

Liability for Defective Electronic Information

"Sticks and stones may break my bones, but words can never hurt me." This children's refrain may never have been completely true, but it has been definitively disproven now that computer program instructions control the operation of so many machines and devices in our society. Those who develop computer programs know programs often contain defects or bugs, some of which can cause economic or physical harms. Many people in the computing field are rightly concerned about what liability they or their firms might incur if a defect in software they developed injures a user.

The general public seems largely unaware of the risks of defective software. Even the popular press generally subscribes to the myth that if something is computerized, it must be better. Only certain freak software accidents ("Robot Kills Assembly Line Worker") seem to capture the mass media's attention. Within the computing field, Peter Neumann deserves much credit for heightening the field's awareness of the risks of computing through publication of the "RISKS Forum Digest." But even this focuses more on technical risks than legal risks.

It is fair to say that there have been far more injuries from defective software than litigations about defective software. Some lawsuits have been brought, of course, but they have largely been settled out of court, often



on condition that the injured person keep silent about the accident, the lawsuit, and the settlement. No software developer seems to want to be the first to set the precedent by which liability rules will definitively be established for the industry.

The topic of what liability may exist when software is defective is too large to be given a full treatment in one column. But I can summarize in a sentence what the law's likely response would be to a lawsuit involving defective software embedded in machines such as airplanes, X-ray equipment, and the like: The developer is likely to be held liable if defects in the software have caused injury to a consumer's person or property; under some circumstances,

the developer may also be held liable for economic losses (such as lost profits). That is, when an electronic information product behaves like a machine, the law will treat it with the same strict rules it has adopted for dealing with defective machines.

Less clear, however, is what rules will apply when software behaves more like a book than a machine. Courts have treated books differently for liability purposes than they have treated machines. They have been reluctant to impose liability on authors, publishers, and booksellers for defective information in books out of concern about the effect such liability would have on the free exchange of ideas and information. Only if erroneous statements defraud or defame a person or are negligently made by someone who claims to have superior knowledge (such as a professional) has the law imposed liability



Pamela Samuelson

ILLUSTRATION BY JUDITH S. ROSEN

on authors, publishers, or booksellers. Whether the "no liability" rule applicable to print information providers will be extended to electronic information providers remains to be seen. There are some differences between the print world and the electronic world that may put electronic information providers at a greater risk of liability than print information providers.

An Example of Software Behaving Like a Book

To explore the liability questions that may arise when software behaves like a book, I want you to imagine that a fellow named Harry wrote a computer program which he calls "Harry's Medical Home Companion." Harry works as a computer programmer for a manufacturer of medical equipment, but his avocation and deepest interest has been for many years the study of medical treatments for human diseases. He has read all the major medical textbooks used by practitioners today, as well as many books about herbal and other organic treatments used in traditional societies before the modern era.

Harry's goal is to sell his program to ordinary folk so they can readily compare what today's medical professionals and traditional societies would recommend for treatment of specific diseases. Harry believes people should be empowered to engage in more self-treatment for illnesses and that his program will aid this process by giving ordinary people knowledge about this subject. To make the program more user friendly and interesting, Harry has added some multimedia features to it, such as sound effects and computer animations to illustrate the effects of certain treatments on the human body.

Harry cannot, of course, practice medicine because he does not have a license to be a medical doctor. But that does not mean he cannot write a book or a computer program discussing treatments for various diseases, for in our society no one needs a license to be a writer or a programmer. Harry arranges for the program to be published by Lightweight

Software. Lightweight intends to focus its distribution of this product initially to health food stores throughout the country.

If there is a defect in the information contained in "Harry's Medical Home Companion" on which a user relies to his or her detriment, what responsibility will Harry, Lightweight Software, or the health food store at which the user bought the program have if the injured consumer sues? (It is easy for computing professionals to imagine what kinds of errors might creep into an electronic text like Harry's program. A "0.1" might have been accidentally transposed as a "1.0" or a fleck of dust on a printed page might, when processed by an optical character recognition program, cause a "1" to be recognized as a "7" which would cause the quantity of a herb or drug for use to treat a specific disease to be incorrect. Or Harry may have included some illustrations in the program, one of which turned out to be a deadly poisonous mushroom which his artist friend didn't know because she was not a trained botanist.) Interestingly, under the present state of the law, neither Harry nor the publisher nor the health food store may have much to worry about from a liability standpoint.

No Implied Warranty for Information In Books: *Cardozo vs. True*

Injured consumers have been largely unsuccessful when they have sued publishers or booksellers for breach of warranty involving defective information contained in books. Even though judges have regarded books as "goods" to which implied warranties of merchantability apply (see sidebar), they have not treated the information contained in the book as covered by these warranties. Information has instead been treated as an unwarranted part of the goods. The intangible information is treated as though it was a "service" embodied in the goods. The strong warranty rules that apply to goods do not apply to services which, of course, often include the delivery of information to the customer. (See sidebar for a discussion on breach of warranty claims

and the "goods" vs. "services" distinction.) Typical of the case law rejecting warranty liability for defective information is the *Cardozo vs. True* case decided in Florida in 1977.

Cardozo got violently ill after she ate a piece of rare plant while preparing to cook it in accordance with a recipe in a cookbook written by True. To recover the cost of her medical expenses, she sued True and the bookstore where she bought the book. Against the bookstore, Cardozo claimed the bookseller had breached an implied warranty of merchantability (that the product was fit for the ordinary purpose for which it might be used) by failing to warn her the plant was poisonous if eaten raw.

Although finding the bookseller was a "merchant" whose books were "goods" subject to the Uniform Commercial Code's (UCC) implied warranty of merchantability rules, the court decided the implied warranty for the book only applied to its physical characteristics, such as the quality of the binding. The court regarded it as "unthinkable that standards imposed on the quality of goods sold by a merchant would require that merchant, who is a bookseller, to evaluate the thought processes of the many authors and publishers of the hundreds and often thousands of books which the merchant offers for sale." Consequently, the court affirmed dismissal of Cardozo's complaint against the bookseller.

(The issue before the court was only whether the bookseller could be liable for breach of warranty, not whether the author could be. But here is the problem with suing authors for breach of warranty when information in books is defective: The UCC only imposes implied warranty responsibilities on "merchants" of "goods" of the sort the case involves. Publishers and booksellers are "merchants" of books, and books are "goods" within the meaning of the UCC. Authors, however, are not merchants of "goods." They are at most sellers of intangible information that may later be embodied in goods when printed and bound by publishers.)

The *Cardozo* opinion is one of

many in which judges have stated that publishers and booksellers cannot reasonably investigate all the information in the books they sell and should therefore not be subject to warranty liability when information in the work is defective. Judges worry that imposing a responsibility on publishers and bookstores to verify the accuracy of all information contained in the products they sell would unduly restrict the free flow of information and chill expression of ideas. It would thus be unwise as a matter of public policy. In addition, courts have feared a torrent of socially unproductive litigation if readers were able to sue publishers and bookstores whenever their expectations were disappointed after acting on information contained in books.

If the same rule is applied to "Harry's Medical Home Companion" as has been applied to purveyors of printed information, neither Harry, nor Lightweight Software, nor the health food stores that sell the program would have to worry about a lawsuit by a user of the program to recover damages for injuries resulting from defective information in the program on a breach of warranty theory.

No Strict Liability in Tort for Books: *Winter vs. Putnam*

There have been a number of cases in which injured consumers have asserted that publishers of books containing defective information should be held strictly liable in tort for having sold a defective product (see sidebar on strict liability in tort). In general, these cases have not been successful.

Typical of the case law in which courts have rejected strict liability in tort claims made against publishers is *Winter vs. G.P. Putnam's Sons* decided by a federal appellate court in California in 1991. Winter sued Putnam to recover the cost of the liver transplant he had after eating a mushroom erroneously depicted as safe for human ingestion in the *Encyclopedia of Mushrooms* published by Putnam. He claimed the publisher should be held strictly liable in tort or should be found negligent for publishing a book in which a poisonous

mushroom was depicted as safe. The court upheld dismissal of both claims.

On the negligence claim, the court ruled the publisher had no duty to investigate the accuracy of information it published. Without a duty of care owed by the publisher to readers of the books it published, no negligence could be found (see sidebar). Even though authors of books may be more vulnerable to negligence claims than publishers, authors may successfully defend against such a lawsuit by showing they exercised reasonable care (e.g., hiring someone to check all the data for correctness) under the circumstances. Also, unless an author claims to be an expert on the subject, the law may not impose a higher duty on the author than it would impose on the reader (who, after all, must use his or her own judgment before taking an author's advice).

The judges in the *Winter* case decided that the strict liability in tort doctrine should only apply to the manufacture of tangible "products," such as tires and insecticides, for which the doctrine had been created. Expansion of the doctrine to make publishers strictly liable for intangible information contained in books would unduly interfere with the free exchange of ideas and information:

We place a high priority on the unfettered exchange of ideas. We accept the risk that words and ideas have wings that we cannot clip and which carry them we know not where. The threat of liability without fault (financial responsibility for our words and ideas in the absence of fault or special undertaking of responsibility) could seriously inhibit those who wish to share thoughts and theories.

It was not that the judges thought no one should ever be held liable for delivering erroneous information injuring consumers. Professionals, for example, should be held responsible for injuries caused by their delivery of defective information, but not even they should be held strictly liable in tort:

Professional services do not ordinarily lend themselves to "strict liability" because they lack the elements which gave rise to

the doctrine. There is no mass production of goods or a large body of distant consumers whom it would be unfair to require to trace the article they used along the channels of trade to the original manufacturer and there to pinpoint an act of negligence remote from their knowledge. . . . Those who hire "professionals" are not justified in expecting infallibility, but can expect only reasonable care and competence.

If the same rule was applied to "Harry's Medical Home Companion" as was applied in *Winter*, Lightweight Software and the health food store would have nothing to worry about from a liability suit against them by an injured consumer. Under the *Winter* ruling, Harry would not have to worry about a strict liability suit. And he would have a reasonable chance of defending against a negligence lawsuit by showing he had exercised reasonable care in preparing the program. He might also point out that he was not holding himself out as a professional in the medical field so he should not be held to the same standard of care as would be imposed on a licensed doctor.

Strict Liability in Tort for Aeronautical Charts: *Aetna vs. Jeppsen*

There is, however, at least one circumstance in which an information product has been held to be a "product" for strict liability purposes. Ten years before the *Winter vs. Putnam* decision, the same court ruled that aeronautical charts were "products" for strict liability purposes. The case was *Aetna Casualty & Surety Co. vs. Jeppsen & Co.* Aetna persuaded the trial judge that a defect in the design of an aeronautical chart manufactured by Jeppsen had caused an airplane insured by Aetna to crash at the Las Vegas airport. Interestingly, Aetna's claim was not that the chart contained inaccurate information, but that it failed in its design goal of graphically representing this information in a readily understandable way.

Jeppsen's principal argument on appeal was that the chart was not the sort of "product" to which strict liability rules should be applied. In ex-

plaining why it disagreed with Jeppsen on this point, the appellate court emphasized the chart was mass-produced for commercial purposes and those who used the chart relied on Jeppsen's expertise as much as consumers might rely on any other manufacturers' expertise. Aeronautical charts were, said the court, "highly technical tools" resembling compasses which would be treated as

products for strict liability purposes. The court contrasted the charts with "how to do X" books which were "pure thought and expression."

If the same rule was applied to "Harry's Medical Home Companion" as was applied in *Jeppsen*, Lightweight Software and the health food store might well be held strictly liable in tort for physical injuries to a user resulting from a defect in the pro-

gram. Because Harry does not himself sell the program to the public, he might not be held strictly liable in tort even if the publisher and health food store were. The strict liability in tort rules only apply to "sellers" of "products" of the kind that injured the consumer.

More Liability Risks for Electronic Information

The law proceeds by analogy. Judges

Liability Categories

There are three distinct categories the law employs when dealing with claims that defective products have caused physical or economic injury to someone other than their producer: breach of contractual warranties, negligence, and strict liability in tort.

Warranty

A warranty is a promise made by a manufacturer or seller of goods which is considered to be a part of the contract under which the product is sold. Warranties are of two sorts: express and implied.

Express warranties are created by a seller's statements about the product, its characteristics, or its performance which affect the consumer's decision to buy the product. Express warranties may arise from statements made in advertising, on the package in which the product is shipped, or by the salesperson who persuaded the consumer to buy it. Merely recommending purchase of the product or making statements about it that a reasonable consumer would understand to be mere "sales talk" or puffery will not create an express warranty. However, a seller need not intend to expressly warrant a product to do so.

When the seller is a merchant, the law will regard the act of selling the product in the marketplace as giving rise to an implied representation the product is of fair and average quality for goods of that kind and fit for ordinary consumer purposes. This is known as the implied warranty of merchantability. It attaches automatically by law to all sales transactions in jurisdictions that have adopted Article 2 of the Uniform Commercial Code (UCC). (In the U.S., this includes every state but Louisiana.) Implied warranties of fitness for a particular purpose will also automatically arise when a seller knows the purpose for which a customer is acquiring the goods and the customer relies on the seller's judgment that a particular product will fulfill that purpose.

Implied warranties can be disclaimed by a seller. However, the disclaimer must be explicit, unambiguous, conspicuous, and often must be in writing before the disclaimer will be effective (as are the bright orange stickers saying "as is" or "with all faults" appearing on the windows of automobiles in used car lots).

These warranty rules do not apply to all sales transactions, but only to sales of "goods." Sales of "services" are not subject to these rules. The law for services contracts more closely resembles the 19th century when "caveat emptor" (let the buyer beware) was the rule across the board.

The question of whether computer software should be treated as "goods" or "services" has been much discussed in the legal literature and in some case law. Insofar as software is an embedded component of a hardware device, such as an X-ray machine, it will almost certainly be treated as "goods" within the meaning of the UCC. It is somewhat less clear how software will be treated when it merely automates an information process previously done manually (which would then have been described as a "service"). The more customized the software or the more it resembles a book or a pure information service, the less likely it is to be treated as "goods" under the UCC. Even when an electronic information product is treated as "goods" under the UCC, there is some case law suggesting that warranties will not attach to the information in the work if it behaves like a book. (See article's discussion of the *Cardozo vs. True* case.)

Negligence

When a person (or a firm) acts in a manner a reasonable person in the same circumstances would have recognized does not live up to a duty of care owed towards others and thereby causes harm to another, that person can be found liable for negligence. Negligence is generally harder to prove than breach of warranty because negligence requires a showing of fault on the part of the person being sued, whereas warranty liability can exist when a product simply fails to perform as stated or expected. There are also some occasions in which negligence claims fail because the law has not imposed a duty of care on the person being sued.

There is a long history of successful negligence lawsuits against manufacturers of defective products. Sometimes manufacturers have been found to have failed in the duty of care owed to consumers in not having taken sufficient care in the design of the product. Sometimes they have been found not to have provided adequate information about how the product should be used or what dangers might exist if the product is used in a particular way.

There have been far fewer successful lawsuits when claims of negligence are made after someone has provided inadequate or inaccurate information to a customer. It is fairly rare for the law to impose a stringent duty of care on information providers unless the information provider holds himself or herself out in the marketplace as having substantially superior knowledge, skill, or expertise. Professional information providers, such as doctors or lawyers, can be held liable for malpractice, for example, when they have conveyed inaccurate information (or otherwise provided a

faced with deciding a case brought by an injured consumer against a seller of a multimedia program containing defective information on medical treatments will decide what liability rule to apply by asking him- or herself whether to treat the case like *Winter* or like *Jeppsen*. I can think of a number of reasons why electronic information providers may be more at risk from liability suits than print

information providers.

For one thing, electronic information products have a more technological character than books. Even when these products behave mainly like books, they also behave like machines. And there may be no simple way to separate their book-like and machine-like characteristics. In addition, electronic information products are often "engineered" similar to

other manufactured products. They are certainly more engineered than books.

Given the emphasis the field places on the technological character of electronic information products, the field should not be surprised if the law takes it seriously by treating its products the way it treats other technological products. One of these days, for example, an electronic in-

negligent service) and a less knowledgeable consumer relied on it to his or her detriment. It is generally quite difficult to win a malpractice action against a professional for delivering defective information, for one will need to show the provider was acting incompetently in delivering the defective information. There is often a difference of opinion among professionals in a field about what is or is not appropriate information to convey in particular circumstances. In addition, professionals generally do not like to call someone in their field an incompetent practitioner in a public forum such as a court and usually one will need an expert in the field to testify to a professional's incompetence.

I am aware that many people who develop software have ambivalent attitudes about whether they should be considered "professionals" in the sense in which this term is used in other fields. While I will not reignite the tired debate over whether software developers should be "licensed," as most other professionals are, it is an issue which may need to be revisited as greater responsibilities (i.e., duties of care) are imposed by law on publishers of electronic information.

Strict Liability in Tort

Manufacturers and sellers of defective products are held strictly liable, (that is, liable without fault) in tort (that is, independent of duties imposed by contract) for physical harms to person or property caused by the defect. This liability arises notwithstanding that "the seller has exercised all possible care in the preparation and sale of the product." These strict liability rules do not apply to all commercial transactions. Along similar lines to UCC warranty law, strict liability in tort exists only for "products" and not for "services."

When computer programs are embedded components of airplanes, X-ray equipment, and the like, they will almost certainly be treated as "products" for strict liability purposes. (The *Winter* case discussed in this article is such an example.) While some tricky causation questions may arise in product liability cases involving software, strict liability will be imposed on a software developer if there is a defect resulting in an injury to the consumer (and a defect will generally be easy to show if a consumer or user has been injured), almost as surely as night follows day.

But there are some computer programs which may not be treated as "products" for strict liability purposes. When programs behave more like a book than a machine or when they otherwise resemble an information service, strict liability rules may not be imposed on them. As this article explains, courts have decided that books should not be treated as "products" for strict liability purposes and that

publishers of books should not be held strictly liable in tort when their products contain defective information.

Remedies

When a seller has breached implied or express warranties in connection with the sale of goods, the buyer can sue the seller to recover money damages for certain kinds of injuries arising from the breach. If, for example, a consumer is physically injured by a defective lawnmower and has to pay \$10,000 in medical expenses, that \$10,000 may be recovered from the manufacturer or the firm from which the consumer bought the lawnmower. If the lawnmower must be repaired or replaced, the consumer can generally recover in contract for these damages as well.

Contract damages, however, tend to be more limited than tort damages. Monetary damages to compensate an injured person for pain and suffering, for example, are recoverable in tort actions (such as negligence and strict liability) but may not be in contract actions. Some economic losses are also not recoverable in contract cases. Unless, for example, the manufacturer (or other seller) of a lawnmower had reason to know at the time of the sale that a particular buyer of the lawnmower needed it to operate a lawn-mowing service, the buyer would not be able to recover lost profits on his lawn-mowing business during the time the business was out of operation after the defect in it evidenced itself.

In negligence actions, successful plaintiffs can generally recover damages for a broad range of injuries flowing from the negligent act, including pain and suffering and some economic losses. In strict liability actions, only damages arising from physical harms to persons or property are generally recoverable.

One other respect in which tort and contract actions tend to differ is in the kinds of persons who can bring claims for what kinds of damages. Contract law tends (except where physical injury to persons or property is involved) to limit the class of possible plaintiffs to those who bought the goods and are thus the beneficiaries of the warranty promises that are part of the contract. Tort law is more generous about who can bring a lawsuit (e.g., if the buyer of the product gives it to another person as a gift and that person is harmed, he or she can sue in tort whereas that person might not be able to sue in contract).

Multiple volumes of thick treatises have been written to explain all the nuances of contract and tort liability arising from defective products. This brief synopsis is necessarily incomplete but will, I hope, give those in the computing field some grounding in the basics of these legal categories.

formation provider's assertion that its product is "user friendly" may be treated not as mere marketing puffery, but as creating an express warranty, leading reasonable consumers to expect that "usability engineering" or "hypertext engineering" techniques or user interface standards or guidelines were used to develop it.

As the electronic information industry moves from handcrafted demonstration projects to mass-marketed products distributed to distant and anonymous customers, the argument for extending liability when defects in these information products cause injury to consumers grows stronger. Consumers of electronic information products and services provided by a distant vendor will probably rely heavily on the expertise of the electronic information provider. The more naive among these customers may well think (however erroneously) that because the information has been computerized, it is more trustworthy than if delivered orally or found in print. In addition, electronic information providers are likely to be in a better position than consumers to control the quality of the information delivered and to insure against liability. This is especially true when firms (and not just individual programmers like Harry) begin to develop electronic information products for the mass market.

Another reason providers of electronic information may in time have greater responsibilities than book publishers is that electronic information products are less readily inspectable by ordinary consumers than books. With books, a consumer can go to a bookstore and browse through the whole thing before buying it. The consumer can, not only examine the binding, but also skim the contents to see if it meets his or her needs. With electronic information products, nothing about the product (except advertising hype) can generally be seen before the purchasing decision is made. One cannot even examine the disk to see if it is scratched or warped. Once out of the box, the disk, of course, reveals nothing about its contents which can only be comprehended through extensive

use of the software. With on-line services for which the consumer is charged by connect-time, the contents are similarly invisible until a charge is incurred for usage.

When so little of value in an electronic information product lies in its physical characteristics (such as the disk on which software may be borne), it is difficult to believe courts will not in time extend liability to the contents of such products.

In addition, it is worth noting books merely instruct a reader how to perform a task whereas software does the task. By making the reader an intermediary between the instructions and their execution, a book keeps the reader in the judgment loop which means he or she bears some responsibility for how well or poorly the task is done. The reader also has to exercise judgment about whether it is really a good idea to follow a particular author's advice. By contrast, electronic information products only leave the user in the judgment loop when they have been explicitly designed to do so. Thus, more of the control over and responsibility for proper execution of the task will lie with the electronic publisher. This too may contribute to an extension of liability to providers of electronic information. Moreover, some have argued the liability rules for print publishers should be changed [1], and if they are, electronic publishers would be affected as well.

One unexplored bulwark against liability for electronic information providers is the First Amendment. What has protected print publishers from liability for dissemination of defective information has largely been concerns about the effect liability rules would have on the free exchange of ideas and information. At the moment, many commercial electronic information providers may think the work of groups like the Electronic Frontier Foundation which seek to define civil rights in Cyberspace are somewhat remote from their core concerns. But when they realize First Amendment concerns may provide the best chance electronic information providers have to protect against liability for

defective information, they may find more reason to support the work of such organizations.

Electronic information providers should, of course, be thinking not only about what kinds of First Amendment rights they may have, but also about what kinds of First Amendment responsibilities they may have. In law, rights and responsibilities tend to be intertwined. One generally does not get rights without some responsibilities as well. As broadcasters and cable TV firms have discovered to their dismay, print publishers often have greater First Amendment rights than other media types do, in part because of the greater historical role of print publishers in promoting free speech interests. Electronic information providers may want to begin thinking more about First Amendment issues and where they stand (or want to stand) in relation to print publishers and other media types.

Another set of questions people in the computing field should ask themselves is what liability standards they think ought to apply to their field. Should injured consumers be able to recover damages for defective delivery of electronic information or not, and why or why not? In addition, the field should be asking what steps can be taken to self-regulate to promote development of high-quality software production to forestall or at least limit the degree to which regulation will come about through lawsuits about defective electronic information products. Liability will be with the field for a long time. It is time to stop worrying about the problem and start addressing it. **□**

References

1. Arnold, R. The persistence of caveat emptor: Publisher immunity from liability for inaccurate factual information. *U. Pitt. Law Rev.* 53 (Spring 1992), 777.

Pamela Samuelson is a professor of law at the University of Pittsburgh School of Law.