Cambridge Law Journal, **58(1),** March 1999, pp. 67–77
Printed in Great Britain

SUING IN TORT FOR LOSS OF COMPUTER DATA

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I. Introduction

As a general rule, economic loss which is not consequential upon physical damage to the plaintiff's property is not recoverable in an action in negligence. Thus, to borrow the example given by Lord Oliver in *Murphy* v. *Brentwood District Council,*[1] the contractor who carelessly drills through a cable in the highway, causing a power cut to nearby business premises, is liable to the factory owner who suffers loss because material in the course of manufacture is thereby ruined, but not to the restaurateur who suffers a loss of profit on the meals that he is unable to prepare and sell.

On those principles, if a power cut physically damages the hardware of a computer system, the resulting loss should be recoverable in negligence. In *Huntingdon Fasteners Co. Ltd.* v. *Avon Lippiat Hobbs (Contracting) Ltd.,*[2] the defendant contractors severed an electricity cable in the highway. This caused an induced voltage surge which damaged printer circuit boards within the plaintiff's computer. The defendants conceded that they were liable for the losses properly consequential upon the physical damage to the circuit boards.

Assume, however, that the interruption of the power supply (or, for that matter, a carelessly transmitted computer virus) causes a loss of data[3] stored within a computer system, without "damaging" the hardware, in the sense that the hardware is still capable of functioning properly. Are the resulting losses recoverable from the careless defendant?

II. The Approach in Canada

This issue arose in the Canadian case of *Seaboard Life Insurance Co.* v. *Babich.*[4] There, the defendant drove his truck into a power pole,

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[1] [1991] 1 A.C. 398 at p. 486.

[2] (1997) 13 Const.L.J. 267.

[3] The term "data" is used here to embrace all forms of information stored on computer, including programs, and "loss" is intended to include corruption of such data.

[4] (1995) 11 B.C.L.R. (3d) 385; [1995] 10 W.W.R. 756.

https://doi.org/10.1017/S000819739900104X Published online by Cambridge University Press

causing a power cut to the plaintiff insurance company's premises. The plaintiff's computer system was rendered inoperable. When power was restored, several hours of testing and system analysis were required to make the system fully operational. Even then, some data had been lost during the power cut. Several insurance policies had to be checked by the plaintiff's staff to ensure that they contained the same information as when the power went off. They found some inconsistencies which had to be remedied. The plaintiff claimed damages for the expenses and loss of profits incurred because, whilst the computer system had been inoperable, its staff had been at work with nothing to do. One issue before the Court was whether the loss of data constituted property damage. Esson C.J.S.C. held that such loss was purely economic loss, and therefore irrecoverable:

> In this case . . . there was no physical injury to any asset of the plaintiff nor was there anything which could be described as direct damage to its property. Counsel for the plaintiff submits that computer data, being something of value to the plaintiff, can properly be characterised as "property". There may be contexts in which computer data will be held, in law, to constitute property. But for the purposes of distinguishing between pure economic loss and damage to property in the law of damages, I consider that it would simply be productive of confusion to treat the loss of the data as anything other than economic loss. In this case, the loss was purely economic. Some employees had to stand by until the computers were operational. Others had to spend some time checking them and 're-inputting' data. All, essentially, a matter of increasing the cost of doing business.[5]

III. The Criminal Cases

The decision in *Seaboard* v. *Babich* is to be contrasted with two English cases on loss of computer data in the context of criminal damage.

In *Cox* v. *Riley,*[6] the defendant, Cox, deliberately erased a computer program from the circuit card of a computerised saw belonging to his employer. As a result, the saw was rendered inoperable. The issue was whether there was damage to property for the purposes of Section 1(1) of the Criminal Damage Act 1971. Stephen Brown L.J. (with whom McCullough J. agreed) referred to two earlier cases, *R.* v. *Fisher*[7] and *R.* v. *Henderson & Battley,*[8] in

[5] *Ibid.*, at para. 11.
[6] (1986) 83 Cr.App.R. 54; Divisional Court.
[7] (1865) L.R. 1 C.C.R. 7.
[8] An unreported case decided by the Court of Appeal on 29 November 1984.

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which acts impairing the value or usefulness of property so that time or money was required to reinstate it were held to amount to damage to that property for the purposes of criminal damage. He concluded that it was "quite untenable" to argue that Cox had not caused damage to property.[9]

Cox v. *Riley* is a difficult decision, as the Law Commission pointed out in its report on Criminal Law and Computer Misuse:

> The problem is that neither *Cox* v. *Riley* nor *Henderson & Battley* squarely address the point that the dictionary definition of "to damage" requires some injury to a thing;[10] the decisions concentrate on the second limb of that definition, that the injury must lessen or destroy its value. In our view, therefore, those authorities cannot be relied upon with sufficient confidence as stating the present law on the meaning of damage.[11]

Similar criticism could be made of *Seaboard* v. *Babich.* There, at least, the court recognised that damage to property requires some "physical injury", but no attempt was made to formulate the test by which the question of physical injury is to be judged. The fact that, in *Seaboard* v. *Babich,* the opposite conclusion was reached to that in *Cox* v. *Riley* perhaps illustrates the difficulty in determining whether there has been "damage to property" without first defining one's terms.

In the light of the Law Commission's observations, section 3 of the Computer Misuse Act 1990[12] created a new criminal offence of unauthorised modification of the contents of a computer.[13] Notably, section 3(6) provides that:

> For the purposes of the Criminal Damage Act 1971 a modification of the contents of a computer shall not be regarded as damaging any computer or computer storage medium unless its effect on that computer or computer storage medium impairs its physical condition.

Before the 1990 Act came into force, however, the issue arose again in *R.* v. *Whiteley.*[14] Whiteley was a computer hacker who, having gained unauthorised access to the JANET computer network, added and deleted files and changed passwords on the system. As a result, some of the computers failed, were unable to operate properly, or had to be shut down for periods of time. He was charged with

[9] *Ibid.,* at p. 58.
[10] ". . . to injure [a thing] so as to lessen or destroy its value." The Oxford English Dictionary, 2nd ed. (1989).
[11] Law Com. No. 186, dated 25.9.89, para. 2.30.
[12] 1990 c. 18.
[13] The term "contents" was intended to include both data and programs: Law Com. No. 186 at para. 3.68.
[14] (1991) 93 Cr.App.R. 25.

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causing criminal damage to the magnetic disks within the computers on which the files were stored. The evidence was that, whilst Whiteley's actions did not physically damage the disks or the computers (in the sense that they were still capable of performing the particular functions for which they were designed), the deletion, addition and alteration of the files had been brought about by a change in the configuration of the magnetic particles on the disks. Lord Lane C.J. concluded that this change to the magnetic particles was sufficient for a finding of damage to property:

> There can be no doubt that the magnetic particles upon the metal discs were a part of the discs and if the appellant was proved to have intentionally and without lawful excuse altered the particles in such a way as to cause an impairment of the value or usefulness of the disc to the owner, there would be damage within the meaning of section 1 [of the Criminal Damage Act 1971] . . .
> *Any alteration to the physical nature of the property concerned* may amount to damage within the meaning of the section. Whether it does so or not will depend upon the effect that the alteration has had upon the legitimate operator (who for convenience may be referred to as the owner). If the hacker's actions do not go beyond, for example, mere tinkering with an otherwise "empty" disc, no damage would be established. Where, on the other hand, the interference with the disc amounts to *an impairment of the value or usefulness of the disc to the owner,* then the necessary damage is established.[15]

IV. The *Hunter* Test

In *Hunter* v. *Canary Wharf Ltd.,*[16] the Court of Appeal considered the question of damage to property in a civil context. The plaintiffs alleged that the defendants' building activities had caused excessive quantities of dust to be deposited on their property. One issue was whether such deposits constituted damage to property for the purposes of an action in negligence. Pill L.J. (with whom Waite and Neill L.J.J. agreed) said:

> In my judgment, the deposit of dust is capable of giving rise to an action in negligence. Whether it does depends on proof of physical damage and that depends on the evidence and the circumstances . . . *The damage is in the physical change which renders the article less useful or less valuable.* On the assumptions we are invited to make, that rather than any general concept of loss of utility is the appropriate test . . . I agree with Lord

[15] *Ibid.,* at pp. 28–29; emphasis supplied.
[16] [1997] A.C. 655, where the Court of Appeal's decision is reported; the issue did not arise for decision in the House of Lords.

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> Irvine[17] that the fact it costs money or labour to remove a deposit of material on property does not necessarily involve a finding that the property has been damaged. I also agree with him that the meaning attributed to the word damage in a criminal statute may be different from that in the law of negligence.[18]

The possible distinction between the criminal and civil cases canvassed in this last sentence calls for comment. It seems that, although *Cox* v. *Riley* was cited to the Court of Appeal in *Hunter, Whiteley* was not. In fact, the test formulated in *Hunter* in the context of liability in negligence ("physical change which renders the article less useful or less valuable") appears indistinguishable from that applied by the Court of Appeal in *Whiteley* in the context of criminal damage ("alteration in the physical nature of the property concerned, . . . [causing] an impairment of . . . value or usefulness").[19]

The *Hunter* test was applied in *Blue Circle Industries plc* v. *Ministry of Defence*.[20] There, an area of marshland on the plaintiffs' estate was contaminated with small quantities of radioactive matter. The question was whether there was physical damage to the plaintiff's property for the purposes of section 7(1)(a) of the Nuclear Installations Act 1965. The Court of Appeal held unanimously that there was. Aldous L.J. said:

> Damage within the Act will occur provided there is *some alteration in the physical characteristics of the property*, in this case the marshland, caused by radioactive properties *which render it less useful or less valuable.* (See *Hunter* v. *Canary Wharf Ltd.* [1997] A.C. 655, 676.[21])

V. The *Hunter* Test Applied to Computer Data

In the context of computer data, therefore, the question appears to be: Has there been an alteration in the physical characteristics of the plaintiff's computer or computer storage medium, so as to render that computer or computer storage medium less useful or valuable?

In Australia, the Supreme Court of Victoria posed a similar question in *Switzerland Insurance Australia Ltd.* v. *Dundean*

[17] Counsel for the defendants.

[18] [1997] A.C. 655 at p. 676; emphasis supplied.

[19] Nor, apparently, was the Court of Appeal in *Hunter* referred to *The Orjula* [1995] 2 Lloyd's Rep. 395, where, in considering whether the contamination of a vessel with hydrochloric acid amounted to physical damage to the vessel for the purposes of an action in negligence, Mance J. expressly derived assistance from a number of criminal cases, including both *Cox* v. *Riley* and *Whiteley. The Orjula* was referred to with approval by the Court of Appeal in the *Blue Circle* case, below.

[20] [1999] 2 W.L.R. 295.

[21] *Ibid.,* at p. 303; emphasis supplied.

https://doi.org/10.1017/S000819739900104X Published online by Cambridge University Press

Distributors Pty. Ltd.[22] There, the plaintiffs took out a policy of insurance with the defendants which covered "accidental damage" to their computer hardware and the operating and accounting software run on that hardware. As a result of a sudden drop in the electrical supply, the magnetic alignment of particles in the hard disk within the hardware was altered. This had two consequences. First, the operating and accounting software were rendered inoperable, and had to be reloaded onto the hardware. Secondly, certain accounting information stored on the hard disk was rendered irretrievable. The issue was whether these costs of reloading the software and recovering the accounting information fell within the scope of the cover. That involved consideration of whether and to what extent damage was suffered. Whilst no reference to *Hunter* was made, the court defined "damage" as "a physical alteration or change, not necessarily permanent or irreparable, which impairs the value or usefulness of the thing said to have been damaged".[23] Ormiston J.A. concluded that there had been a physical alteration in the insured equipment which impaired both its value and usefulness:

> The physical alteration was the change in the alignment of the magnetic particles on the hard disk of the computer . . . which had the effect of rendering the system useless in a practical sense until the particles had been realigned.

The *Switzerland Insurance* case may be compared with the decision in *Whiteley*. In each case, the court applied a test which, in effect if not in terms, was the same as that identified in *Hunter*, and found the necessary "alteration in the physical characteristics of property" in the reconfiguration of magnetic particles within the computer storage medium concerned.

VI. Millennium Repercussions

If "reconfiguration of particles" is the touchstone for liability in negligence, then in cases where the cause of the loss of data stored on computer hardware is not some outside source, but rather a defect inherent in the hardware or the ready-installed software, there would generally be no action in tort against the manufacturer responsible.

In such a case, the loss of data (brought about by a reconfiguration of the particles on the relevant storage medium) is caused by the hardware itself, or by the software installed elsewhere on the hardware. In other words, one part of the computer concerned causes

[22] AUSTLII database, [1998] VICSC 25 (4 March 1998).
[23] The definition is adopted from *Ranicar* v. *Frigmobile Pty. Ltd.* [1983] Tas.R. 113 at p. 166, *per* Green C.J.

https://doi.org/10.1017/S000819739900104X Published online by Cambridge University Press

"damage" to another part of the computer. But "damage" caused to one part of a product by a defect in another part of the same product is not generally regarded as recoverable "damage to property" for the purposes of an action in negligence;[24] rather, any resulting loss is purely economic loss arising from the defective nature of the product.

One may compare the decision of the United States Court of Appeals in *Rockport Pharmacy Inc.* v. *Digital Simplistics Inc.*[25] There, the plaintiff lost certain data which it had installed in a computer system bought from the defendant. The plaintiff, alleging that the loss was caused by problems with the system, argued that, although Missouri law prohibited claims in tort for pure economic loss, the defendant was liable in negligence[26] because the loss of the data constituted damage to property other than the computer system. The court rejected this argument, concluding that the loss of data represented nothing more than "commercial loss for inadequate value and consequential loss of profits".[27]

Such considerations may well be of practical importance in the light of the impending "millennium bug". Victims may be forced to seek tortious remedies against manufacturers, since in many cases an action in contract against the retailer concerned will be difficult if the retailer has ceased trading.

VII. A Pragmatic Approach?

It may not be possible to demonstrate the necessary reconfiguration of particles in all cases of loss of computer data, as the Law Commission pointed out in its Computer Misuse report:

> In *Cox* v. *Riley,* the deleted computer program had been stored on a plastic circuit card, which latter could be and was identified as the tangible property which had been damaged. Several consultees have pointed out that there may be more difficulty in other cases in pointing to a physical medium on which the altered or erased data has been held; indeed it has been suggested to us that in some cases data is stored by means of electrical impulses that are only very notionally attached to any tangible property . . . For the commission of a criminal offence to depend on whether it can be proved that data was damaged or destroyed while it was held on identifiable tangible property not only is

[24] See *Aswan Engineering Establishment Co.* v. *Lupdine Ltd* [1987] 1 All E.R. 135 at pp. 158–159 *per* Nicholls L.J.; Murphy v. *Brentwood District Council* [1991] 1 A.C. 398 at p. 478 *per* Lord Bridge, at p. 484 *per* Lord Oliver; *The Orjula* [1995] 2 Lloyd's Rep. 395, 400–401; *Invercargill City Council* v. *Hamlin* [1996] A.C. 624. Cf. section 5(2) of the Consumer Protection Act 1987.

[25] (1995) 53 F. 3d 195.

[26] The claim in contract was dismissed at first instance.

[27] *Ibid.,* at p. 198.

https://doi.org/10.1017/S000819739900104X Published online by Cambridge University Press

> unduly technical, but also creates an undesirable degree of uncertainty in the operation of the law.[28]

It is submitted that this observation could be applied with equal force in the context of civil liability. One could add that, to allow liability in negligence to turn on such a "technical" distinction would be to lose sight of the policy reasons behind limiting recoverability. To return to the example given by Lord Oliver in *Murphy* v. *Brentwood District Council,*[29] it is a matter of fortuity that the factory owner can point to some physical damage to his property, whereas the restaurateur cannot. In each case, the real loss is pecuniary. As Lord Oliver observed:

> The solution to such borderline cases has so far been achieved pragmatically . . . not by the application of logic but by the perceived necessity as a matter of policy to place some limits—perhaps arbitrary limits—to what would otherwise be an endless, cumulative causative chain bounded only by theoretical foreseeability. I frankly doubt whether, in searching for such limits, the categorisation of the damage as "material", "physical", "pecuniary" or "economic" provides a particularly useful contribution.[30]

Loss of data might be regarded as such a "borderline case". However the data happen to be stored, not only is the "real" loss pecuniary, but the risk of indeterminate liability (about which more is said below) remains the same. There are, therefore, strong arguments in favour of a pragmatic approach which treats the question of liability in negligence consistently, whether or not there is a provable alteration in the configuration of the particles within the computer storage medium. The remainder of this article discusses some of the considerations which may be relevant in determining on which side the line should be drawn.

VIII. The *De Minimis* Argument

It is clear that *de minimis* principles apply to the question of whether there has been damage to property sufficient to found liability in tort. In both *Merlin* v. *British Nuclear Fuels plc*[31] (a case of contamination by radioactive material) and *Hunter* v. *Canary Wharf Ltd.,* counsel for the respective plaintiffs were constrained to accept that their arguments that there was damage to property were subject to *de minimis* principles, and Carnwath J. at first instance in *Blue Circle*

[28] Law Com. No. 186 at para. 2.29.
[29] [1991] 1 A.C. 398 at p. 486.
[30] *Ibid.*
[31] [1990] 2 Q.B. 557.

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Industries plc v. *Ministry of Defence*[32] observed that "[i]n many cases contamination of a very small part of a large estate could be dismissed as *de minimis*".[33]

How, if at all, do *de minimis* principles apply to cases of loss of computer data? It is notable that the "interruption of power supply" cases[34] establish that the loss of electrical power to profit-making equipment does not of itself give rise to liability in negligence. Yet the loss of power must cause *some* change within the profit-making equipment, in that the components of that equipment through which the current passes cease to be electrically motivated. Why does this change not constitute an "alteration in the physical characteristics" of the equipment which, coupled with the resulting loss of utility of the equipment, would (on the *Hunter* test) constitute damage to property so as to give rise to civil liability? The answer must be that the physical change in the components of the equipment is of such a minimal nature that *non curat lex*. Cases of data "stored by means of electrical impulses" should arguably be regarded on the same footing. In cases where the particles within the storage medium are reconfigured, the physical change is hardly more extensive. There is therefore an argument for saying that, in all cases of loss of data, the alteration in the physical characteristics of the computer equipment in question should be disregarded on *de minimis* principles. If so, no damage to property has taken place, and, under the general rule, no liability in negligence arises.

IX. The *Marc Rich* Argument

In *Marc Rich & Co. AG* v. *Bishop Rock Marine Co. Ltd.,*[35] Lord Steyn (with whom the majority in the House of Lords agreed) approved what Saville L.J. had said in the Court of Appeal:

> *Whatever the nature of the harm suffered by the plaintiff*, it is necessary to consider the matter not only by inquiring about foreseeability but also by considering the nature of the relationship between the parties; and to be satisfied that in all the circumstances it is fair, just and reasonable to impose a duty of care.[36]

This principle is relevant only to novel factual situations and is not intended to reopen established categories of liability, for instance

[32] [1997] Env.L.R. 341.
[33] *Ibid.,* at p. 349.
[34] *British Celanese Ltd.* v. *A. H. Hunt (Capacitors) Ltd.* [1969] 2 All E.R. 1252; *S.C.M. (UK) Ltd.* v. *W. J. Whittal & Son Ltd.* [1971] 1 Q.B. 337; *Spartan Steel & Alloys Ltd.* v. *Martin & Co. (Contractors) Ltd.* [1973] Q.B. 27; *Muirhead* v. *Industrial Tank Specialities Ltd.* [1986] Q.B. 507; *Londonwaste Ltd.* v. *Amec Civil Engineering Ltd.* (1997) 53 Con.L.R. 66.
[35] [1996] 1 A.C. 211.
[36] *Ibid.,* at p. 236, approving [1994] 1 W.L.R. 1071 at p. 1077; emphasis supplied.

https://doi.org/10.1017/S000819739900104X Published online by Cambridge University Press

in personal injury cases: see *Perrett* v. *Collins & others.*[37] Cases of loss of data which do not involve personal injury are, however, novel so far as our courts are concerned. In such cases, therefore, even if loss of data were held to amount to damage to property, it is still necessary to consider whether it is fair, just and reasonable to impose a duty of care on the person responsible for the loss. Two considerations may be of particular relevance here.

The first is the law's reluctance to expose a defendant in an action in negligence to "liability in an indeterminate amount for an indeterminate time to an indeterminate class".[38] Examples of such potentially unlimited liability are not hard to imagine in the context of computer data. The power cut caused when a contractor drills through a power cable in the highway is likely to affect a great many computers. Should he be liable to all those who lose data? In an age of computer networking, a carelessly transmitted computer virus may well infect a whole host of computer systems and a vast range of data stored on them. In either case, the consequences for the victim's trade (not to mention the difficulties surrounding proof of the resulting losses) are likely to be a great deal more extensive than, say, the limited effect of causing one batch of molten metal to solidify in a factory owner's furnace. Or consider the consequences for the computer industry if all those affected by the "millennium bug" could sue the manufacturers of the operating software responsible.

The second consideration is that those who own and use computers have alternative means of protecting their interests against the loss of data, whether by way of insurance,[39] back-up facilities or virus protection measures. Two of the "interruption of power supply" cases touch on a similar point. In *S.C.M.* v. *Whittall,*[40] Thesiger J. at first instance remarked obiter (the point was not open to the defendants on the facts of that case) that:

> In the case of interruption of the supply of electric power . . . many people now, owing to cuts in power through industrial action or inadequate production, provide stand-by plant as a precaution and it may be reasonable to contemplate that prudent people would do that in order to meet the position if unexpected cuts that occur without warning would in fact damage their particular machinery.[41]

The point was echoed in *Spartan Steel* v. *Martin*[42] by Lord Denning M.R.:

[37] [1998] 2 Lloyd's Rep. 255.
[38] *Ultramares Corp.* v. *Touche* (1931) 255 N.Y. 170 at p. 179 *per* Cardozo C.J.
[39] Many policies, however, now have exclusions in relation to millenium problems.
[40] [1970] 1 W.L.R. 1017.
[41] *Ibid.*, at p. 1036.
[42] [1973] 1 Q.B. 27.

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> Such a hazard is regarded by most people as a thing they must put up with—without seeking compensation from anyone. Some there are who install a stand-by system. Others seek refuge by taking out an insurance policy against breakdown in the supply. But most people are content to take the risk themselves. When the supply is cut off, they do not go running round to their solicitor. They do not try to find out whether it was anyone's fault. They just put up with it. They try to make up the economic loss by doing more work next day. That is a healthy attitude which the law should encourage.[43]

X. Maliciously Inflicted Loss of Data

The arguments canvassed above militate against the imposition of liability in negligence for the loss of data. But what if such loss is deliberately inflicted, as where a man maliciously infects his business rival's computer system with a virus? Surely, the victim of such conduct should not be denied a civil remedy?

The answer lies, it is submitted, not in the law of negligence, but in the "clearly recognised" but "relatively undeveloped tort"[44] of using unlawful means with the object and effect of causing damage to the economic interests of another. Acts which are prohibited by statute are, it seems, capable of constituting "unlawful means" for the purposes of this tort.[45] If so, then the deliberate transmission of a computer virus (or the deliberate interruption of power to a computer), which would be a criminal offence contrary to section 3 of the Computer Misuse Act 1990, should, if done with the intent to harm another's business interests by sabotaging his data, be sufficient to give rise to liability under this economic tort.

[43] *Ibid.*, at p. 38.
[44] *Barretts & Baird (Wholesale) Ltd.* v. *I.P.C.S.* [1987] I.R.L.R. 3 at pp. 6 and 10, *per* Henry J.
[45] *Associated British Ports* v. *Transport and General Workers' Union* [1989] 1 W.L.R. 939 at pp. 960–961 *per* Butler Sloss L.J., at pp. 965–966 *per* Stuart-Smith L.J.

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