¹² the genuineness of the document.

Finally, it holds that a person, in order to be bound, must put his or her mind to the act of signing the document, as opposed to simply providing an autograph.

When an autograph is affixed to a document there is, on the part of the signatory, a lack of intention to be bound to the contents of the document or to be associated with the contents to the document. Hence, a mark on a document will not be regarded as a signature unless there is the necessary intention to be bound to the contents of the document or to be associated with it.¹³ The document must also be authenticated.

The Macquarie Dictionary defines “authenticate” as “to make authoritative or valid; to establish as genuine”.¹⁴ Further the term “valid” is defined in part as “legally sound, effective, or binding; having legal force; sustainable at law.”¹⁵

Hence, a signature, if properly executed, and there being no surrounding circumstances to legally vitiate the signature such as fraud, undue influence or unconscionable conduct, will bind the signatory to the contents of the document even if the signatory has not read the document.¹⁶

B. The Functions and Characteristics of a Signature

A signature is capable of performing a number of functions, namely it can:

- identify the signatory;
- provide certainty as to the personal involvement of a particular person in the act of signing;
- associate a particular person with the contents of the document;¹⁷
- attest to the intention of a person to be bound by the contents of the document;
- attest to authorship of the document by the signatory; and

12 See also *Hucklesby v Hook* (1900) 82 LT 117 where Buckley J held that a printed name in the body of an instrument, in order to operate as a signature must be authenticated by the person to be charged.

13 Further, the mark of a witness does not carry with it the necessary intention to be bound by the contents of the document. Thus, the witness’ signature is usually clearly designated as such so as to overcome any confusion as to who is to be bound by the contents of the document.

14 Webster’s Dictionary defines “authenticate” in similar terms as does the Oxford Dictionary.

15 Webster’s Dictionary defines “valid” in similar terms as does the Oxford Dictionary.

16 *L’Estrange v Graucob* [1934] 2 KB 394; for a critical analysis see JR Spencer, “Signature, Consent, and the Rule in *L’Estrange v Graucob*” (1973) *Cambridge Law Journal* 104.

17 A clear point in this regard is the signature of a witness. A witness does not through the act of affixing a signature become bound by the contents of the document. Rather their primary function is to validate or provide corroborative evidence in relation to the signing of the document by the persons to be so bound. In relation to artificial persons such as companies it is usual for the affixing of the company seal to be witnessed by two authorised persons, usually a director and the company secretary. Only in exceptional circumstances do witnesses, through the act of witnessing the affixation of the company seal, become bound by the contents of the document.

- attest to some written agreement which may have been written by some third party who is not a party to the binding agreement.¹⁸

The general *physical* characteristics of the traditional signature are that they:

- can be easily produced by the same person;
- are easily recognised by third parties;
- are relatively difficult to forge by third parties;
- become bound to the document such that the physical object and its contents and the signature become one composite physical thing;
- involve a physical process (ink to paper);
- are comparatively standard for all documents signed by the same person,¹⁹ and
- are relatively difficult to remove without trace.²⁰

The general *legal* characteristics of a traditional signature are that:

- any kind of mark is acceptable provided it is affixed by the person or by some person authorised by the person intended to be bound;²¹
- unless there is some specific legislative requirement, the mark can be affixed by some mechanical means;
- the mark can be highly insecure such as a mark that has been effected by pencil;²²
- at the time of affixing the mark, the signatory must have the necessary intention to be bound by the contents of the document or, in the case of being a witness, the necessary intention to be associated with the document as a witness; and
- the mark can be located anywhere on the document and does not have to be at the foot of the document unless there is a legislative requirement as to form as in a will,²³ specifying where the signature is to be placed.

C. Should an Electronic Signature be Accepted as a Signature?

An electronic signature should be accepted as a signature because:

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- 18 UNCITRAL Working Group on Electronic Commerce, *Planning of Future Work on Electronic Commerce: Digital Signatures, Certification Authorities and Related Legal Issues*, 31st session, New York, 18-28 February 1997.
- 19 W Hagan, *A Treatise on Disputed Handwriting and the Determination of Genuine from Forged Signatures*, Sweet & Maxwell (1894).
- 20 Nevertheless, it is possible to remove a traditional signature without trace through the use of laser technology. The cost involved is substantially greater than the cost of removing a digital signature from an electronic document that could require at a minimum a text based editor: Personal email with Dr E Gerk.
- 21 *Blackstone's Commentaries on the Laws of England*, The Legal Classics Library (1983) Book II, Ch 20 at 305: "we are assured by all our ancient historians, that sealing was not then in common use. The method of the Saxons was for such as could write to subscribe their names, and, whether they could write or not, to affix the sign of the cross: which custom our illiterate vulgar do, for the most part, to this day keep up, by signing a cross for their mark, when unable to write."
- 22 *Geary v Physic* [1826] 5 B&C 234 at 238, per Bayley J.
- 23 *Cohen v Roche* [1927] 1 KB 169 at 175, per McCardie J. The formalities of wills are discussed below.

- electronic signatures are marks capable of being affixed by the person or by some person authorised by the person intending to be bound;
- an electronic signature can be affixed via mechanical means, as can a traditional signature;
- an electronic signature can be either highly secure or highly insecure as can a traditional signature;
- at the time of affixing the electronic signature, the necessary intention that must be possessed by a signatory or witness as the case may be, can be satisfied regardless of whether a signature is applied physically or electronically. In the latter case the method of affixing the electronic signature does not destroy the intention; and
- as with traditional signatures, an electronic signature can be located anywhere on the document and does not have to be at the foot of the document unless the contrary is demanded by some legislative requirement. In this regard the mechanism used to affix the electronic signature should ensure that the electronic signature is attached to the document such that any detachment of the electronic signature from the document will cause a total failure in the mechanism used to verify the electronic signature.

III. WHEN THE LAW REQUIRES A SIGNATURE

A. General Requirement to Use a Signature

In general, there is no formal requirement for a contract to be in writing. Many contracts are effected daily without there being a formal document in place to evidence the terms of the contract, and in some instances, such as contracts relating to the sale of goods, some of the terms are implied by statute.²⁴ Nevertheless, there are obvious reasons for evidencing a contract in a formal and signed document, such as:

- the formal document may set out all the terms to which the parties agree;
- there is some finality involved in the use of a formal document;
- the formal document itself can be used to overcome any ambiguity concerning what was agreed to during negotiations;
- the formal document can be used as evidence should a dispute arise;
- the formal document identifies the parties to the transaction;
- the formal document identifies when the transaction was entered into and when it will be completed; and
- when a traditional signature is effected it forms part of the document itself. This characteristic can also be incorporated for electronic

²⁴ There are many forms of legislation that imply terms into contracts, including the *Sales of Goods Act 1896* (Qld) and corresponding legislation in each State of Australia and the United Kingdom. See also, for example, the *Trade Practices Act 1974* (Cth) and the Uniform Commercial Code in the United States of America.

signatures. The technology is available such that an electronic signature can also be affixed in such a manner that it also forms part of the electronic document. That is, any attempted removal of the electronic signature will cause the document to be unreadable.

In limited cases, legislation such as the Statute of Frauds, requires certain transactions to be expressed in writing.

B. Transactions Governed by the Statute of Frauds

The Statute of Frauds, first enacted in 1677, states in the preamble the reason for its enactment as follows:

For the prevention of many fraudulent practices which are commonly endeavoured to be upheld by perjury and subordination of perjury.

Roxborough J, in *Leeman v Stocks*²⁵ cited with approval the views of Cave J in *Evans v Hoare*.²⁶

The real point to be decided is, whether the document in question is a memorandum or note in writing of an agreement signed by the party to be charged, or by some other person lawfully authorised within the meaning of s 4 of the Statute of Frauds. The Statute of Frauds was passed at a period when the legislature was somewhat inclined to provide that cases should be decided according to fixed rules, rather than to leave it to the jury to consider the effect of the evidence in each case. This, no doubt, arose to a certain extent from the fact that in those days the plaintiff and the defendant were not competent witnesses.

Many jurisdictions have enacted a form of the Statute of Frauds.²⁷ The Statute of Frauds normally requires that a contract or memorandum for the sale of some interest in land or for consideration in excess of some specified monetary amount must be in writing and must be signed by the party to be charged with the obligation to perform. As an example, s 59 of the *Property Law Act 1974* (Qld) expressly adopts the Statute of Frauds in the following terms:

No action may be brought upon any contract for the sale or other disposition of land or any interest in land unless the contract is in writing and signed by the party to be charged, or by some person by the party lawfully authorised.

As far as the authors are aware, there are no cases directly dealing with the issue of whether an electronic signature will satisfy the Statute of Frauds, however, it is the authors' contention that an electronic signature should suffice as a signature for the purposes of the Statute of Frauds.²⁸ This is supported by, for example the definition of writing in various statutes such as the Corporations Law which in s 9 provides that writing includes any mode of representing or

25 [1951] 1 Ch 941 at 947-8.

26 [1892] 1 QB 593 at 597.

27 See for example section 2-202(1) of the Uniform Commercial Code of the USA which has expressed the Statute of Frauds in similar terms as follows: "Except as otherwise provided in this section, a contract for the sale of goods for a price of \$500 or more is not enforceable by way of action or defence unless there is some writing sufficient to indicate that a contract for sale has been made between the parties and signed by a party against whom enforcement is sought or by his authorised agent or broker."

28 In the United States a signature is defined in the UCC section 1-201 as "any symbol executed or adopted by a party with the present intention to authenticate a writing."

reproducing words, figures, drawings, or symbols in a visible form. Even so, the processes by which signatures may be created electronically are likely to raise significant legal issues due to the fact that these processes may occur entirely without any person being present or directly involved in the process at the time of the signature's creation.²⁹ This is not to suggest that proof that an electronic signature has been effected will be any more difficult to establish in the future than is presently the case with traditional signatures, or that electronic signatures will be any less secure than traditional ones. The contrary is likely to be true. Nevertheless, proof by the signer of the affixation of a signature or, importantly, satisfaction by other parties wishing to ascertain that a signature has been made and therefore a transaction completed, raises different considerations from those of attending traditional signatures. Legal conventions specifying when and where an electronic signature is to be taken to have been applied will need to be developed quickly so that the law of contract in particular can be effectively applied to electronic contracts. Likewise, the law of evidence will require adjustment so that those wishing to prove that a document was signed electronically will know what they are entitled or required to produce to the court in satisfaction of their onus of proof.

It has been suggested³⁰ that a signature to be valid under the Statute of Frauds must specify the name of the person to be bound and that a mark that does not specify the person's name is insufficient. The issue then is whether a mark that does not directly specify the signer's name but can be indirectly linked to the relevant person will suffice. When the recipient of a digitally signed message is verifying the digital signature, the recipient must have access to the public key that corresponds to the private key that was used to sign the message. This access will most like be achieved via an electronic certificate.³¹ This certificate will specify the name of the signer of the message. This indirect access to the name of the signatory should satisfy the Statute of Frauds provided the integrity of the electronic certificate is assured.³² The central issue for the purposes of the Statute of Frauds must be the act of affixing the mark with an intention to be bound together with some method of identifying the person so bound. It should not matter that the identification process is not directly from the document itself but is achieved through some indirect secure method.

It is contended that an electronic signature not only satisfies the characteristics above in relation to traditional signatures, but also satisfies the requirements of the

29 This will be particularly important when the use of software agents becomes prevalent. A software agent is a machine that will be programmed to effect commercial transactions for and on behalf of its owner. In signing the commercial transaction the owner may not even be aware of the transaction until some time after the transaction has been effected. The software agent may sign using its owner's private key or may be registered with its own private key that is identified with the owner of the software agent.

30 DW Grieg and JLR Davis, *The Law of Contract*, The Law Book Company (1987) pp 713-5.

31 ITU specification for X509 certificates. These certificates will specify information about the holder of the private key that was used to sign the message. In particular the name of the private key holder will be specified. The certificates will be held in a database.

32 The issue of naming requirements in a signature involving the Statute of Frauds was first brought to the attention of the authors by Kate Reid, School of Law, University of Canberra, private email, 3 June 1998.

Statute of Frauds, by being a symbol or mark affixed by the signatory in cases where the name of the signatory is a requirement. This can be satisfied indirectly by referencing the certificate that will specify the name of the person to be bound.

C. Formal Requirements of Deeds

A deed has been described as the most solemn act that a person can perform concerning specific property or contract.³³ The formalities at common law are that a deed must be sealed and delivered and must be written on parchment, vellum or paper.³⁴

As one eminent common law scholar observed:³⁵

[I]t is requisite that the party, whose deed it is, should seal, and in most cases I apprehend should sign it also ... This neglect of signing, and resting only upon the authenticity of seals, remained very long among us; for it was held in all our books that sealing alone was sufficient to authenticate a deed: and so the common form of attesting deed, 'sealed and delivered', continues to this day; notwithstanding the statute 29 Car II c3.³⁶

It should be remembered that only a small proportion of the population could then write, which resulted in the use of the personal seal as being the only distinguishing method of authenticating a document.³⁷ The ancient seal could in modern times be replicated by the private key value³⁸ that will be used to digitally sign an electronic document.

The use of seals has in fact subsided to such an extent that only in the most exceptional cases are they used³⁹ and then it is often limited to the requirement of the signatory's position or office, for example a notary public or government office. The procedure to execute a deed does not now require the affixing of a seal.⁴⁰

33 *Manton v Parabolic Pty Ltd* (1985) 2 NSWLR 362 at 367-8, per Young J.

34 E Coke, *The First Part of the Institutes of the Laws of England; or a Commentary upon Littleton*, J & WT Clarke (19th ed, 1832), Vol I, p 35b. See also *Stiles' Case* (1596) 5 Co Rep 20b, 77 ER 80; and more recently see *Manton v Parabolic Pty Ltd*, *ibid*.

35 *Blackstone's Commentaries*, note 21 *supra*, p 306.

36 It appears the in early times a deed was effective even if it was not signed. All that was absolutely necessary was that the deed be sealed by the parties and be delivered. See *Manton v Parabolic Pty Ltd*, note 33 *supra* at 366.

37 See W Hagan, note 19 *supra*, p 25: "200 years ago there were but a few people who wrote much or that used the pen to any great extent. But for the last three generations, a large proportion of the people in all, civilised countries have not only learned to write, but to write a great deal."

38 The private key value will mathematically relate to the public key value in an asymmetric cryptosystem. but it is computationally infeasible to calculate the private key value from public key value. For an introductory explanation on this see RSA Lab's FAQ on Cryptography <<http://www.rsa.com/rsalabs/newfaq/home.html>>.

39 Law Reform Commission of British Columbia Report 96, *Report on Deeds and Seals*, June 1998 <<http://www.lawreform.gov.bc.ca/>>. The authors of the report note that deeds are infrequently used because typically, the parties will enter into a simple contract rather than a formal contract.

40 *Property Law Act 1974* (Qld), s 45; *Conveyancing Act 1919* (NSW), s 38; *Property Law Act 1958* (Vic), s 73; *Law of Property Act 1936* (SA), s 14; *Property Law Act 1969* (WA), s 9; *Conveyancing and Law of Property Act 1884* (Tas), s 63; *Law of Property (Miscellaneous Provisions) Act 1958* (ACT), s 38. In some parts of the United States, such as Ohio and Illinois, the use of a seal has been abolished while in other places, for example California, no legal distinction is made between documents which are or are not sealed.

The common law requirement that a deed would not bind the signatory until it had been delivered requires not that the deed be physically delivered but that the intention of the party to be bound by the obligations set out in the deed can be established. It is a question of fact to be determined in accordance with all the facts and circumstances of the case⁴¹ as to whether a deed has been delivered. The same situation should also occur when digital deeds emerge.

The last formality concerns the material comprising the deed, namely it must be either paper, vellum or parchment. While the common law is very specific in relation to the material that must be used to create a deed, there appears to be no valid reason why the law should remain in its current form. Provided the recording of the intention of the parties is secure, it should not matter that the material is not paper, vellum or parchment. It is anachronistic that the law should limit the form of a deed to vellum, parchment or paper when computer records are given full recognition under, for example, the Corporations Law. If delivery is a question of fact based on the intention then the means of recording that intention should not alter its legal effect. The main requirements should be that it could be proved that a deed was made, and that it was delivered, regardless of the form of its delivery.

D. The Concept of Witnessing

In certain circumstances, a traditional signature is required to be attested or witnessed at the time the signature of the person to be bound by the document is affixed.⁴² The requirement of a competent witness may vary, depending on the transaction under consideration. However, the minimum requirement in common law jurisdictions is that the witness be an independent adult. In some instances the witness must be embassy official, a member of the judiciary or a notary public. The attestation and sealing by a notary will in many circumstances be accepted as a valid attestation for documents involving an interest in land in Australia. The role of the notary has been internationally accepted for hundreds of years.⁴³

41 *Property Law Act 1974 (Qld)*, s47. The United Kingdom and the other States of Australia rely upon the common law under which the requirements of delivery are similar see *Beesley v Hallwood Estates Ltd* [1960] 1 WLR 549 at 561; *Ansett Transport Industries (Operations) Pty Ltd v Comptroller of Stamps* (1983) 84 ATC 4103 at 4110; *Hooker Industrial Developments Pty Ltd v Trustees of the Christian Brothers* [1977] 2 NSWLR 109 at 118-9.

42 Section 9 of the *Succession Act 1981 (Qld)* provides that a will is not valid unless it is writing and is executed as follows:

- (a) it must be signed at the foot of each page and at the end of the document by the testator or by some other person in his/her presence and by his or her authority;
- (b) its execution by the testator must occur in the presence of two or more witnesses;
- (c) the witnesses must attest the will though no form of attestation is necessary.

The main requirement in executing a will is that the signing by the testator must be in the presence of two witnesses. Two witnesses are required so as to minimise the likelihood of fraud. This is to assist with the resolution of any subsequent dispute concerning the execution of the will, particularly in view of the fact that the prime witness to the execution of the will, namely the testator, will be dead. Each witness thus not only witnesses the signing of the will by the testator but also witnesses the signing by the other witness.

43 NP Ready, note 9 *supra*.

Wigmore states that the real justification for attestation is to prevent forgery and fraud.⁴⁴ Another respected common law commentator states that:⁴⁵

The last requisite to the validity of a deed is the attestation, or execution of it in the presence of witnesses: though this is necessary, rather for preserving the evidence, than for constituting the essence, of the deed.

Accordingly, the role of the modern witness is to attest to the signing of the document in question as a method of preserving evidence of such signing and if cross examined on the circumstances surrounding its signing to give such evidence as is within the knowledge of the witness.

Wigmore notes that the rule requiring the calling of a person who has attested a deed by his subscription comes down to us as the survival of a very early procedure.⁴⁶ In ancient times, certain official witnesses were appointed whose duty was to be present at all sales, or at all sales above a certain value.⁴⁷ These witness were sometimes called transaction or business witnesses. A transaction witness who agreed to be the attesting witness also agreed in advance to compulsorily come before the court as a witness in relation to the execution of the deed.

Wigmore refers to two reasons that have been advanced by the courts in support of this rule.⁴⁸ First, the parties to the document had agreed to make the attester their witness to prove execution. Pollock CB in *Whyman v Garth*⁴⁹ stated that:

The attesting witness must be called to prove the execution of a deed for this reason, that by an imperative rule of law the parties are supposed to have agreed 'inter se' that the deed shall not be given in evidence without his being called to depose the circumstances attending its execution.

Secondly, the opponent is entitled to the benefit of cross-examining the attesting witness as to the circumstances of execution. That is, the attester may know more than some other person observing the execution, and may be able to speak as to fraud, duress or other matters of defence that surround the execution of the document.⁵⁰ It is not free from dispute, however, that a person in the business of witnessing will be a more competent witness after the event than any other ordinary witness.

Thus, if a dispute arose in earlier times in relation to a document, it was usually required that the document be put before the court for inspection accompanied by the attesting witness. The role of the transaction witness faded and was supplanted

44 JH Wigmore, note 8 *supra* at chapter 42, [1286].

45 W Blackstone, note 20 *supra*, p 307.

46 JH Wigmore, note 9 *supra* at chapter 42, [1287].

47 WS Holdsworth, note 8 *supra*, p 81. This procedure pre-dated the Statute of Frauds but corresponds with the requirement that the transaction be witnessed by a person who was not a party to the transaction.

48 JH Wigmore, note 9 *supra*.

49 8 Ex 803 (1853) at 807.

50 Wigmore disputes these reasons at page in the following terms: "(a) The attester was usually in the practice of witnessing documents and therefore would be in no better position than any other person who witnessed the execution of the document; (b) If the witness did possess some special knowledge about some affirmative issue, then the opponent is the proper person to call the witness, if he desires him": JH Wigmore, note 9 *supra*, p 697.

by the modern attesting witness who was not by so doing agreeing to be called before a court should a dispute arise.⁵¹

The act of signing a document which is to be witnessed is the physical act of appending a mark via a pen to the document or via some mechanical means such as a stamp. It is relatively easy for a witness to address his or her mind to such physical action and perform the witnessing task. The attester, shortly after the signing by the person to be bound by the contents of the document and usually at the same signing ceremony, will also affix his or her mark noting the mark to be that of the attester or witness. Attesters need not know the contents of the documents they are witnessing. They are not affixing their mark so as to be bound by the contents of the document but affix their mark as evidence of the signing by the person to be bound by the contents of the document so signed.

The question then arises whether an attester can witness the signing of an electronic document. The first problem to contend with is that during the electronic signing of an electronic document the attester will not see the actual electronic document. This is physically impossible because the document will consist of electronic impulses in memory. In fact, the signer of the document is trusting that the image on the screen is in fact the document that he or she wants to sign. All that the attester and the signer will see is a human readable representation on the computer screen of what is allegedly in memory. Therefore, neither the signer nor the attester can be absolutely certain that what is on the computer screen corresponds with what is in memory. Further, when the attester physically sees the signer pressing the keyboard, the attester will not know with certainty what is actually happening. It is the authors' contention that traditional witnessing concepts may not be readily implanted into the authentication of electronic documents. Nevertheless, if the real justification for attesting documents is to prevent forgery and fraud and therefore increase the level of trust that may be reposed in them, then it will be necessary for new procedures to be established for similar purposes for the electronic signing of electronic documents.

Currently, most computer systems are not designed to include a trusted path. A trusted path will ensure that the screen display corresponds with the contents of memory and that all keystrokes effected by the user will directly correspond with what the user intended under the relevant application. Without this trusted path neither the signer nor the attester will know what is occurring in memory; in effect they would be signing documents blindly. To effect a trusted path all machines used to sign documents will need to be evaluated to trusted evaluation criteria.⁵²

The authors propose that this new procedure not involve the witnessing of the electronic signing of an electronic document. Instead, the attester will, immediately after the signer has electronically signed the document, verify that the electronic document has in fact been electronically signed. To do this the attester would first use the signer's public key to verify the initial electronic signing and once this has

51 WS Holdsworth, note 8 *supra*, p 169.

52 Presently the three main criteria used to evaluate computer system for trust are ITSEC, TCSEC and Common Criteria. It is not the purpose of this paper to detail these criteria, however the authors intend to examine them in a subsequent paper.

been done the attester would also electronically sign the electronic document. The software affixing or embodying the attester's electronic signature must both note the witness or attester as an attester and not as a primary signatory and affix the attester's signature in a manner that embodies the whole of the document, including the signature of the person who is bound by the contents of the document.

IV. CONCLUSION

Many of the traditional concepts developed over the centuries in relation to the signing of paper based documents will not be capable of being adopted in the electronic age. Not only are new concepts necessary, but new technology needs to be developed that will build the required trust in electronic commerce. Equally, aspects of the law of contract, evidence and other bodies of law will require revision to recognise electronic transactions and signatures.

It is submitted that all electronic signature software should possess the following properties:

- (a) electronic signatures should not be capable of being easily removed without trace from their documents;
- (b) electronic signature software should establish a trusted path between memory, the display-screen and the key-board; and
- (c) electronic signature software should be capable of verifying signatures so that third parties can sign documents as verifiers.

The issue of non-removal of the signature is a fundamental attribute of the traditional signature regime and therefore should not be compromised. This may need a new formatting procedure or may require the electronic signature to be steganographically bound to the document.

Further, the concept of witnessing will need to be reconceptualised. Unless there is a trusted path between the screen, the memory and the keyboard, it is not absolutely guaranteed that what is displayed on the screen will correspond with the memory contents. Thus, a person purporting to witness an electronic document could never at a later time attest with sufficient certainty that the screen version of the document that they verified was the same as the contents in memory. Accordingly, it is recommended that instead of requiring electronic documents to be witnessed as paper documents are, the preferred procedure would be to have the electronic signature verified.