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Computer Malpractice: Are Computer Manufacturers, Service Burreaus, and Programmers Really the Professionals They Claim to Be?

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COMPUTER MALPRACTICE: ARE COMPUTER MANUFACTURERS, SERVICE BUREAUS, AND PROGRAMMERS REALLY THE PROFESSIONALS THEY CLAIM TO BE?

I. INTRODUCTION

A businessman, faced with the pleasant prospect of handling a successful and expanding wholesale supply house, decides that the time is right to install a sophisticated computer system to handle more efficiently his inventory, billing, and general accounting operations. Since he is not knowledgeable about current computer technology, he contracts with an independent consulting firm specializing in data processing and program design.[1] After determining that a computer system is feasible for the businessman's operations, the consultant obtains the appropriate components from a manufacturer, supervises their installation, and designs the operating program to serve the client's business needs.

Several months after the computer is placed "on line," the businessman begins receiving letters from disgruntled buyers about improper shipments and from impatient creditors concerning unpaid bills. Further, improper inventory accounts have resulted in the understocking of some items and the overstocking of others. The problem is finally traced to the computer "software" system, which is found to be too small to handle the desired business functions.

In a second case, an independent insurance agent

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1. These firms are known as "computer service bureaus" and have been defined as firms which "sell data processing services to businesses generally." Ass'n of Data Processing Serv. Org., Inc. v. Camp, 379 U.S. 150, 151 (1970). *See* J.C. Nahil, *Small Business Computers: A Beginner's Guide*, COMPUTERS AND PEOPLE, Feb. 1978, at 7:

> These firms are specialists who procure the best computer equipment they can find, combine it with application programs that you need for your business, then install the system and handle any related computer chores you wish. Independent computer suppliers are more than just vendors. They're a management resource, much like your CPA firm, law firm, or investment counselor, helping you with your information management needs.

See generally Jordon, *The Tortious Computer—When Does EDP Become Errant Data Processing*, [1972-79 Transfer Binder] 4 COMPUTER L. SERV. § 5-1, art. 2 (1972).

searches for a solution to his data-processing problems. The insurance agent contracts with a computer manufacturer to purchase a computer. The manufacturer also designs and sells computer systems, programming, and services. After installation of the system, the manufacturer operates the system while training the insurance agent's personnel. Several months later, the computer manufacturer departs, having completed the training. It later becomes apparent that the system is failing to perform as expected, and in fact commits errors with such frequency that the insurance agent finds himself embroiled in litigation and faced with a sharp decline in profits. The errors are ultimately traced to a negligently designed computer software system lacking sufficient controls to deal with a program malfunction.

This comment examines whether consumers of computer services like those in the above illustrations have a cause of action in tort against a computer manufacturer or service bureau for computer malpractice. This cause of action is based upon the reliance which the consumer must place on the expert judgment and experience of those who sell and service computers. The comment investigates the need for malpractice protection. The author concludes that such protection is needed and that plaintiffs should have a cause of action in tort.

II. THE PUBLIC NEED FOR COMPUTER MALPRACTICE PROTECTION

A. *Growth of the Industry*

The evolution and phenomenal growth of the computer industry in the last forty years[2] has been one of unbridled expansion.[3] Commentators have remarked that the United

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2. In 1942, the Atarrosoff-Berry computer, which is generally acknowledged to be the first digital computer, went into operation for the U.S. Government. M. HOLDIEN, COMPUTERS AND THEIR SOCIETAL IMPACT 38-40 (1977). General Electric Company made the first commercial use of a computer in 1954. W. FUORI, INTRODUCTION TO THE COMPUTER 42 (2d ed. 1977).

3. J. Paul Lyet, chairman and chief officer of UNIVAC, has drawn the analogy that if aviation had grown with the speed of data processing, less than a year would have separated the Wright brothers' flight at Kitty Hawk from Neil Armstrong's walk on the moon. *Dynamic Growth Seen Continuing*, COMPUTERWORLD, June 14, 1976, at 1, col. 1.

States had quietly entered a "second Industrial Revolution,"[4] an "information age"[5] based on data processing and computer systems.

Today, there are more than one million computers in use in the United States.[6] The commercial potential of early computers was limited by their large size and operating expense.[7] The growth in commercial use of computers is due, in part, to a series of technological advancements which have greatly increased the machines' capabilities while reducing their overall size. A computer which in 1956 needed 10,000 cubic feet of floor space, today requires only ten cubic feet for the same computing operations, and theoretically can be further reduced to the size of a typewriter.[8]

The computer's speed is also vastly improved. Whereas the early computers performed 300 instructions per second, today's large computers are capable of executing 100 million instructions per second.[9] Perhaps most importantly, comput-

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4. "Computer technology is the cornerstone of the Second Industrial Revolution." Lawlor, *What Computers Can Do: Analysis and Prediction of Judicial Decisions,* 49 A.B.A.J. 337 (1963).

5. French, *White House Advisors Urge National Information Policy, Cite Merging Technologies,* COMPUTERWORLD, Jan. 31, 1977, at 1, col. 3. *See also* Davis, *Evolution of Computers,* SCIENCE, March 18, 1978, at 1099. The increased use of computers is discussed in Bigelow, *The Lawyer's Role in the Computer Age,* [1972-79 Transfer Binder] COMPUTER L. SERV. § 1.1, art. 1, at 1-4. *See generally* Muller, *Personal Computers in Home and Business Applications,* COMPUTERS AND PEOPLE, Dec. 1977, at 11; Spangle, *Minicomputers: Their Expanding Role,* COMPUTERS AND PEOPLE, Dec. 1976, at 16.

6. Three-fourths of the total number of computers are "minicomputers" which cost less than $50,000. Smith, *A Survey of Current Legal Issues Arising from Contracts for Computer Goods and Services,* COMPUTER L. J. 475, 475 n.1 (1979).

There has been especially rapid growth in the installation of small computer systems; 350,000 were installed in 1978 alone. McCartney, *Small Business Systems: They're Everywhere,* DATAMATION, Oct. 1978, at 91.

7. The first models were made with thousands of vacuum tubes and demanded a substantial amount of power for their operation. Some, such as the ENIAC, weighed 30 tons and required 1,500 square feet of floor space. Originally only the government and some of the larger industrial corporations could afford to purchase them. D. SANDERS, COMPUTERS IN SOCIETY 8 (1973). *See generally* Rosen, *Electronic Computers: A Historical Survey,* 1969 COMPUTING SURVEYS 7; E. TOMESKI, THE COMPUTER REVOLUTION 17-18 (1970).

8. F. GRUENBERGER, COMPUTERS AND THE SOCIAL ENVIRONMENT 10 (1975). For a brief history of the three stages of computer development (the vacuum stage, the transistor stage, and the integrated circuit stage), see Chandler, *Computer Transactions: Potential Liability of Computer Users and Vendors,* 3 WASH. U. L.Q. 405, 408-11 (1977).

9. Medium to large computers are capable of one million executions per second and the microcomputer can handle 250,000 executions per second. *See* F. GRUEN-

ing costs have dropped precipitously, being cut roughly in half
every two years.[10] It has been estimated that one-third to one-
half of the gross national product of the United States is de-
rived from the production and distribution of information and
knowledge.[11] Computers have become big business in the
United States, and are rapidly becoming *the* business of the
nation. Over $50 billion was spent on data-processing goods
and services in 1979.[12] In 1980 the top one hundred U.S.
based data-processing companies experienced a 20.4% growth
rate in revenues to $55.6 billion.[13]   .

Nowhere has the evidence of this growth rate been more
prevalent than in the field of "microcomputers," small com-
puter systems designed especially to handle the needs of
smaller businesses. Because of their low cost ($2,000 to
$10,000),[14] these small business systems have opened the door
to data-processing for businesses previously priced out of the
computer market, creating a tremendous demand.[15] Increasing
numbers of suppliers of small business systems have entered

BERGER, *supra* note 8, at 7. This increase in speed has been of such magnitude that
the fundamental units of measurement have had to change. First generation com-
puters were measured in milliseconds (thousandths of a second), second generation
computers dealt with microseconds (millionths of a second), while third and fourth
generation computers are measured in nanoseconds (billionths of a second). It is pre-
dicted that computers soon will operate at the speed of electricity (one foot per na-
nosecond). *See* D. SANDERS, *supra* note 7, at 59-60. Storage capacity (memory) has
also grown prodigiously from 2,000 words to over one million, and the capacity exists
to extend that amount as high as 500 billion to a trillion alphanumerical characters in
one computer. *See* D. SANDERS, *supra* note 7, at 60-61.

10. "In the late 1940's, one could purchase 600,000 executed instructions for
three dollars, whereas today one can purchase ten million instructions for a dollar."
Chandler, *supra* note 8, at 405, 410.

The trend shows no signs of abating. By the year 1984, it should be possible to
purchase 50 to 100 billion instructions for one dollar, the cost further decreasing to
two billion per penny by the year 2000. *See* F. GRUENBERGER, *supra* note 8, at 7.

11. French, *White House Advisors Urge National Information Policy, Cite
Merging Technologies*, COMPUTERWORLD, Jan. 31, 1977, at 1, col. 3. (Report to the
President by the Domestic Council Committee on the Right to Privacy addressing in
part the effects of modern computer technology on U.S. business).

12. *See* FUORI, *supra* note 2, at 42; Davis, *Evolution of Computers*, SCIENCE,
March 18, 1978, at 1096-99.

13. Wright, *The Datamation 100: The Top 100 U.S. Companies in the DP In-
dustry*, DATAMATION, June 1981, at 91 [hereinafter cited as Wright].

14. Weisbecker, *The Microcomputer Industry: An Introduction*, COMPUTERS
AND PEOPLE, May-June 1980, at 20, 21.

15. In Wright, *supra* note 13, the author states that "[M]icrocomputer system
revenues (defined as fully configured systems selling for under $15,000) increased
85% in 1980, while word processing systems increased 64% to $881 million and min-
icomputers increased 28% to $8.8 billion." Wright, *supra* note 13, at 93.

the market,[16] "and the boom is really just getting under way."[17]

Use of service bureaus has also risen prodigiously. In 1976 there were more than 5,000 companies which generated revenues of $5.9 billion.[18]

B. *Lack of Public Knowledge*

Public knowledge of computers has lagged far behind the new advances in the computer field, creating what one commentator described as "the mystique of the computer."[19] Even though computers touch all our lives,[20] they remain "a mystery to the public, who may fail to distinguish between incompetence and competence, between honorable and dishonorable programmers, or to recognize fraud."[21] This lack of familiarity with computer theory and operation, despite the rapidly increasing integration of computers into the mainstream of commercial and private life, explains why society has become so totally dependent upon the computer.[22]

There are many problems confronting the operator of a small business who seeks to improve his profit margin by installing a computer. Frequently, not only does he not know realistically what to expect from the system, usually he does not even know how to ask for what he wants. From the point of view of those who sell and service the computer, the client's inability to state his needs is one of the most frequent causes of disagreement between customer and computer merchant.[23]

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16. For example, in 1977, there were 88 suppliers offering a total of 249 different systems. By 1978, it was estimated that there were 750 such suppliers offering a choice of over 2,000 different systems, an 800% increase. Richman, *Firms of All Sizes Convert to Mini's*, DATAMATION, Oct. 1978, at 94.

17. McCartney, *supra* note 6, at 91. The author also indicates that pharmacies and insurance brokers are probable future purchasers of small computer systems.

18. Lautenberg, *Computing Services: Industry or Coincidence?*, COMPUTERS AND PEOPLE, Nov.-Dec. 1978, at 8.

19. Bigelow, *Contract Caveats*, DATAMATION, Sept. 15, 1970, at 41. *Cf.* Brown, *Programming: The Quiet Evolution*, DATAMATION, March 1979, at 147-49.

20. In the 1970's, it was estimated that one out of every six people was affected daily by the computer. By 1984, that figure should rise to one out of every two. Statland, *Computers—Their Impact on People's Lives in the 1980's*, COMPUTERS AND PEOPLE, Nov.-Dec. 1979, at 17.

21. O'Connor, *Computer Professionals: The Need for State Licensing*, 18 JURIMETRICS J. 256, 258 (1978).

22. Palmer, *Programming: The Profession That Isn't*, DATAMATION, April 1975, at 171. *See generally* Smith, *supra* note 6, at 477-78.

23. Kirshner, *DP Contract Litigation Viewed as Booming Area*, COM-

However, what the data programmer sees as a failure to communicate, the client normally views as necessary reliance upon the skill and judgment of the "computer expert."

Courts often have noted the extremely complex nature of the computer industry.[24] It also has been the object of criticism by many commentators.[25] It therefore is not surprising that the purchasers of computer systems and services feel the need to place themselves in the seemingly capable hands of the systems and program designer. The consultants, however, do not seem ready to assume the responsibility placed on them. Not only does the demand for persons who are knowledgeable about computers far exceed the supply,[26] but there are few industry-wide standards measuring job performance. In addition, no tests have been developed to measure the individual performance of computer programmers.[27] While programmers are capable of directing the operations of the actual computer, they have been criticized as having little understanding of how to utilize computers in a profitable business, or how to make the theoretical possibilities of the computer applicable to solving a client's actual needs.[28]

The difficulties caused by this frequent gap between expert and layman should be borne by those with a knowledge of computers—those persons involved with computer sales and service who represent themselves as knowledgeable in the

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PUTERWORLD, Nov. 6, 1978, at 9, col. 1.

24. *See* Strand Eng'g Co. v. Librascope, Inc., 197 F. Supp. 743, 748 (E.D. Mich. 1961). *Cf.* Triangle Underwriters, Inc. v. Honeywell, Inc., 604 F.2d 737 (2d. Cir. 1979); Clements Auto Co. v. Serv. Bureau Corp., 444 F.2d 169 (8th Cir. 1971); Chatlos Sys., Inc. v. Nat'l Cash Register Corp., 479 F. Supp. 738 (D.N.J. 1979). *See also* text accompanying notes 86-95 *infra*.

25. *See generally* Chandler, *supra* note 8, at 405; O'Connor, *supra* note 21, at 256; Jordon, *supra* note 1; Smith, *supra* note 6, at 475; Comment, *Imposing Liability on Data Processing Services—Should California Choose Fraud or Warranty?*, 13 SANTA CLARA LAWYER 140 (1972).

26.
> Employment of programmers and systems analysts, negligible in 1960, now totals nearly half a million workers. Despite this growth, the demand still exceeds the supply; as the number of dp installations increases, the number of job openings for programmers and systems analysts will grow much faster than the rest of the labor force. (U.S. Bureau of Census, 1980).

Hiltz, *The Growing DP Job Market*, DATAMATION, April 1981, at 219.

27. *See* Editorial, *Too Young*, COMPUTERWORLD, March 26, 1975, at 12, col. 1; Chandler, *supra* note 8, at 438.

28. *See* Statland, *supra* note 20, at 8.

field. As the two hypotheticals at the beginning of this comment illustrate, there is a strong need to protect the public through regulation of computer professionals.

Licensing of computer programmers has been mentioned with increasing frequency, primarily by those outside the computer industry.[29] One critic has commented that licensing of computer programmers is needed in areas of "critical concern," such as credit information control, hospital apparatus regulation, and mass transit regulation.[30]

Since the computer industry is so new and the demand for data programmers so great, there has been little impetus to restrict the influx of data programmers into the field. As a result, licenses, such as the Certificate in Data Processing (CDP) as proposed by the Institute for the Certification of Computer Professionals (ICCP), have been ignored. The CDP title has little bearing on a person's chances for employment since job competition is virtually nonexistent and the CDP license elicits little respect in the industry.[31] Outside the industry, the public already views computer personnel with respect, making a license unnecessary in this regard.[32]

No state has enacted legislation regulating the conduct of computer industry professionals or requiring that they be licensed.[33] Though such public protection methods are ultimately inevitable as the industry begins to slow its growth somewhat and job competition increases,[34] other ways must be found to insulate the public from over-reliance upon the com-

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29. *See generally* Note, *A Model Professional and Occupational Licensing Act,* 5 HARV. JON. LEGIS. 67 (1967); Hoffman, Scott Springer, *A Model Health Profession Act and State Regulatory Policy,* 28 AD. L. REV. 167 (1976); Raskin, *Do Special Interests Control the Licensing?,* N.Y. Times, Feb. 20, 1977, at 6E, col. 3; Arnst, *SCDP Licensing Proposal Splits DP Community in 1975,* COMPUTERWORLD, Dec. 31, 1975 and Jan. 5, 1976, at 9, col. 1; O'Connor *supra* note 21, at 261.

30. O'Connor, *supra* note 21, at 256. The author argues for mandatory licensing of those data processors who control systems related to other "critical areas" such as air traffic control systems, criminal information systems, systems which directly affect financial or economic status, systems which catalogue substantial amounts of information regarding individuals, and systems which analyze data regarding individuals or their characteristics, such as personal credit reporting services and educational testing services. *Id.* at 263-67.

31. *DP Too Young for Licensing, ICCP Officer Says,* COMPUTERWORLD, March 5, 1975, at 1, col. 2.

32. *See* O'Connor, *supra* note 21, at 263.

33. Introduction, *Computer Personnel Regulation and Licensing Information,* [1972-1979 Transfer Binder] 5 COMPUTER L. SERV. § 7.3 at 1 (1978).

34. *See* O'Connor, *supra* note 21, at 256.

puter professionals.

C. *Inadequacy of Present Remedies*

1. *Contract*

The client of a systems designer or the purchaser of a computer system who relies upon contractual remedies to redress his grievances may have less protection than he expected. A manufacturer may disclaim most, if not all, express or implied warranties in the sale of computers.[35] The Uniform Commercial Code permits warranty disclaimers provided they mention "merchantability" and are conspicuous if in writing.[36] Such broad disclaimer clauses are common in the computer industry.[37] These contracts frequently contain merger clauses which state that the written contract is the parties' final "complete and exclusive agreement."[38]

A computer manufacturer or service bureau can further restrict a consumer's remedies by contractually limiting the remedies in the sales agreement.[39] Courts have been tolerant of virtually any such contractual limitations that have not been patently unconscionable or contracts of adhesion.[40] For example, the contractual limitations on the statute of limitations in a services contract have been held valid when restricted to as short a time as one year.[41] Given the industry-wide acceptance of such contracts in the computer field, some

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35. Spanner and Mark, *Sharpening Your Clause,* DATAMATION, Aug. 1980, at 114, 115.

36. U.C.C. § 2-316 (1977).

37. *See* Spanner and Mark, *supra* note 35, at 116.

38. *Id.* at 115. *See* Int'l Business Mach. Corp. v. Catamore Enter., 548 F.2d 1065 (1st Cir. 1976), and *infra* note 41.

39. U.C.C. § 2-719 (1977).

40. *See* Spanner and Mark, *supra* note 35, at 115. *But see* U.C.C. § 2-719(2) (1977).

41. *See* Int'l Business Mach. Corp. v. Catamore Enter., 548 F.2d 1065 (1st Cir. 1976) for a typical agreement in this area. There, the plaintiff, a wholesale distributor of religious jewelry, was barred from bringing suit for breach of contract, negligence, fraud, and misrepresentation because of its "Agreement for IBM Systems Engineering Services" with IBM. The contract provided that it was "the complete and exclusive statement of the agreement between the parties, which supersedes all proposals oral or written and all other communications between the parties," and that IBM's liability for damages would "not exceed the total amount paid for services," that this was the buyer's "exclusive remedy," that IBM would not be liable for any lost profits or other consequential damages, and that no action "arising out of the services under this Agreement may be brought by either party more than one year after the cause of action has accrued." *Id.* at 1070.

other form of public protection is needed.

2. *Tort*

The consumer who wishes to bring an action in tort for negligence may encounter difficulties with the statute of limitations. Generally, the statute does not begin to run until some damage has occurred.[42] California has adopted a similar rule to the effect that the statute begins to run at the occurrence of the last essential element of the cause of action.[43] In the case of computer negligence, this last element will likely be the installation of either the improper system or the improperly designed program. California has a two year statute of limitations for such actions[44] which applies whether the plaintiff elects a tort action for negligent injury to intangibles, or a contract action for breach of an implied duty of care.[45]

The rule that the statute begins to run at the time of the negligent act is disadvantageous to the potential plaintiff for two reasons. First, it may sometimes take the computer owner-user more than two years to discover that the system as designed for his needs is inadequate. Second, it probably will take more than two years from the time of the negligent act for the computer-owner to complain to the manufacturer or service bureau and have them attempt to rectify the problem.[46]

Another problem facing the potential tort plaintiff is proving that the defendant breached a duty of care owed the

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42. W. PROSSER, LAW OF TORTS § 30, at 144 (4th ed. 1971).

43. Neel v. Magana, Olney, Levy, Cathcart and Gelfand, 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837 (1971); Howe v. Pioneer Mfg. Co., 262 Cal. App. 2d 330, 340, 68 Cal. Rptr. 617 (1968). For a discussion of various exceptions to this rule, see Warrington v. Charles Pfizer and Co., 274 Cal. App. 2d 564, 567-80, 80 Cal. Rptr. 130 (1969).

44. CAL. CIV. PROC. CODE § 339(1) (West 1982), provides in part for a two year limitation upon "[A]n action upon a contract, *obligation or liability* not founded upon an instrument of writing . . .." (Emphasis added). This code section has been deemed a "catch-all" for unusual tort actions not otherwise provided for. 2B. WITKIN, CALIFORNIA PROCEDURE 1172 (2d ed. 1970).

45. Neel v. Magana, et al., 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837; Alter v. Michael, 64 Cal. 2d 480, 413 P.2d 153, 50 Cal. Rptr. 553 (1966); Moonie v. Lynch, 256 Cal. App. 2d 361, 64 Cal. Rptr. 55 (1967).

46. In *Triangle*, a contract was entered into on December 5, 1970, and the system was installed in January, 1971. Though the system never worked properly, plaintiff did not file its initial complaint until August 14, 1975. In Int'l Business Mach. v. Catamore Enter., 548 F.2d 1065, a "Machine Service Agreement" was signed in September of 1968. After much disagreement between the parties over the insufficiency of the system, suit was not filed until October of 1972. *See* text accompanying notes 26-28 *supra* and 98-117 *infra*.

plaintiff. The general standard of care is usually stated as that of the "reasonable man of ordinary prudence."[47] However, this standard is very difficult to establish since the industry has so few standards by which to measure performance.[48] One possible remedy is to hold those who service and sell computer goods and services to the elevated responsibility of the professional and, as such, liable for malpractice.

III. ESTABLISHING THE TORT

A. *Case Precedence*

The courts have yet to fully accept the tort of computer malpractice in relation to computer merchants or consultants. No court has expressly held that a plaintiff may bring an action for computer malpractice. Only a few have even discussed it.

The computer malpractice claim was given short shrift by the U.S. District Court for New Jersey in *Chatlos Systems v. National Cash Register Corp.*[49] Plaintiff, Chatlos, was involved in the design and manufacture of cable pressurization equipment for the telecommunications industry. Defendant, National Cash Register (NCR), designed, manufactured and sold computer systems, programs and services. In July of 1974, Chatlos signed a Systems Services Agreement for the sale of an NCR computer system to be operational within six months.[50] The system had problems from the time it was installed; attempts were made to correct the system until September of 1976, when relations between the parties ceased.

The court dismissed Chatlos' computer malpractice claim in the first footnote of the opinion. Answering plaintiff's claim that those who sell and service computer systems have an elevated responsibility, the court found that the technical complexity and relative importance to the business community of selling and servicing computer systems was insufficient justifi-

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47. *See* W. PROSSER, *supra* note 42, § 32, at 150.

48. *See supra* text accompanying notes 26-28; and *infra* text accompanying notes 98-117.

49. 479 F. Supp. 738 (D. N.J. 1979).

50. *Id.* Chatlos was shortly thereafter approached by Burroughs Corporation, a major competitor of NCR, who told Chatlos of a more advanced system than the one NCR had offered. When Chatlos brought this conversation to the attention of NCR, a substitution was made, and a more advanced disc system replaced the old magnetic ledger system in the agreement. *Id.*

cation to impose greater potential liability.[51] The "invitation to create a new tort," was also rejected due to the absence of any "sound precedential authority."[52] Despite this scant treatment of the issue, the court did not seem adverse to the notion of computer malpractice per se, and perhaps would have confronted the question directly had the case not been decided on contractual grounds.[53]

The U.S. Court of Appeals for the Second Circuit directly addressed the issue of the professional liability of computer programmers in *Triangle Underwriters, Inc. v. Honeywell, Inc.*[54] and denied a malpractice claim. Plaintiff, Triangle Underwriters, was a general agent for many insurance companies,[55] and had used computers to process the large quantities of paper involved in the business. In April of 1970, Triangle signed a lease agreement with Honeywell for a new system to replace its IBM system, and then elected to purchase the hardware that December.[56] The new system was installed[57] but it was immediately apparent that the system was not working properly. Although Honeywell's personnel continued to work on the system until sometime in 1972, Triangle's computer system never functioned properly. Triangle filed suit in August, 1975, seeking damages for fraud, breach of contract and warranties, and negligence. On appeal the court held that all counts other than those for fraud were barred by the New York statutes of limitation.[58]

The court viewed the contract as principally for the sale of goods, and saw no justification for the imposition of profes-

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51. *Id.* at 740-41 n.1.

52. *Id.*

53. Chatlos Systems was awarded $120,710.92 by the federal district court for direct breach of warranties and consequential damages. As of this writing, the case is still in litigation over the question of damages.

54. 604 F.2d 737.

55. *Id.* at 739. Triangle's duties included the placement of casualty insurance from brokers, and assuming the responsibility of binding the carriers, remitting the premiums to the carriers, keeping records of the payments, extensions, cancellations, credits, remitting commissions to brokers, issuing policies, and updating all records.

56. *Id.* at 740. Under the agreement, Honeywell employees were to install the system and train Triangle employees in its use, so they could eventually take over complete operation of the system.

57. As Robert Weinstein, Triangle's president, described the occasion, "[A] baby was being born, and I was very concerned with the success of that baby and how healthy it was going to be." *Id.* at 740.

58. *Id.* at 741.

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sional responsibilities on an equipment merchant.[59] As part of its cause of action Triangle sought to use the "continuous treatment" concept,[60] usually applicable only to physicians and patients, to extend the statute of limitations. Under the continuous treatment doctrine the statute of limitations does not begin to run until the physician-patient relationship has ended, rather than at the last date of the malpractice. The court acknowledged that New York courts had extended that doctrine to other professionals such as attorneys,[61] architects,[62] and accountants,[63] but stressed that such extensions had been based upon the special relationship of trust and reliance that existed between the lay client and the professional.[64] The court dismissed the plaintiff's professional liability claim, finding that there was "wholly lacking in the case at bar that professional relationship upon which application of the doctrine, in any context, depends."[65] The court noted that although Triangle had relied upon Honeywell's expertise, that reliance was insufficient to warrant application of the continuous treatment concept. The court feared that to do so would open a Pandora's box of uncertainty and wreak havoc on the areas to which the statutes of limitation offer stability.[66]

It is significant that the court placed such emphasis on the element of reliance. Though in this particular case it found the reliance to be insufficient, the court seems to have opened the door to computer malpractice at least in those cases where the reliance is substantial.

The U.S. District Court for the Southern District of New York found sufficient reliance in *F & M Shaefer Corp. v. Elec-*

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59. *Id.* at 745.
60. *Id.* at 744.
61. *See* Crago v. Robertson, 49 A.D.2d 645, 370 N.Y.S.2d 255 (1975); Siegel v. Kranis, 29 A.D.2d 477, 288 N.Y.S.2d 831 (1968). In *Siegel,* the court noted that "the client is hardly in a position to know the intricacies of the practice or whether the necessary steps in the action have been taken. For better or worse, the client must depend on his attorney to pursue the litigation diligently and according to the rules." 288 N.Y.S.2d at 835.
62. County of Broome v. Vincent J. Smith, Inc., 78 Misc. 2d 889, 358 N.Y.S.2d 998 (1974). In that case the court observed that "generally the client is required to rely almost totally on the professional advice of the architect. He must have confidence in him and place his full trust in him." *Id.* at 1002.
63. Wilkin v. Dana R. Pickup & Co., 74 Misc. 2d 1025, 377 N.Y.S.2d 122 (1973).
64. 604 F.2d at 745.
65. *Id.*
66. *Id.* at 746.

tronic Data Systems.[67] The court declared that computer specialists and their clients have a "special relationship" that is based upon the client's reliance on the advice and knowledge of the data programming expert.[68]

F & M Shaefer and Electronic Data Systems (EDS) entered into a seven year contract in 1969 for the development and supply of data processing services.[69] Under the agreement, EDS operated Shaefer's old computer system while developing a faster, more modern system to meet Shaefer's data processing needs. EDS ran this new system for Shaefer until August, 1976, when the turnover was completed. The system never functioned properly, however. Shaefer alleged that EDS did not adhere to the contract, that EDS had developed a faulty system, and that EDS had fraudulently induced Shaefer to enter the contract.

The court found that the reliance creating the "special relationship" was based on the technical language used by programmers, the complexity of which prevented the client from giving informed consent to the programmer's work.[70] The court stressed that, because of this special relationship, any fraud or negligence would probably not be discovered until after the termination of the relationship. Consequently, the court ruled that the statute of limitations should begin to run only after the continuing relationship had ended.[71] The case, however, was not decided on the professional negligence issue because it ultimately settled out of court.

Thus, no court has specifically upheld the tort of computer malpractice. The emphasis on the reliance factor, however, has opened the door to the tort, at least for those clients who have "sufficiently" relied upon the skill and judgment of the computer expert. Future cases must develop some standard by which the sufficiency of this reliance can be judged.

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67. No. 76-3982, slip op. at ——— (S.D.N.Y. March 28, 1977).

68. *Id.* slip op. at ———. *See also Judge Rules DPers Open to Malpractice Claims,* COMPUTERWORLD, Nov. 28, 1977, at 1, col. 1.

69. F & M Shaefer Corp. v. Elec. Data Systems Corp., 430 F. Supp. 988, 989 (S.D.N.Y. 1977). This case decided a counterclaim for replevin advanced by E.D.S. against Shaefer's original complaint.

70. No. 76-3982, slip op. at ———.

71. *Id.* slip op. at ———.

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B. *Professional Liability Defined*

Black's Law Dictionary defines "profession" as a "vocation or occupation requiring special, usually advanced, education and skill . . .. The labor and skill involved in a profession is predominantly mental or intellectual, rather than physical or manual."[72] Professionals are held to a higher duty of care than laymen primarily because of this emphasis on the professional's judgment.[73] Absent an express understanding to the contrary, a professional is held to the standard of skill and knowledge which is commonly possessed by members in good standing of that profession.[74] If a professional represents that he has greater expertise in a certain area than is usually possessed by members of his profession, he will be held to that higher level of responsibility.[75]

The following factors are characteristic of a profession: (1) the requirement of extensive learning and training; (2) a code of ethics imposing standards above those normally tolerated in the marketplace; (3) a disciplinary system for members who breach this code; (4) a primary emphasis on social responsibility over strictly individual gain, and the corresponding duty of its members to behave as members of a disciplined and honorable profession; and (5) the prerequisite of a license prior to admission to practice.[76] Applying this fairly strict standard, it is clear that data programmers are professionals.

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72. BLACK's LAW DICTIONARY 1089 (5th ed. 1979). The definition notes that the term originally applied only to theology, law, and medicine, but has been applied to other vocations to which the extension of science and learning implies the attainment of special knowledge rather than mere skill.

73. *See, e.g.,* RESTATEMENT (SECOND) OF TORTS § 299A, Comment a (1977). Section 299A defines a professional as possessing a degree of aptitude and competence not ordinarily found in the reasonable man, but which stems from acquired learning, special training and experience.

74. Comment, *Professional Negligence,* 121 U. PA. L. REV. 626 (1973); RESTATEMENT (SECOND) OF TORTS § 299, Comments a and e (1977); *See also* W. PROSSER, *supra* note 42, § 32, at 161-62. *See generally* T. ROADY, PROFESSIONAL NEGLIGENCE 4 (1960).

75. *See* PROSSER, *supra* note 42, § 32, at 161; RESTATEMENT (SECOND) OF TORTS § 299A, Comment a (1977).

76. Lincoln Rochester Trust Co. v. Freeman, 355 N.Y.S.2d 336, 339 (1974). *See supra* notes 68-70 and accompanying text. See generally R. ROUND, THE LAWYER FROM ANTIQUITY TO MODERN TIMES 4-10 (1953) for the traditional definition of "professional."

1. *Training*

Data programmers meet the requirement of formal training. As selling points, both manufacturers and service bureaus stress the qualifications and skills of their employees.[77] As the industry continues to grow in size and complexity, the skill and knowledge of those employed must keep pace.

2. *Code of Ethics*

The computer industry has many voluntary codes of ethics and conduct.[78] Most stress adherence to a uniform, professional standard as essential to the attainment of public recognition of computer personnel as professionals.[79] Moreover, these codes recognize the high degree of trust and reliance involved in the relationship between data processor and client.[80]

3. *Disciplinary System*

In addition, several proposed disciplinary systems already exist. For example, in its Disciplinary Rules, the Association for Computing Machinery's Code of Conduct provides that "[a]n ACM member shall not attempt to exonerate himself from, or to limit, his liability to his clients for his *personal malpractice.*"[81]

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77. *See* Association for Computing Machinery, Proposed Code of Conduct, [1972-79 Transfer Binder] 5 COMPUTER L. SERV. (CALLAGHAN) App. 7-3C at 26 (1979).

78. Codes are collected at [1972-79 Transfer Binder] 5 COMPUTER L. SERV. (CALLAGHAN) App. 7-3C at 1-39 (1968-80).

79. The Preamble of the Association for Computing Machinery's proposed Code of Conduct is indicative of this desire to be viewed as a bona fide profession: "Recognition of professional status by the public depends not only on skill and dedication, but also on adherence to a recognized code of conduct." Association for Computing Machinery, Code of Conduct— 5 COMPUTER L. SERV., *supra* note 78, at 14.

80. *See, e.g.,* Data Processing Management Association Code of Conduct: "The personal accountability of consultants and technical experts is especially important because of the positions of unique trust inherent in their advisory roles. Consequently, they are accountable for seeing to it that known limitations of their work are fully disclosed, documented and explained." D.R.3.1. 3 [1972-79 Transfer Binder] 5 COMPUTER L. SERV. (CALLAGHAN) App. 7-3C at 8 (1974).

81. Association for Computing Machinery, Code of Conduct, D.R.3.1. 3 [1972-79 Transfer Binder] 5 COMPUTER L. SERV. (CALLAGHAN) App. 7-3C at 29 (1979) (emphasis added). It should be noted that those codes of conduct and disciplinary rules do not yet apply to the industry as a whole, but only to those members of the various professional organizations propounding them. It is expected, however, that membership in these groups will increase as employment in the industry becomes more competitive. *See supra* text accompanying notes 29-34.

4. *Social   Responsibility   and   Duty   to   Behave
Accordingly*

The various codes of ethics and conduct also demonstrate
the industry's awareness of its duty to subvert individual gain
to a wider social responsibility.[82] This attitude has not yet had
the chance to pervade the profession to the same degree as it
has with the three "traditional" professions: law, medicine,
and the ministry. Since this duty has come to be recognized
among several of the "newer" professions, such as accounting
and architecture, it will likely also be recognized among com-
puter personnel.

5. *Licensing*

Although the various codes of ethics show that data pro-
grammers tend to hold themselves out as professionals, no
state has required licensing to date. Much of the current op-
position to licensing comes from data programmers. They
favor voluntary certification, if anything, and view legislation
requiring licensing as an unnecessary intrusion into the devel-
opment of their new profession.[83] As discussed above, licens-
ing is a necessary means of safeguarding the public by provid-
ing industry-wide standards of conduct. Several
commentators predict both that states will require licensing
and that data programmers will attain professional status.[84]

C. *Reliance*

In addition to superior skill and knowledge, other factors
which courts have discussed in finding that a person is to be
held to the standard of a professional include whether the
person continually exercises his judgment in carrying out his
duties[85] and the degree of reliance placed upon that judg-

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82. *See supra* text accompanying notes 79-81.
83. See, for example the Data Processor Managing Association's position on li-
censing—legislation that would require licensing for employment and operation of
computers would be too difficult to administer and would be detrimental to the devel-
opment of the profession. 5 COMPUTER L. SERV. App. 7-3C at 17-18, *supra* note 78, at
14. *But cf.* O'Connor, *supra* note 21, at 256.
84. *See supra* text accompanying notes 29-34. *See generally* Nycum, *Liability
for Malfunction of a Computer Program*, 7 RUTGERS J. OF COMPUTERS, TECHNOLOGY
AND LAW 1, 9 (1979); O'Connor, *supra* note 21; Chandler, *supra* note 8.
85. Comment, *supra* note 75, at 631.

ment.[86] Courts have designated as professionals physicians, surgeons, dentists, pharmacists, attorneys, architects, engineers, accountants, abstractors of title, oculists, optometrists, x-ray operators, pilots, and those involved in some skilled trades.[87] California courts long have recognized the fiduciary relationship that arises between a professional and his client due to this reliance.[88]

The reliance which a purchaser of computer sales and services must necessarily give to expert judgment has been addressed by several courts. As early as 1961 in *Strand v. Librascope, Inc.,*[89] the U.S. District Court for the Eastern District of Michigan commented that computer consumers rely more upon the knowledge and good faith of the manufacturer than in any ordinary contractual relationship since the potential purchaser is not in a position to make a prior investigation of the product.[90]

Reliance was the key issue in *Clements Auto Co. v. Service Bureau Corp.*[91] The plaintiff claimed that it had been de-

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86. *Id.* This reliance has been judicially recognized in many "professions" in California. Neel v. Magan, 6 Cal. 3d 176, 491 P.2d 421, 98 Cal. Rptr. 837 (1971) (attorney); Budd v. Nixen, 6 Cal. 3d 195, 491 P.2d 433, 98 Cal. Rptr. 849 (1971) (attorney); Lucas v. Hamm, 56 Cal. 2d 583, 364 P.2d 685, 15 Cal. Rptr. 821 (1961), *cert. denied,* 368 U.S. 984 (1962) (attorney); Bedolla v. Logan & Frazier, 52 Cal. App. 3d 118, 125 Cal. Rptr. 59 (1975) (accountant); Moonie v. Lynch, 256 Cal. App. 2d 361, 64 Cal. Rptr. 55 (1967) (accountant); Cooper v. Jeune, 56 Cal. App. 3d 860, 128 Cal. Rptr. 724 (1976) (architect). In all these cases, the reliance between professional and client was a major factor in imposing the "time of discovery" rule to the applicable statute of limitations. *See infra* text accompanying notes 131-138.

87. W. PROSSER, *supra* note 42, § 32, at 161-62; RESTATEMENT (SECOND) OF TORTS § 299A, Comment b (1977).

88. *See* Budd v. Nixen, 6 Cal. 3d 195, 491 P.2d 433, 98 Cal. Rptr. 849 (1971); Neel v. Magana, 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837 (1971); Huysman v. Kirsch, 6 Cal. 2d 302, 57 P.3d 908 (1936) (physician); Cortelyou v. Imperial Land Co., 166 Cal. 14, 134 P. 981 (1918) (trustees); Leaf v. San Mateo, 104 Cal. App. 3d 398, 163 Cal. Rptr. 711 (1980) (real estate developer); Bedolla v. Logan and Grazier, 52 Cal. App. 3d 118, 125 Cal. Rptr. 59 (1975) (accountant); Moonie v. Lynch, 256 Cal. App. 2d 361, 64 Cal. Rptr. 95 (1971); Twomey v. Mitchum, Jones and Templeton, Inc., 262 Cal. App. 2d 690, 69 Cal. Rptr. 222 (1968) (stock broker).

89. 197 F. Supp. 743 (E.D. Mich. 1961).

90. *Id.* at 752. The court found that,
> under the singular circumstances of this case, where reliance was placed upon the expertise of an established concern that had the required information in its exclusive possession, the manufacturer was under an obligation to indicate the state of development of the new product in order to avoid misleading impressions created by its partial disclosure and its unqualified statements.

Id. at 753.

91. 444 F.2d 169 (8th Cir. 1971), *aff'g modified,* 298 F. Supp. 115 (D. Mich.

frauded by a computer service bureau, an IBM subsidiary. The court noted the inequality of knowledge between the parties, finding that the defendant was clearly an expert in the computer field and so must be held to an elevated level of responsibility.[92] It was this same reliance which prompted the court in *F & M Schaefer Corp.* to find the necessary special relationship to exist between professionals and their clients. In a similar vein, it was due to a *lack* of the necessary degree of reliance that the court in *Triangle Underwriters* declined to recognize plaintiff's claim of computer malpractice.

The complexity of the computer field necessitates this client reliance on the computer consultants and data programmers, and that industry has become so complex that even its terminology has come under judicial attack. Though ostensibly lighthearted dicta, there can be little doubt as to the seriousness underlying Judge Edenfield's views in *Honeywell, Inc. v. Lithonia Lighting, Inc.*:[93]

> [I]n the computer age, lawyers and courts need no longer feel ashamed or even sensitive about the charge, often made, that they confuse the issue by resort to legal "jargon," law Latin or Norman French. By comparison, the misnomers and industrial shorthand of the computer would make the most esoteric legal writing seem as clear and lucid as the Ten Commandments or the Gettysburg Address; and to add to this Babel, the experts in the computer field, while using exactly the same words, uniformly disagree as to precisely what they mean.[94]

In California, analogies can be made between the computer field and many other occupations which the courts have deemed "professions" because of the complexity of the field and the resulting client reliance.[95] Thus, the computer area

1969).

92. *Id.* at 183. Consequently, the court found that Service Bureau Corporation's statements regarding the overall usefulness of its system, the presence of error-control features, the properties of the Flexowriters and the necessity of automating SM's accounting were all statements upon which SM, with its limited knowledge of computers and data processing systems, could reasonably rely, given the superior knowledge of SBC. *Id.* at 184.

93. 317 F. Supp. 406 (N.D. Ga. 1970).

94. *Id.* at 408.

95. *See, e.g.,* Lucas v. Hamm, 56 Cal. 2d 583, 364 P.2d 685, 15 Cal. Rptr. 821 (1961), *cert. denied,* 368 U.S. 987 (1962) (attorneys). A similar degree of reliance has been found when dealing with other "professions." U.S. Liab. Ins. Co. v. Haidinger-

satisfies all the prerequisites for the imposition of the standard as a "profession," and there is strong precedence for extending professional liability to those who render computer sales and services.

D. *Elements of Professional Malpractice*

There are four elements to any negligence action. The defendant has (1) a duty of care which, either by his action or failure to act, (2) has been breached, the breach being the (3) proximate cause of (4) the plaintiff's damages or injuries.[96] Each of these elements presents problems when applied to the tort of computer malpractice.

1. *Duty of Care*

Since data programmers and service consultants are professionals,[97] they have a duty to conduct themselves as reasonable persons having the skill and learning commonly possessed by members of the profession in good standing.[98] To whom is this duty owed? This question has been rephrased in the following manner: Does the person stand "in any such relation to the plaintiff as to create any legally recognized obligation of conduct for his benefit?"[99] This duty certainly extends to the client who must rely upon the computer professional's skilled judgment and experience.[100] Whether this duty extends to third parties, however, is less certain.

Hayes, Inc., 1 Cal. 3d 586, 594-95, 463 P.2d 770, 777, 83 Cal. Rptr. 418, 425 (1970) (insurance agents); Amen v. Merced County Title Co., 58 Cal. 2d 528, 534, 375 P.2d 33, 36. 25 Cal. Rptr. 65, 68 (1962) (escrow agents); Cortelyou v. Imperial Land Co., 166 Cal. 14, 20, 134 P. 981, 983 (1913) (trustees); Cooper v. Jeune, 56 Cal. App. 3d 860, 128 Cal. Rptr. 724 (1976) (architects); Stuart v. Crestview Mut. Water Co., 34 Cal. App. 3d 802, 110 Cal. Rptr. 543 (1973) (engineers); Cook v. Redwood Empire Title Co., 275 Cal. App. 2d 452, 79 Cal. Rptr. 888 (1969) (title companies); Moonie v. Lynch, 256 Cal. App. 2d 361, 64 Cal. Rptr. 55 (1967) (accountants). The California legislature also has extended professional status, with the accompanying liability for breach of professionalism to investment counselors. CAL. CIV. CODE § 3372 (West 1970); Twomey v. Mitchum, Jones & Templeton, Inc., 262 Cal. App. 2d 690, 726, 69 Cal. Rptr. 222, 246 (1968) (stock brokers).

    96. W. PROSSER, *supra* note 42, § 30, at 143; RESTATEMENT (SECOND) OF TORTS, § 281 (1977).

    97. *See* Jordon, *supra* note 1; W. PROSSER, *supra* note 42, § 32, at 161-62; *supra* notes 78-96 and accompanying text.

    98. W. PROSSER, *supra* note 42, § 32, at 162.

    99. *Id.* at 245.

    100 *See supra* text accompanying notes 86-96.

In the wake of Justice Cardozo's decision in *Ultramares Corp. v. Touche*,[101] holding that there is no liability owed by accountants to creditors and investors who have relied on the accountants' certifications, computer programmers may not owe a duty of care to third parties.[102] One commentator has hypothesized that, because the *Ultramares* principle has been applied to accountants, lawyers, and other professionals, it also might be applied to computer programmers, since they too deal with abstractions not necessarily subject to physical limitations.[103]

This rule probably would not prevent liability to third parties in California. *Lucas v. Hamm*,[104] concerning the liability of lawyers, developed a balancing test to determine the liability of professionals for their negligence to third parties not in privity.[105] Under *Lucas* the elements to be considered include "the extent to which the transaction was intended to affect the plaintiff, the foreseeability of harm to him, the degree of certainty that the plaintiff suffered injury, the closeness of the connection between the defendant's conduct and the injury, and the policy of preventing future harm."[106] Applying these factors to the computer field, the computer professional could well be held liable to third parties.[107]

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101. 255 N.Y. 170, 174 N.E. 441, 74 A.L.R. 1639 (1931).

102. An example of an aggrieved third party would be a party who relies upon the reports issued by an insurance agent who utilizes a data processing system. The system had been programmed by an independent service bureau. The third party becomes involved in an auto accident and when he files his claim, discovers that the negligently-programmed computer system never informed him of the lapse of his policy. The question in this case would be whether the service bureau can be held liable to the third party.

103. Nycum, *supra* note 85.

104. 56 Cal. 2d 583, 364 P.2d 685, 15 Cal. Rptr. 821 (1961), *cert. denied*, 368 U.S. 987 (1962).

105. Nycum, *supra* note 85, at 11.

106. 56 Cal. 2d at 588, 364 P.2d at 687, 15 Cal. Rptr. at 823.

107. *See generally* Nycum, *supra* note 85. See also Indep. School Dist. No. 454 v. Statistical Tabulating Corp., 359 F. Supp. 1095 (N.D. Ill. 1973), where the defendant STC had processed statistical data for a consulting firm which had been engaged by the plaintiff to appraise the value of a school building. The building was underinsured as a result of the inaccuracy of STC's figures. The building was later destroyed by fire. In holding STC liable for its negligence, the court stated that liability may lie for "providing inaccurate information which was relied on and caused economic loss, although there was no direct contractual relationship between the parties." *Id.* at 1097. Noting that STC could expect that the plaintiff would rely upon the data, the court stated that "recovery by a foreseeable user will promote cautionary techniques among computer operators." *Id.* at 1098; *accord,* M. Miller Co. v. Cent. Contra Costa

2. *Breach of the Duty of Care*

Several difficult issues are raised in determining when the computer programmer's duty of care is breached. First and foremost is the lack of any real standards in the field itself.[108] Because the computer industry is so new and is constantly changing equipment and applications, an injured plaintiff may encounter trouble proving the defendant violated a duty of care. For example, a computer error can occur in as short a period as one nanosecond,[109] making detection of the malfunction very difficult. Proof of the error may lie undetected in the computer banks, much the same as proof of an accountant's error may lie undetected in the columns of a ledger.

The problem is not completely insurmountable. If a contract is involved, its terms may be the best guide as to what should be the standard of care.[110] If the data programmer belongs to an organization with a code of ethics, or if there are any licensing statutes in force, these may supply a minimum standard of care.[111] The standards of care may also be established by focusing on the extent to which the newly installed system was tested for potential and existing problems.[112] Though the installer of the system satisfied his contractual obligations, he still may be held to a higher standard of care. Because of the reliance placed upon his skill and knowledge, he may have an implied professional duty to test the system beyond that minimum required by the contract.

The doctrine of res ipsa loquitur probably does not apply due to the complexity and unsureness of the field. In order to use res ipsa loquitur successfully, the plaintiff must show that the injury or damage was such that it normally would not have occurred in the absence of negligence, that the instrumentality, i.e., the computer, was in the defendant's control, and that the plaintiff was not contributorally negligent.[113]

Sanitary Dist., 198 Cal. App. 2d 305, 18 Cal. Rptr. 13 (1961). *See generally* Chandler, *supra* note 8, at 413.

    108. *See supra* text accompanying note 27.

    109. *See* Chandler, *supra* note 8, at 411. *See generally* O'Connor, *supra* note 21; Jordon, *supra* note 1; Nycum, *supra* note 85.

    110. T. ROADY, *supra* note 75, at vi-vii.

    111. *See* RESTATEMENT (SECOND) OF TORTS, § 299A, Comment f (1977): "Licensing statutes, or those requiring a basic knowledge of science for the practice of a profession, may provide such a minimum standard."

    112. *See* Jordon, *supra* note 1.

    113. *See* W. PROSSER, *supra* note 42, § 39 at 214.

Courts must recognize the reliability of the computer before the res ipsa loquitur doctrine will be applied.[114] This has not yet occurred.[115]

One advantage in proving the negligent act is the computer's ability to reconstruct the exact steps leading to the damage caused by the system's program. This characteristic actually permits a higher level of accuracy in identifying the negligent act than is normally the case in negligence actions.[116]

3. *Proximate Cause*

To be liable for malpractice, the defendant's negligent act or failure to act must have been the proximate cause of the plaintiff's injuries or damages.[117] Mere negligence will not create a cause of action unless this causal relationship is shown.[118] Proximate cause may be defined succinctly as that cause which produces the injury in a continuous sequence, unbroken by any intervening causes, and without which the injury would not have occurred.[119] In the area of computer systems design and research, there do not seem to be any special problems with proximate cause which cannot be treated adequately under existing tort doctrines. Generally, it easily can be shown that it was the computer system which caused the injury. For example, if a business's accounting operations are handled by a data processing system, it is likely that overbillings and delayed payments are due to a malfunction in the computer. In short, the plaintiff alleging computer malprac-

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114. *Id.*
115. In Post City State Bank v. Am. Nat'l Bank, 486 F.2d 196 (10th Cir. 1973), the court refused to impose liability for negligence upon the owner of a computer system, the breakdown of which caused the loss of two checks. One commentator has suggested the rationale for the court's conclusion was that the computer used was not sufficiently reliable to hold the owner liable for its breakdown. *See* Chandler, *supra* note 8, at 412; Jordon, *supra* note 1.
116. *See* Jordon, *supra* note 1, at 12.
117. *See* W. PROSSER, *supra* note 42, § 42, at 244-45; RESTATEMENT (SECOND) OF TORTS § 430 (1977). A necessary causal link between the negligent act and the injury must be shown. Finnegan v. Royal Realty Co., 35 Cal. 2d 409, 433, 218 P.2d 17 (1950) Hawthorne v. Siegel, 88 Cal. 159, 163, 25 P. 1114 (1891); RESTATEMENT (SECOND) OF TORTS § 915-17, 454-62; C. MCCORMICK, HANDBOOK ON LAW OF DAMAGES § 73 at 261-63 (1935).
118. *See* W. PROSSER, *supra* note 42, § 42 at 244-45.
119. *Id.*; Price v. Neyland, 320 F.2d 674 (D.C.Cir. 1963). *See also* Nycum, *supra* note 85 at 14.

tice will seek to prove that, but for the defendant's negligent act or omission, he would have derived measurably better results from the defendant's services.

4. *Damages*

In tort actions, the general rule in California allows the recovery of damages which will compensate the plaintiff for all losses proximately caused by the negligent act, whether or not such losses were foreseeable.[120]

In computer malpractice actions, the plaintiff should only be awarded damages for the expenses he would have incurred in implementing a reasonable alternative system, if this exceeds his original installation costs. In addition, the plaintiff should be able to recover provable lost profits during the time the defective system impaired the plaintiff's business operations, that is, those which can be demonstrated with reasonable certainty.[121]

A problem of proof arises concerning this limitation on recovery. The same difficulties which were present in determining the proper standard of care for the computer professional's conduct also arise in establishing the "reasonableness" of the alternative. Given the lack of industry standards and the inexperience of most plaintiffs in this type of cause of action, it will be difficult to prove that the alternative was reasonable. The professional does not guarantee a particular result.[122] Rather, the soundness of his design for the client depends upon the soundness of the reasonable alternatives.[123] Expert testimony is necessary in order to find the alternatives which would have provided better results for the client.[124] The expert must testify to his own interpretation of the client's needs, the feasibility of attaining alternative systems in the market at the time the negligent design occurred, cost factors, and the risks involved in the alternative system not entailed

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120. CAL. CIV. CODE § 3333 (West 1983).

121. C. MCCORMICK, HANDBOOK ON THE LAW OF DAMAGES §§ 25-29 (1935); Story Parchment Co. v. Patterson Paper Co., 282 U.S. 555, 563 (1931). This limitation is akin to the contract damages limitation on lost profits, where only those damages reasonably foreseeable at the time of contracting are allowed. Morello Growers Grape Prod. Ass'n, 82 Cal. App. 2d 365, 375, 186 P.2d 463, 469 (1947); Brunvold v. Johnson, 36 Cal. App. 2d 226, 230, 97 P.2d 489, 491 (1939).

122. *See infra* text accompanying notes 137-38.

123. *See supra* text accompanying notes 107-15.

124. FED. R. EVID. 702.

in the system actually rendered to the client. If a client contracts for a business system which is incapable of handling payroll operations but, in hindsight, should have included such functions, how should the client's damages be measured?

Under the conventional "out of pocket" measure of tort damages, a plaintiff recovers an amount of damages to make him whole, i.e., the cost of adding additional payroll functions to his system.[125] However, this measure seems inequitable to the defendant because the plaintiff did receive what he bargained for—a system without payroll-handling capabilities.[126] Therefore, under an ordinary measure of tort damages, the plaintiff would be unjustly enriched in an amount equal to the difference between a system with payroll handling capabilities and a system without such abilities.

Holding the plaintiff to a strict "out-of-pocket rule" ostensibly denies the plaintiff recovery because he has not "lost" anything. But the plaintiff *has* been harmed. But for the defendant's negligent appraisal of his client's needs, and the defendant's failure to satisfy those needs, the client would have contracted for the system capable of handling his business operation. Thus, the plaintiff's compensable damages lie in his having been counseled to buy an inadequate system, one he would not have purchased had the computer expert not acted negligently.

In this situation, the client's damages should be limited to the excess of the cost of implementing the proper alternative system, at the time the system should have been discovered, over the cost of installing the original system, plus incidental expenses and ascertainable lost profits resulting from

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125. *See* CAL. CIV. CODE § 3333 (West 1983). *See generally* RESTATEMENT (SECOND) OF TORTS §§ 901, 903, 905, 906 (1977).

126. *See* Gagne v. Bertran, 43 Cal. 2d 481, 275 P.2d 15 (1954), where plaintiff hired defendant, a soil driller, to test for the pressure of fill on lots which plaintiff planned to buy. The defendants negligently reported that there was much less fill than actually existed. The trial court awarded plaintiff damages measured by the increased cost of structural footing required due to the fill. In reversing this measure of damages, the California Supreme Court found that the defendant had not insured against the costs of the building foundations. The cost of proper foundations was inevitable since fill was a natural characteristic of the land. Accordingly, the court allowed compensable damages only to the extent that the defendants' negligent report induced the plaintiff to purchase the lots for more than their actual value. No damages would be awarded if it turned out that the lots were actually worth what the plaintiff paid, notwithstanding the defendant's report. *Id.* at 21-23, 275 P.2d at 490-92.

the use of the negligently designed system. In this way, the plaintiff will recover an amount reflecting his actual losses and the defendant will be relieved of the duty of guaranteeing his results.

E. *The Effect of Computer Malpractice on the Statute of Limitations*

One of the more important aspects of an action for computer malpractice is the effect it will have on the applicable statute of limitation. In actions based on ordinary negligence, the statute of limitations begins to run at the time of the negligent act or omission.[127] An exception to this rule is followed in malpractice cases: the statute of limitations does not begin to run until the plaintiff discovers, or should have discovered, the injury.[128] This rule is based upon the client's reliance upon the professional's judgment, and the resulting fiduciary duty of the professional to the client.[129] If the rules applicable to ordinary negligence applied, it is quite possible that the statute may have already run before the plaintiff is aware that he has a cause of action.

In California, this rule has been applied to all actions for professional malpractice.[130] In *Neel v. Magana*[131] the California Supreme Court set down three justifications for this "discovery" rule, all of which are applicable to computer professionals. First, after restating the professional's elevated duty of care to use the skill, prudence, and diligence commonly exercised by practitioners of his profession, the court noted that

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127. *See* W. PROSSER, *supra* note 42, § 31, at 144: "[T]he statute of limitations does not begin to run against a negligence action until some damage has occurred." *See also* Neel v. Magana, 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837 (1971).

128. *See* W. PROSSER, *supra* note 42, § 31, at 144. *See also* Elec. Equip. Express v. Donald M. Seiler and Co., 122 Cal. App. 3d 834, 840, 176 Cal. Rptr. 239, 242 (1981): "A cause of action for professional malpractice accrues when the plaintiff both sustains appreciable and actual harm and discovers, or with reasonable diligence should have discovered, the wrongful acts." *Accord* Budd v. Nixen, 6 Cal. 3d 195, 491 P.2d 453, 98 Cal. Rptr. 849 (1971).

129. U.S. Liab. Ins. Co. v. Haidinger-Hayes, Inc., 1 Cal. 3d 586, 463 P.2d 770, 83 Cal. Rptr. 418 (1970); Neel v. Magana, 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837 (1971); Budd v. Nixen, 6 Cal. 3d 195, 491 P.2d 453, 98 Cal. Rptr. 849 (1971).

130. *See* Neel v. Magana, 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837 (1971); Leaf v. San Mateo, 104 Cal. App. 3d 398, 163 Cal. Rptr. 711 (1980); Bedolla v. Logan and Frazier, 52 Cal. App. 3d 118, 125 Cal. Rptr. 59 (1975); Moonie v. Lynch, 256 Cal. App. 2d 361, 64 Cal. Rptr. 55 (1967), *see also supra* text accompanying note 91.

131. 6 Cal. 3d 187, 491 P.2d 421, 98 Cal. Rptr. 837.

the client is often unable to detect the negligence of the professional when he sees it.[132] Thus, just as the plaintiff "cannot be expected to know the relative medical merits of alternative anesthetics, or the various exceptions to the hearsay rule,"[133] so too the computer professional's client will likely be unable to detect a negligently programmed computer program or realize that he has been unwisely counseled by a vendor until long after the negligent act has occurred.

Second, the court noted that, not only might the client fail to recognize a negligent act when he sees it, but frequently he will not even have the chance to see it. This reasoning is clearly applicable to the computer professional. Not only is much of the programmer's work performed outside the client's presence and hidden by confusing technical jargon, but evidence of the malpractice may lie buried deep within the computer's memory, much like the proof of the surgeon's negligence which may not become known until years after the negligent act.[134]

Lastly, the court noted that there exists a fiduciary relationship between the professional and his client, creating an obligation to render full and complete disclosure to the client of all facts which may materially affect his rights and interests.[135] The rationale here relates especially well to those computer vendors who advise buyers through wholly-owned subsidiary service bureaus, as was the situation in *Clements Auto Co. v. Service Bureau Corp.*[136] According to the court, the fact that the client is unaware of the professional's negligence implies a failure to properly disclose.[137]

If the statute of limitations does not begin to run until the computer client or purchaser discovers or should have discovered the malpractice of the computer vendor or service bureau, then the "discovery" rule will prevent the defendant from escaping liability for his original breach by a later breach

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132. *Id.* at 188, 491 P.2d at 428, 98 Cal. Rptr. at 844.
133. *Id.* "If he must ascertain malpractice at the moment of its incidence, the client must hire a second professional to observe the work of the first, an expensive and impractical duplication, clearly destructive of the confidential relationship between the practitioner and the client." *Id.*
134. *Id.*
135. *Id.* at 188, 491 P.2d at 428, 98 Cal. Rptr. at 844-45.
136. 444 F.2d 169 (8th Cir. 1971). *See supra* text accompanying notes 89-92.
137. Neel v. Magana, 6 Cal. 3d at 189, 491 P.2d at 429, 98 Cal. Rptr. at 845 (1971).

of his duty to disclose. It is submitted that this will not only prevent a great deal of inequity between the two parties, but will also serve to reinforce the public's perception of the professional status of the computer industry.

F. *Strict Liability Actions Inapplicable*

The classification of computer consultants and data programmers as professionals will result in the likely preclusion of any kind of strict liability action, that is, liability without fault. Those who deal with the inexact sciences, such as doctors, lawyers, architects, and engineers, must perpetually exercise their judgment so as to foresee and deal with random factors which cannot be precisely measured. Consequently, the professional cannot gauge with complete accuracy how these factors will affect a given situation.[138] As a result of the imprecise nature of their professions, those in the business of selling professional services are not held liable for any bad results unless they were negligent.[139] The general rule in California was stated by the Supreme Court in *Gagne v. Bertran*[140] that

> those who sell their services for the guidance of others in their economic, financial, and personal affairs are not liable in the absence of negligence or intentional misconduct . . . . Those who hire such persons are not justified in expecting infallibility, but can expect only reasonable care and competence. They purchase service, not insurance.[141]

Thus, those engaged in service bureau consultation and those vendors of computer equipment who also provide consulting services will not be held strictly liable for their negligence.

IV. CONCLUSION

It has been suggested by some that in allowing this new

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138. See Chapel v. Clark, 117 Mich. 638, 640, 76 N.W. 62, 62 (1898), which applied this standard to design architects. *See generally* W. PROSSER, *supra* note 42, § 32, at 161-62.

139. *See* La Rossa v. Scientific Design Co., 402 F.2d 937 (3d Cir. 1968), where the plaintiff sought to hold the defendant, a design consultant, liable for poor design services. The court held that there could be no strict liability action and that the plaintiff needed proof of negligence.

140. 43 Cal. 2d 481, 487-89, 275 P.2d 15, 20-21 (1954). *See also* Paxton v. County of Alameda, 119 Cal. App. 2d 393, 259 P.2d 934, 25 A.L.R. 2d 1085, 1092 (1952).

141. 43 Cal. 2d at 487-89, 275 P.2d at 20-21.

tort of computer malpractice, the courts will be opening a veritable "Pandora's Box"[142] of trouble and uncertainty which will needlessly burden the courts with complex and confusing litigation. However, if the injuries and damages arising from the malpractice of computer professionals are indeed genuine, then the law is obligated to provide a remedy.[143] With more and more inexperienced persons entering the computer market, persons who cannot be expected to bargain equally with manufacturers and service bureaus, the law must equitably redistribute the burdens.[144]

The cause of action set forth in this comment is a necessary one, and grows more practical every day. Supporting its implementation are a number of considerations such as the rapidly increasing role of the computer in our society, the increasing complexity of the field, and the growing necessity of holding those in the field to an elevated degree of responsibility commensurate with the increased societal reliance on their expertise. The profession itself has recognized this new accountability, though somewhat reluctantly, by its various codes of ethics. Expanding the accountability of computer professionals will ultimately reduce friction between the parties as those professionals render more satisfactory service to their clients.

As Dean Prosser has stated, "it is the business of the law to remedy wrongs that deserve it, even at the expense of a flood of litigation, and it is a pitiful confession of incompetence on the part of any court of justice to deny relief on such grounds."[145] The tort of "computer malpractice" is not intended to place another arrow in the already replete quiver of the plaintiff's attorney. Rather, it is intended to help alleviate the difficulties which will likely increasingly arise in dealings between laymen and computer consultants. The mere novelty of a claim should never operate as a bar to recovery if the plaintiff's interests are clearly entitled to protection.[146] Com-

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142. *See Triangle Underwriters*, 604 F.2d 737 (2d Cir. 1979). *See also supra* text accompanying notes 50-66.
143. *See* W. PROSSER, *supra* note 42, § 12, at 51.
144. *See* Chandler, *supra* note 8, at 407.
145. *See* W. PROSSER, *supra* note 42, § 12, at 51.
146.
> New and nameless torts are being recognized constantly, and the progress of the common law is marked by many cases of first impression, in which the court has struck out boldly to create a new cause of action,

puter malpractice should not be seen as an undue overreaching of conventional tort doctrines, but, like the computer age itself, as an idea whose time has come.

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where none had been recognized before . . .. The law of torts is anything but static, and the limits of its development are never set.
See W. PROSSER, *supra* note 42, § 1, at 3-4.