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HAS THE COMPUTER CHANGED THE LAW?

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I. INTRODUCTION

Beginning in the 1970's, and continuing until the present, the computer industry has experienced rapid growth.[1] The computer is not just another invention. It is the force behind monumental changes in our daily lives.[2] Computers are with us everywhere: medicine, business, transportation, banking, shopping, entertainment, travel, education, and more. They are entwined in many aspects of our lives.[3] And, of course, the computer has become involved with many legal issues, including: commercial law, state taxation, copyright, patent, privacy, criminal law, and evidence.[4]

Some would argue that there is actually no field of computer law, and that the field is really no more than how the computer relates to already existing areas of law.[5] The purpose of this article is to examine whether the computer has actually made a difference in the law. The legal topics mentioned in the previous paragraph will be explored in order to make this determination. In the interest of brevity, all possible Computer Law topics are not included. The topics which are discussed should be sufficient to illustrate that the computer has caused changes to

1. RICHARD L. BERNACCHI, BERNACCHI ON COMPUTER LAW, 3-4 (1993) (hereinafter BERNACCHI).

2. MICHAEL D. SCOTT, SCOTT ON COMPUTER LAW, at 1-2 (1993) (hereinafter SCOTT).

3. *Id.* at 1-4.

4. *Id.* at Table of Contents; *See* DAVID C. TUNICK, COMPUTERS AND THE LAW: CASES AND MATERIALS (1991) (also discussing antitrust, banking, and trade secrets).

5. *See* SCOTT, *supra* note 2, at 1-2.

some areas of the law.[6]

II. COMMERCIAL LAW: COMPUTERS AND THE U.C.C.

Computer contracts can involve the acquisition of hardware,[7] software,[8] or services.[9] Questions arise as to the applicability of the Uniform Commercial Code to such acquisitions. With minor variations, the Code is in force in the District of Columbia, and in all states except Louisiana.[10]

Article 2 of the Uniform Commercial Code deals with transactions in goods.[11] Although Article 2 is entitled "Sales," it is clear that the title extends beyond sales.[12] Many computer contracts are structured as leases, licenses, or sale-leasebacks. It appears that courts may apply the terms of the U.C.C. to these non-sale transactions.[13] Before determining what constitutes "goods" under the U.C.C., it is important to know why it matters if the U.C.C. applies. Two examples should suffice.

In *Hartford Mutual Ins. Co. v. Seibels, Bruce and Co.*,[14] the question arose as to whether the U.C.C. applied. If the U.C.C applied, a six year statute of limitations governed, otherwise a three year statute governed. The court refused to grant summary judgment, needing instead to hear facts in order to decide if the software was goods or services.[15]

In *Data Processing Serv., Inc. v. L. H. Smith Oil Corp.*,[16] the ques-

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6. The topics again are: commercial law, state taxation, copyright, patent, privacy, crime, and evidence. Banking is an example of a topic which will not be discussed in this article. *See supra*, note 4. One interesting banking case is *Judd v. Citibank*, 435 N.Y.S.2d 210 (N.Y. Civ. Ct. 1980). The case deals with the failure of a bank's computerized automated terminal. *Id.* at 211-12. The case is discussed briefly in Paul Horowitz, et al., *The Law of Prime Numbers*, 68 N.Y.U.L. REV. 185, 202 n. 107 (1993).

7. Physical equipment that can be used in data processing. Hardware is anything that can be touched. KENT PORTER, THE NEW AMERICAN COMPUTER DICTIONARY, 133 (1983).

8. *Id.* at 261. Software is a generic term for computer programs. A program is a complete set of instructions that tells a computer how to do something. *Id.* at 227.

9. A service bureau is a firm that sells data-processing services. *Id.* at 256. A common function of a service bureau is to provide payroll processing. BERNACCHI, *supra* note 1, at 11-4.

10. SCOTT, *supra* note 2, at 7-21, 22. In Louisiana, many provisions have become law by way of court decision or statute. *Id.* at 7-22. *See also* BERNACCHI, *supra* note 1, at 3-195.

11. U.C.C. § 2-102 (1979).

12. BERNACCHI, *supra* note 1, at 3-196, *citing* Robert A. Holmes, *Application of Article II of the Uniform Commercial Code to Computer System Applications*, 9 RUTGERS COMPUTER & TECH. L.J. 1, 9-13 (1982); Willard H. Krasnow, *The Extension of Warranty Protection to Lease Transactions*, 10 B.C. IND. & COM. L. REV. 127 (1968).

13. *Id.*, SCOTT, *supra* note 2, at 7-26, *citing* several cases, *e.g.*, Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House, Inc., 298 N.Y.S.2d 392, 395 (N.Y. Civ. Ct. 1969), *rev'd on other grounds*, 316 N.Y.S.2d 585 (N.Y. Sup. Ct. 1970).

14. 579 F. Supp. 135 (D. Md. 1984) (a case involving computer software).

15. *Id.* at 138.

16. 492 N.E.2d 314 (Ind. Ct. App. 1986).

tion arose again as to whether a software transaction fell under the U.C.C.[17] The court found that the software was developed specifically for the purchaser, and constituted a service rather than goods. Therefore, the court held that the U.C.C. did not apply.[18] The court held that the U.C.C. provision requiring the buyer to notify the seller of seller's breach was not applicable.[19]

A. WHAT ARE "GOODS"?

The U.C.C. defines "goods" as "all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale . . ."[20] Computer hardware is movable and, thus, is a good.[21] Hardware transactions often involve services, such as installation, maintenance, and training. The entirety of hardware transactions typically has been held to fall under the U.C.C. because the services are held to be incidental to the sale of goods.[22] However, the idea to treat services as incidental to the sale of goods is not peculiar to the sale of computer hardware. For example, in *Port City Constr. Co., Inc. v. Henderson*,[23] a contract for the sale of concrete was held to be entirely under the U.C.C. as a sale of "goods" although there was incidental work and labor, such as pouring and finishing.[24]

Questions relating to software may be more interesting.

B. IS SOFTWARE GOODS?

A critical question is whether software is considered "goods" under the U.C.C. The answer may depend upon whether the software is canned[25] or custom[26] and whether the software is sold alone or bundled in a sale with hardware.[27] Since the U.C.C. applies to transactions in "goods,"[28] courts need to determine if the software is considered a "good." Depending on one's focus, it is possible to categorize nearly all software

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17. *Id.* at 315.

18. *Id.* at 318-19.

19. *Id.* at 320.

20. U.C.C. § 2-105 (1).

21. SCOTT, *supra* note 2, at 7-23.

22. *Id.*; Chatlos Systems, Inc. v. Nat'l Cash Register Corp., 479 F. Supp. 738, 742 (D.N.J. 1979), *aff'd* 635 F.2d 1081 (3d Cir. 1980), *cert. denied* 457 U.S. 1112 (1982).

23. 266 So. 2d 896 (Ala. Civ. App. 1972).

24. *Id.* at 898, 899.

25. Canned software is not developed for any particular user, but is developed to be sold to many different users. Comptroller of the Treasury v. Equitable Trust Co., 464 A.2d 248, 250 (Md. 1983).

26. Custom software is developed, at least in part, specifically for the party acquiring the software. SCOTT, *supra* note 2, at 10-2.

27. *See* SCOTT, *supra* note 2, at 7-24.

28. *See supra*, notes 11 and 20, and accompanying text.

transactions as dealing with either "goods" or "services." If one focuses on the medium of transmission, then the software involving tapes or disks would be dealing with goods; whereas those in which the software was transmitted over telephone lines probably should not be considered as transactions in goods. The tapes or disks transactions deal with movable[29] goods. If one focused instead on the ideas contained on the medium of transmission, then the transaction would not be for goods, but rather for ideas. Here, the medium of transmission would be incidental. Thus, it might be possible to say software transactions involving either canned or custom are for "goods" where the medium of transaction is the focus, i.e., the medium is tape or disk. However, software transactions involving ideas rather than the medium are not for "goods" where the focus is on the ideas instead. Thus, canned and custom software can be treated the same. However, examination of cases shows that canned and custom software are often treated differently.

1. *Canned Software*

In *RRX Indus., Inc. v. Lab-Con, Inc.*,[30] Lab-Con was formed to market the software of another company. The software failed, and litigation followed. A question arose as to whether the transaction was under the U.C.C. . The court found that the employee training, repair services, and system upgrading were incidental to the sale of the software package.[31] Since the court did not mention that original programming was part of the sale, it appears that the court believed that the software was canned. The court concluded that the sales aspects of the software predominated over the incidental services, and that the U.C.C. applied.[32] Since the U.C.C. requires there be a transaction in "goods" in order to apply,[33] it seems the court focused on the sale of the medium of transmission of the programs, rather than on the efforts in writing the programs.

There does not appear to be anything new in the law when a transaction involving canned software is treated as a transaction in "goods" under the U.C.C. As with many other situations, canned software requires that ideas are formed. Then, some tangible object, such as a computer disk containing the software, is created. In *Cardozo v. True*,[34] it was held that a book, comprised of thoughts and ideas, was "goods" under the U.C.C. .[35] Thus, it is not surprising that pre-written software, the same as a pre-written book, would be "goods" under the U.C.C. .

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29. *Id.*

30. 772 F.2d 543 (9th Cir. 1985).

31. *Id.* at 546.

32. *Id.*

33. *See supra*, notes 11 and 20, and accompanying text.

34. 342 So. 2d 1053 (Fla. Dist. Ct. App. 1977).

35. *Id.* at 1055-56.

2. *Custom Software*

There is a split of opinion among the courts on the question of whether custom software is "goods" or "services." For example, in *Liberty Fin. Management Corp. v. Beneficial Data Processing Corp.*,[36] the Missouri Court of Appeals said:

> This contract is primarily for data processing services . . . The reels of tape . . . were incidental to . . . the subject of the contract . . . Liberty did not bargain for reels of tape containing computer data, but for Bencom's skill in putting the data on the tapes for transfer to the new Liberty system. This was not a transaction "in goods" as contemplated by Article 2 of the Uniform Commercial Code. [37]

Thus, the *Liberty* case focuses on the service aspect of the transaction as the dominant element, while mentioning that there also were tangible items involved, such as tapes and disks. Compare this with *Advent Systems Ltd. v. Unisys Corp.*,[38] where the United States Third Circuit Court of Appeals said:

> That a computer program may be copyrightable as intellectual property does not alter the fact that once in the form of a floppy disc or other medium, the program is tangible, moveable and available in the marketplace. The fact that some programs may be tailored for specific purposes need not alter their status as "goods" because the Code definition includes "specially manufactured goods."[39]

Thus, the *Liberty* court focuses on the services involved, in custom programming, while the *Advent Systems* court focuses instead on the medium of transmission.

3. *Dominant Element*

However, neither approach breaks new ground in the law. In *Liberty*, the end product was the software programs on some storage media.[40] However, the concept of using the dominant element, on the service aspect of the transaction, to determine if the entire transaction is one for "goods" or "services", is not new for computer software. For example, *Freeman v. Shannon Constr., Inc.*,[41] involved construction work including the sale of cement. The court found that the U.C.C. did not apply because the essence of the transaction was for construction serv-

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36. 670 S.W.2d 40 (Mo. App. 1984). The case appears to involve custom programming since the court discusses the need of several months to test programs. *See Id.* at 46. Canned software should not require this much testing. *See* SCOTT, *supra* note 2, at 7-25 n. 97, and accompanying text.

37. 670 S.W.2d at 48, 49.

38. 925 F.2d 670 (3d Cir. 1991).

39. *Id.* at 675.

40. 670 S.W.2d at 48-49.

41. 560 S.W.2d 732 (Tex. Ct. App. 1978).

ices rather than for goods.[42]

4. *End Product Tangible and Movable*

The court in *Advent*[43] held that specially manufactured custom computer software constitutes "goods" because the programs are delivered on tangible media.[44] This approach does not break new ground in the law either. For example, in *Zimmerman v. General Mills, Inc.*,[45] the plaintiff designed, fabricated, and sold novelty items, including items placed into breakfast cereals for advertising purposes. The items at issue were plastic dune buggies. The defendant manufactured and sold breakfast cereals.[46] A dispute arose over the cost of some of the dune buggies.[47] There were services involved in manufacturing the plastic dune buggies specially for the defendant.[48] However, the court treated the entire transaction as one for "goods" under the U.C.C. without any discussion of why the U.C.C. applied.[49] Thus, apparently because the end product was a tangible item, dune buggies, the transaction was one for "goods" rather than the service of manufacturing the dune buggies. This seems similar to *Advent* where, notwithstanding the services of writing custom software, the end product was a tangible, movable floppy disk or other medium.[50]

5. *Bifurcation*

Additionally, there is the bifurcation approach, whereby portions of the transaction involving "goods" are analyzed under the U.C.C., while portions of the same transaction involving "services" are analyzed under common law.

In *Data Processing Services, Inc. v. L.H. Smith Oil Corp.*,[51] a case involving a transaction in custom software,[52] the court indicated that the proper method of dealing with a contract for the mixed sale of goods and services was to bifurcate the analysis.[53] Portions of the transactions dealing with "goods" were analyzed under the U.C.C., while portions

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42. *Id.* at 734, 737.
43. 925 F.2d 670 (3d Cir. 1991).
44. *Id.* at 675-76.
45. 327 F. Supp. 1198 (E.D. Mo. 1971).
46. *Id.* at 1200.
47. *Id.* at 1201.
48. *See Id.* at 1200, 1201.
49. *Id.* at 1204.
50. 925 F.2d at 670, 676 (3d Cir. 1991).
51. 492 N.E.2d 314 (Ind. Ct. App. 1986).
52. *Id.* at 318-19.
53. *Id.* at 318.

dealing with services were analyzed under common law.[54] However, this bifurcation approach is not unique to computer transactions; in fact, the *Data Processing Services* court cited *Stephenson v. Frazier*[55] for the proposition. *Stephenson* involved the purchase of a modular home, installation of a septic system, and construction of a foundation for the plaintiff's real property.[56] Numerous disputes resulted in a suit for rescission of the contract. The court found that the U.C.C. applied to the sale of the modular home.[57] In deciding whether the U.C.C. applied to the rest of the contract, the court said:

> The part of the contract relating to the construction of the foundation and installation of the septic system, however, does not fall within the definition of "goods." These contractual provisions were for the performance of services and thus the issues pertaining to them must be determined by common law contract principles.[58]

Thus, bifurcation of the contract into its "goods" and "services" aspects is not unique to computer transactions. In applying the concept to computers, a transaction involving both canned and custom software would be bifurcated. Portions relating to canned software would fall under the U.C.C., while portions relating to custom software would not.

6. *Hardware and Software Sold Together*

Many acquisitions of software also involve acquiring hardware.[59] As a result, it is necessary to determine if the transaction falls under the U.C.C. The software could be either pre-written (canned) or custom.

In *Triangle Underwriters, Inc. v. Honeywell, Inc.*,[60] a case involving both hardware and software, the plaintiff argued that what was sold was predominately "services," and thus the U.C.C.'s four year statute of limitations did not apply. Plaintiff argued that instead the New York six year period applicable to contract actions should apply.[61] However, the court concluded that the transaction was predominantly one for "goods," and therefore the U.C.C. applied.[62] The court said:

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54. *Id.* In its analysis the court found that the contract was for the development of custom software, and that the medium of transmission, i.e., tapes and disks, was insignificant. *Id.* Therefore, the court held the entire transaction was the sale of services. *Id.*

55. *Id.* at 318, *citing* 399 N.E.2d 794, 797 (Ind. App. 1980), *trans. denied* 425 N.E.2d 73 (Ind. 1981).

56. 399 N.E.2d 794 (Ind. Ct. App. 1980).

57. *Id.* at 797.

58. *Id.*

59. SCOTT, *supra* note 2, at 7-24.

60. 457 F. Supp. 765 (E.D. N.Y. 1978), *modified on other grounds* 604 F.2d 737 (2d Cir. 1979).

61. 457 F. Supp. at 769.

62. *Id.*

The agreement with Honeywell did not contemplate that it would run a data processing service for Triangle but rather that Honeywell would develop a completed system and deliver it "turn-key" to Triangle to operate. After the installation and training period, Honeywell personnel were to withdraw, and Honeywell's major remaining obligation was to be maintenance. Although the ideas or concepts involved in the custom designed software remained Honeywell's intellectual property, Triangle was purchasing the product of those concepts. That product required efforts to produce, but it was a product nevertheless and, though intangible, is more readily characterized as "goods" than "services" [sic]. Intangibles may be "goods" within the meaning of U.C.C. § 2-106.[63]

The court in *Triangle* used the "dominant element" test; but this test is not unique to computers.[64] Had the court bifurcated the analysis into a "service" aspect for the programming and a "goods" aspect for the hardware, it still would not have been adopting a test unique to computer transactions.[65]

In summary, computer use appears not to have changed this area of the law. Courts seem to be fitting the computer cases into pre-existing analysis, such as the "dominant element" test, the "end product tangible and movable" test, and the "bifurcation" test.

III. STATE TAXATION

Typically states charge sales tax, use tax, and personal property tax.[66] The question arises how these taxes apply to computer-related transactions. For all three of these kinds of taxes, the taxing statutes are of two types: 1. those that do not mention computers, but are in more general terms, for example, that tangibles are taxed, but not intangibles;[67] and 2. those that specifically mention computers.[68] Under the first type, where tangibles are taxed, but not intangibles, the analysis often is similar to that under the previous U.C.C. relating to "goods" and "services."

A. ALL SOFTWARE IS INTANGIBLE

In one of the earliest computer taxation cases, *Commerce Union Bank v. Tidwell*,[69] the Tennessee Supreme Court needed to decide if

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63. *Id.*

64. *See supra* notes 40-42, and accompanying text.

65. *See supra* notes 51-58, and accompanying text.

66. BERNACCHI, *supra* note 1, Annex 14B. This annex describes the sales and use taxes in the fifty states and the District of Columbia. As an example of state personal property tax, *See infra notes* 96-97, and accompanying text.

67. *See infra* notes 70-88, and accompanying text.

68. *See infra* notes 95-97, and accompanying text.

69. 538 S.W.2d 405 (Tenn. 1976).

software was tangible, and, thus, taxable under the Tennessee Sales and Use Tax.[70]

The court, referring to the statute, said:

The applicable Code section reads in part as follows: 67 — 3003. Levy of tax — Rate. It is declared to be the legislative intent that every person is exercising a taxable privilege who engages in the business of selling tangible personal property at retail in this state, or who uses or consumes in this state any item or article of tangible personal property as defined in this chapter, irrespective of the ownership thereof or any tax immunity which may be enjoyed by the owner thereof, or who is the recipient of any of the things or services taxable under this chapter, or who rents or furnishes any of the things or services taxable under this chapter, or who stores for use or consumption in this state any item or article of tangible personal property as defined in this chapter, or who leases or rents such property, either as lessor or lessee, within the State of Tennessee. . . .Tangible personal property is defined by T.C.A. § 67 — 3002 (1) as 'personal property, which may be seen, weighed, measured, felt, or touched, or is in any other manner perceptible to the senses.'[71]

The case apparently involved both canned and custom software, as well as "operational" and "application" software.[72] The court found all of the software to be intangible and, thus, not taxable.[73] The court reasoned that what is created and sold here is information, and that the magnetic tapes which contain the information are only a method of transmitting these intellectual creations from the originator to the user. The court stated that it is merely incidental that these intangibles are transmitted by way of a tangible reel of tape.[74]

The court further stated:

A magnetic tape is only one method whereby information may be transmitted from the originator to the computer of the user. That same in- formation may be transmitted from the originator to the user by way of telephone lines, or it may be fed into the user's computer directly by the originator of the program.[75]

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70. *Id.* at 406.

71. *Id.* at 406. Tennessee has changed its law and now taxes both canned and custom software. T.C.A. § 67-3002 (b). *See* BERNACCHI *supra* note 1 at 14B-48.

72. 538 S.W.2d at 406 (wherein the court said "an operational program . . . controls the hardware and actually makes the machine run; it is fundamental and necessary to the functioning of the computer hardware itself. Secondly there is an applicational program which is a type of program designed to perform specific functions, such as preparation of the employee payroll, preparation of a loan amortization schedule, or any other specific job which the computer is capable of performing.")

73. *Id.* at 408.

74. *Id.*

75. *Id.* The court was a bit unrealistic in stating the programs may be fed directly into the user's computer by the originator. Software transactions simply do not happen that way.

Thus, the court reasoned that the user was acquiring intangible information, and that the tangible media was incidental. However, the idea that tangible personal property can be transferred as merely incidental to the transfer of the non-taxable intangible is not unique to computer software.

For example, in *Washington Times-Herald v. District of Columbia*,[76] the tax code provided that personal service transactions were exempt from the sales tax where tangible personal property was transferred but was an inconsequential element of the transaction.[77] A newspaper purchased from an artist the right to reproduce the artist's cartoons. The cartoons were transferred to the newspaper in fiber matrices (mats) which were used to reproduce the cartoons in the newspaper. The court held that the newspaper had purchased the right to reproduce the cartoons, and not the material upon which the cartoons were impressed.[78]

Also in *Dun & Bradstreet, Inc. v. City of New York*,[79] the City imposed a tax on tangible personal property.[80] Dun & Bradstreet delivered reference books to its subscribers. The books contained information which could be used by the subscribers when making sales and extending credit. The court said the information furnished was of value to the subscribers, and that was what they bought, and not the paper on which the information was conveyed. Therefore, the paper was incidental to the service provided.[81] Thus, it is not unique to computer software transactions that the transaction not be taxed although there are incidental tangibles transferred along with the intangible programs.

B.   CANNED SOFTWARE TANGIBLE, CUSTOM SOFTWARE INTANGIBLE

In *Maccabees Mutual Life Insurance Co. v. State Department of the Treasury*,[82] the State of Michigan assessed a use tax on tangible personal property.[83] The Michigan appellate court said:

> The use tax was enacted for the purpose of levying a specific tax for the privilege of using, storing or consuming tangible personal property. It is designed to impose an excise tax on the use, storage or consumption of tangible personal property brought into the state in interstate commerce, after it has come to rest in Michigan. The use tax is complemen-

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76. 213 F.2d 23 (D.C. Cir. 1954).

77. *Id.* at 24 n.3.

78. *Id.* at 23-24.

79. 11 N.E.2d 728 (N.Y. 1937).

80. *Id.* at 731.

81. *Id.*

82. 332 N.W.2d 561 (Mich. 1983).

83. *Id.* at 562.

tary to the sales tax.[84]

The court also said "[t]angible personal property embraces all goods, wares, merchandise, products and commodities, all tangible things and substances which are dealt in, capable of being possessed and exchanged."[85]

The court found that custom software was not tangible, and thus not subject to the use tax.[86] The court reasoned that custom software needs pre-release consulting, continuous on-sight updating, and expert engineering.[87] The court contrasted this with canned software, which need none or far fewer of these services, and which is an end product in itself.[88]

However, the reasoning in *Maccabees*, [89] that custom and canned products are treated differently, is not unique to software. For example, in *Southern Bell Telephone and Telegraph Co. v. Department of Revenue*,[90] the question arose as to whether artwork prepared for the yellow pages of a telephone directory was taxable.[91] The court said:

> The art work which Southern Bell acquired for use in the yellow pages fell into three different categories: (1) stock art; (2) speculative art; and (3) finished art. Southern Bell conceded in the proceedings below that it purchased stock art as tangible personal property and that those purchases were subject to the sales tax. However, Southern Bell contends that its transactions with artists who created speculative art and finished art were personal service transactions which involved sales as inconsequential elements for which no separate charges were made and thus were exempt from sales tax by virtue of F.S. 212.08(7)(e).
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> Prior to the final hearing, the parties entered into a stipulation of facts which defines the three types of art work. Stock art is previously created art work which is inventoried by dealers who publish catalogues describing the stock art. When Southern Bell purchases stock art, it acquires possession of papers bearing reproductions of previously prepared drawings, designs, or other representations of objects which are created by the company that sells the stock art, and are reproduced in quantity. Speculative art and finished art are created by artists with whom Southern Bell contracts. Speculative art refers to rough drawings created by artists at the specific request of the yellow pages salesperson. After a salesperson investigates the general nature of a

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84. *Id.*
85. *Id.* at 563, *citing* AC, R 205.5.
86. 332 N.W.2d at 563.
87. *Id.*
88. *Id.*
89. 332 N.W.2d 561 (Mich. 1983).
90. 366 So. 2d 30 (Fla. 1978).
91. *Id.* at 31. *See also* JEROME R. HELLERSTEIN AND WALTER HELLERSTEIN, STATE TAXATION (Warren Gorham Lamont 1992) at 13-32 to 35 (hereinafter HELLERSTEIN & HELLERSTEIN).

prospective advertiser's business he gives this information to the artist who by himself or in collaboration with the salesperson creates an artistic design to show how an advertisement for the business might appear in the yellow pages. The design may be accepted or rejected by the prospective advertiser. If it is accepted, Southern Bell gives it back to the same or another artist with the request that finished art be created. . . .The fee is not broken down into separate amounts for the services performed and the tangible personal property transferred to Southern Bell. Finished art refers to designs which are actually photographed for use in particular yellow pages advertisements. While speculative art is a mock-up of the entire design of the advertisement, including the lettering, finished art consists of only the artistic design or illustration. Finished art is precisely drawn as opposed to being merely sketched as in the case of speculative art. Southern Bell photographs the finished art and it is the photograph not the finished art itself which is placed in the yellow pages advertisement.[92]

The court held that the speculative and finished art were exempt from tax under the personal service exemption:[93]

We agree with petitioner that the exemption set forth in F.S. 212.08(7)(e) applies to the transactions involved. When Southern Bell buys speculative and finished art, it is really purchasing the artist's idea and the fact that the idea is transmitted on tangible personal property is an inconsequential element of the transaction.

We reach this decision after considering several factors, viz: (1) whether or not the property to be transferred as a result of the transaction is already in existence or whether it is produced in the course of the services rendered; (2) the value of the individual effort involved in the transaction as compared to the value of the property transferred; and (3) whether or not it is essential to the transaction that the specific tangible personal property be created.

Applying those factors to this case we find that the art work (not stock art) transferred to Southern Bell was created solely in the context of the particular transactions and not prior to them. The value of the services performed for Southern Bell was much greater than the value of the tangible personal property transferred to Southern Bell. Finally, taking possession of the material on which the services were rendered was not essential to Southern Bell's realization of the value of the artist's services because the designs created by the artist could be disassociated from the tangible personal property even though it might not have been economically feasible to do so.

Our decision finds support in this court's decision in *Askew v. Bell*, 248 So. 2d 501 (Fla. 1st DCA 1971). In that case, the court held that a court reporter, who for a fee records a judicial or administrative proceeding, or takes down and transcribes testimony, is engaged in render-

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92. 366 So. 2d at 31-32.
93. HELLERSTEIN & HELLERSTEIN, *supra* note 91, at 13-33.

ing a service and the transcript which he furnishes to the persons who employ him is a mere incident of that service. The *Askew* court held that such a transaction would be subject to sales tax only when transcripts are sold to third persons who are not parties to the proceeding for which the court reporter was engaged.[94]

Thus, it can be seen that the idea to treat canned software as tangible, and taxable, but custom software as intangible, and not taxable, is not unique to the computer business.

C. SPECIFIC LEGISLATION

Many states have specific legislation or regulations which deal with taxability of transactions involving computer software.[95] For example, in California, for property tax purposes, only basic operational programs are taxed.[96] The code provides:

§ 995 storage media for computer programs.

Storage media for computer programs shall be valued on the 1972 lien date and thereafter as if there were no computer program on such media except basic operational programs. Otherwise, computer programs shall not be valued for purpose of property taxation.

As used in this section, storage media for computer programs may take the form of, but are not limited to, punched cards, tapes, discs or drums on which computer programs may be embodied or stored.

As used in this section, a computer program may be, but is not limited to a set of written instructions, magnetic imprints, required documentation or other process designed to enable the user to communicate with or operate a computer or other machinery.

The term "basic operational program," as used in section 995 means a computer program which is fundamental and necessary to the functioning of a computer. A basic operational program is that part of an operating system including supervisors, monitors, executives and control or master programs which consist of the control program elements of that system.

For purposes of this section the terms "control program" and "basic operational program" are interchangeable. A control program, as opposed to a processing program, controls the operation of a computer by managing the allocation of all system resources, including the central

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94. 366 So. 2d at 32-33.

95. *See* BERNACCHI, *supra* note 1, Annex 14 B. For example, Alabama does not have a sales tax on either canned or custom software (*Id.* at 14B-2; Alabama Sales and Use Tax Legislation 810-6-1-.37) whereas Arkansas has a sales tax on both canned and custom software, (BERNACCHI, *supra* note 1, at 14B-5; Arkansas Gross Receipts Tax (Sales Tax) ARK. CODE ANN. § 26-52-304 (1988)). Idaho has a sales tax on canned but not custom software. BERNACCHI, *supra* note 1, at 14B-15, Idaho Sales and Use Tax Regulation 12.2 (amended 12/5/1988).

96. CAL. REV. AND TAX CODE §§ 995, 995.2 (West 1987).

processing unit, main storage, input/output devices and processing programs. A processing program is used to develop and implement the specific applications which the computer is to perform. Its operation is possible only through the facilities provided by the control program; however, it is not in itself fundamental and necessary to the functioning of a computer.

Excluded from the term "basic operational program" are processing programs, which consist of language translators, including but not limited to, assemblers and compilers; service programs, including but not limited to, data set utilities, sort/merge utilities, and emulators; data management systems, also known as generalized file-processing software; and applications programs including but not limited to payroll, inventory control and production control. Also excluded from the term "basic operational program" are programs or parts of programs developed for or by a user if they were developed solely for the solution of an individual operational problem of the user. A control program, as used in this section, includes such functions as: selection, assignment and control of input and output devices; loading of programs, including selection of programs from a system resident library; handling the steps necessary to accomplish job-to-job transition; controlling the allocation of memory; controlling concurrent operation of multiple programs or computers; and protecting data from being inadvertently destroyed as a result of operator program error.[97]

However, computer software is far from the only item mentioned specifically in state tax statutes or regulations. For example, purchases of food for human consumption, other than meals that are served, are exempt from sales tax in most of the states and District of Columbia. Meals are taxed by every state having a sales tax.[98] Other items regularly exempted from sales tax include prescription drugs, and consumer electric and gas utilities.[99] Therefore, although legislation and regulations specifically mention software, this is not unique to software.[100]

In summary, computers do not seem to have caused major changes in the area of state taxation. In those states taxing tangibles but not intangibles, computer software typically is analogized to other products in order to determine the taxability of the software. Furthermore, computer taxing statutes are not unique. Although many states have passed taxing statutes referring specifically to computer products, there are many state taxing statutes which refer to many other products as well.

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97. *Id.*

98. HELLERSTEIN & HELLERSTEIN, *supra* note 91, at 13-73.

99. *Id.* at 12-4.

100. *Id.* at 12-4 to 6.

IV. COPYRIGHT

This is an area of the law that has seen dramatic changes as a result of computers. The National Commission on New Technological Uses of Copyrighted Works (CONTU) was created in 1976 by Congress as part of its effort to revise the United States copyright law.[101] Congress had learned that computer use may cause problems relating to authorship, distribution, and use of copyrighted works. In turn, it asked the Commission to recommend changes to the copyright law relating to computers.[102]

The Commission noted that the copyright law provided that the owner of a copyright has the exclusive right to do or authorize the following: a.) prepare copies of the work; b.) prepare derivative works[103] based upon the work; c.) distribute copies of it publicly by sale, rental, lease, or lending; d.) perform certain works publicly; and e.) display certain works publicly.[104]

It also noted that the placement of any copyrighted work into a computer is a preparation of a copy, and therefore, a potential copyright infringement.[105] Therefore, CONTU suggested that "the law should provide that persons in rightful possession of copies of programs be able to use them freely without fear of exposure to copyright liability."[106]

The report also states:

Because the placement of a work into a computer is the preparation of a copy, the law should provide that persons in rightful possession of copies of programs be able to use them freely without fear of exposure to copyright liability. Obviously, creators, lessors, licensors, and vendors of copies of programs intend that they be used by their customers, so that rightful users would but rarely need a legal shield against potential copyright problems. It is easy to imagine, however, a situation in which the copyright owner might desire, for good reason or none at all, to force a lawful owner or possessor of a copy to stop using a particular program. One who rightfully possesses a copy of a program, therefore, should be provided with a legal right to copy it to that extent which will permit its use by that possessor. This would include the right to load it into a computer and to prepare archival copies of it to guard against destruction or damage by mechanical or electrical failure . . . .

Because of a lack of complete standardization among programming languages and hardware in the computer industry, one who rightfully

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101. FINAL REPORT OF THE NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS (1978) (hereinafter CONTU).

102. *Id.*

103. Derivative works include translations, abridgements, transformations and adaptations. 17 U.S.C. § 101 (1977).

104. 17 U.S.C. § 106 (1977); CONTU at 8.

105. CONTU at 13.

106. *Id.*

acquires a copy of a program frequently cannot use it without adapting it to that limited extent which will allow its use in the possessor's computer. The copyright law, which grants to copyright proprietors the exclusive right to prepare translations, transformations and adaptations of their work, should no more prevent such use than it should prevent rightful possessors from loading programs into their computers. Thus a right to make those changes necessary to enable the use for which it was both sold and purchased should be provided. The conversion of a program from one higher-level language to another to facilitate use would fall within this right, as would the right to add features to the program that were not present at the time of rightful acquisition.[107]

In explaining why inputting a copyrighted work into a computer is the preparation of a copy, CONTU said that the definitions of "copies" and "fixed" lead to its conclusion. CONTU said:

"Copies" are material objects . . .in which a work is fixed . . . . A work is "fixed" . . . when its embodiment in a copy . . . is sufficiently permanent or stable to permit it to be perceived, reproduced, or otherwise communicated for a period of more than transitory duration. Because works in computer storage may be repeatedly reproduced they are fixed, and thus, are copies.[108]

Apparently, CONTU meant that when a computer program is read into the computer from a tape or disk, the program is recreated in the memory of the computer, thus, creating a copy. The reason CONTU believed computer programs were eligible for copyright protection, thereby calling for protection from being copied illegally, is that programs are "literary works," protected under the copyright law.[109]

The Commission considered the various forms in which programs could be fixed, including flowcharts,[110] source code,[111] and object code.[112] The Commission also noted the ways in which infringement might occur, such as, photocopying the programmer's coding sheets or copying the magnetic media containing the program.[113]

The Commission recommended that section 101 be amended, defining a computer program as "a set of statements or instructions to be used

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107. CONTU at 13.

108. CONTU at 55 (citing 17 U.S.C. § 101).

109. CONTU at 38. Literary works are subject to copyright protection. 17 U.S.C. § 102 (a)(1).

110. "A flowchart is a graphic representation for the definition, analysis, or solution of a problem in which symbols are used to represent operations, data flow, or equipment." CONTU at 53 n. 126.

111. "A source code is a computer program written in any of several programming languages employed by computer programmers." CONTU at 53 n. 127.

112. "An object code is the version of the program in which the source code language is converted or translated into the machine language of the computer with which it is to be used." CONTU at 53-54 n. 128.

113. CONTU at 55-56.

directly or indirectly in a computer in order to bring about a certain result."[114]

Additionally, the Commission recommended that a new 17 U.S.C. section 117 be enacted as follows:

> § 117: Limitations on Exclusive Rights: Computer Programs
> Notwithstanding the provisions of § 106, it is not an infringement for the rightful owner[115] of a copy of a computer program to make or authorize the making of another copy or adaptation of that computer program provided:
> (1) that such a new copy or adaptation is created as an essential step in the utilization of the computer program in conjunction with a machine and that it is used in no other manner, or
> (2) that such new copy or adaptation is for archival purposes only and that all archival copies are destroyed in the event that continued possession of the computer program should cease to be rightful.
>
> Any exact copies prepared in accordance with the provisions of this section may be leased, sold, or otherwise transferred, along with the copy from which such copies were prepared, only as part of the lease, sale, or other transfer of all rights in the program. Adaptations so prepared may be transferred only with the authorization of the copyright owner.[116]

A. COPYING COPYRIGHTED PROGRAMS

After Congress enacted the CONTU suggestions, the new laws were tested in the courts. In *Apple Computer, Inc. v. Franklin Computer Corporation*,[117] the Third Circuit United States Court of Appeals needed to decide whether the copying of computer programs was a copyright infringement.[118]

Apple manufactured computers, peripheral equipment such as disk drives, and sold software.[119] Franklin manufactured and sold computers.[120] Apple sued Franklin, claiming that Franklin had copied fourteen of Apple's programs, and that this constituted copyright infringement.[121] Franklin admitted that it copied the programs,[122] but

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114. *Id.*

115. CONTU actually suggested the word "possessor," but Congress changed it to "owner." Research has failed to disclose the reason Congress made the change. The result seems to be that the rights provided in 17 U.S.C. section 117 technically apply only to those that purchase, rather than are licensed to use, software. Licensees are advised to provide for these rights in their licensing agreement.

116. CONTU at 30.

117. 714 F.2d 1240 (3d Cir. 1983).

118. *Id.* at 1242, 1245-49.

119. *Id.* at 1242.

120. *Id.* at 1243.

121. *Id.* at 1243-44.

122. *Id.* at 1245.

nevertheless argued it had not infringed any of Apple's rights.[123]

The trial court had found that the object code,[124] which had been copied,[125] was ineligible for copyright protection because it could not be read and understood by humans.[126] The trial court based its view on the United States Supreme Court case of *White-Smith Music Publishing Company v. Appollo Co.*[127] This case held that a piano roll was not a copy of the musical composition because it was not in a form others, except a few experts, could perceive.[128] However, the appellate court rejected this reasoning, and said:

> [I]t is clear from the language of the 1976 Act and its legislative history that it was intended to obliterate distinctions engendered by White-Smith . . . . Under the statute, copyright extends to works in any tangible means of expression "from which they can be perceived, reproduced, or otherwise communicated, either directly or with the aid of a machine or device." 17 U.S.C. Section 102 (a). Further, the definition of "computer program" adopted by Congress in the 1980 amendments is "sets of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result." 17 U.S.C. Section 101. As source code instructions must be translated into object code before the computer can act upon them, only instructions expressed in object code can be used "directly" by the computer . . . . This definition was adopted following the CONTU Report in which the majority took the position that object codes are proper subjects of copyright.[129]

Thus, the *Apple* court upheld copyrightability of software even as it exists in non-human readable form stored in the computer.[130] However, this does not necessarily distinguish software from other items which receive copyright protection. For example, copyright protection exists for

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123. *Id.* at 1244-45.

124. *See supra* note 112.

125. 714 F.2d at 1246-49.

126. *Id.* at 1248, (citing 545 F. Supp. 812, 821 (E.D. Pa. 1982)).

127. 209 U.S. 1 (1908).

128. 714 F.2d at 1248.

129. *Id.*

130. *Id.* at 1246-49. Technically, the *Apple* court needed to explain its conclusion better. It said that under 17 U.S.C. section 102 (a), the program was protected because it could be perceived using a machine or device. 714 F.2d at 1248. Section 102 (a) states that the original work of authorship must be perceivable. 17 U.S.C. § 102 (a). Most likely, what will be perceived is a binary version of the program, listed on the printer. It is arguable this is not the original work of authorship, which instead is the higher-level source code. Using a reverse compilation method, a listing close to the original source code could be produced from the binary which is located in the computer's memory. *See e.g.* Sega Enterprises Ltd v. Accolade, Inc. 977 F.2d 1510, 1514-16 (9th Cir. 1993) (involving the "disassembly" of computer programs in order to learn how they worked so that defendant could write software to work with plaintiff's game cartridges).

sound recordings,[131] and they exist on some media that is not under-
standable to humans without the use of a machine.

B. CHANGES TO THE COPYRIGHT LAWS

Computers induced an important change to the copyright law.
CONTU realized that programs needed to be copied in order to be read
into computers and used, that a backup copy of a program was necessary
in case of destruction or damage by mechanical or electrical failure;[132]
and that absent legislation permitting this copying, an infringement
might occur.[133] Congress, of course, passed such legislation as 17 U.S.C.
section 117.[134] Courts have construed the legislation as having accom-
plished these purposes of allowing the copying of the program into the
computer in order to use the program,[135] and in order to make an archi-
val copy.[136]

1. *Semiconducter Chip Protection Act of 1984*

In addition to the copyright changes passed as a result of CONTU's
suggestions, the copyright law was changed to provide protection for
semiconductor chips.[137] This article will later define and discuss the
change in detail.

Prior to passage of the Chip Act, the Copyright Office supported pro-
tection for semiconductor chips.[138] That office believed that technical
drawings were copyrightable as "pictorial, graphic, or sculptural
works"[139] However the Copyright Office also believed that under 17

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131. 17 U.S.C. § 102 (a)(7); Fonotopia Limited v. Bradley Victor Talking Mach. Co., 171
F. 951, 963 (C.C.E.D.N.Y 1909); United States v. Taxe et. al., 540 F.2d 961, 965 (9th Cir.
1976); A & M Records, Inc., et al v. M.V.C. Distributing Corporation, 574 F.2d 312, 313
(6th Cir. 1978).

132. CONTU, *supra* note 101, at 31; 17 U.S.C. § 117.

133. CONTU, *supra* note 101, at 30. Infringement would be under 17 U.S.C. § 106. *See*
supra notes 103 and 104, and accompanying text.

134. *See supra* notes 115 and 116, and accompanying text.

135. *Sega Enterprises*, 977 F.2d at 1520.

136. Vault Corporation v. Quaid Software Limited, 847 F.2d 255, 264, 267 (5th Cir.
1988) (involving the "disassembly" of the plaintiff's binary computer programs in order to
learn how they worked so that the defendant could write software to cause the plaintiff's
software to fail. Plaintiff's software was designed to cause it to be impossible to copy disks
containing programs plus plaintiff's software).

137. 17 U.S.C. § 901-12.

138. *See* Prepared Statement of Dorothy Schrader, Associate Register of Copyrights for
Legal Affairs, Copyright Office (hereinafter Schrader); published in the: HEARINGS ON S.
1201 BEFORE THE SUBCOMMITTEE ON PATENTS, COPYRIGHTS AND TRADEMARKS OF THE SEN-
ATE COMM. ON THE JUDICIARY, 98th Cong., 1st Sess. (1983).

139. Schrader *supra* note, 138 at 28, (citing 17 U.S.C. § 102 (a)). Pictorial, graphic, and
sculptural works are protected under 17 U.S.C. section 102 (a)(7).

U.S.C. section 113[140] of the Copyright Act, protection apparently would not extend to the semiconductor chip product portrayed by the drawing or technical data.[141]

Under 17 U.S.C. section 113(b), copyright protection afforded to a technical drawing portraying a useful article is to be construed in accordance with the law in effect on December 31, 1977.[142] The 1977 House Report refers to the 1961 Report of the Register of Copyrights, where it was stated, based on judicial precedents, that "copyright in a pictorial, graphic, or sculptural work, portraying a useful article as such, does not extend to the manufacture of the useful article itself," and recommended that the court decisions not be altered by statute.[143]

Courts consistently have refused to extend copyright protection to useful articles.[144] The Copyright Office, in its statement to the United States Senate prior to the passage of the Semiconductor Chip Act, referred to the case of *Norris Industries v. International Tel. & Tel. Corp.*, and *Ladd* in support of the contention that useful articles do not receive copyright protection.[145] In that case, which involved the design of wire spoked automobile wheel covers, the court found that the useful article did "not contain a superfluous sculptural design, serving no function, that can be identified apart from the wheel covers themselves."[146]

The Copyright Office believed that the Chip Act, which provides protection for semi conductor chip products and mask works,[147] also would

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140. 17 U.S.C. § 113. The scope of exclusive rights in pictorial, graphic, and sculptural works is defined as follows:

      (a) Subject to the provisions of subsections (b) and (c) of this section, the exclusive right to reproduce a copyrighted pictorial, graphic, or sculptural work in copies under section 106 includes the right to reproduce the work in or on any kind of article, whether useful or otherwise.

      (b) This title does not afford, to the owner of copyright in a work that portrays a useful article as such, any greater or lesser rights with respect to the making, distribution, or display of the useful article so portrayed than those afforded to such works under the law, whether title 17 or the common law or statutes of a State, in effect on December 31, 1977, as held applicable and construed by a court in an action brought under this Title.

141. Schrader, *supra* note 138, at 28.

142. Schrader at 28; 17 U.S.C. § 113 (b).

143. Schrader, *supra* note 138, at 28-29.

144. *Id.* at 30.

145. *Id.* at 33, *citing* 696 F.2d at 918 (11th Cir. 1983).

146. Schrader *supra* note 138, at 3, (citing 696 F.2d at 924).

147. The Semiconductor Chip Protection Act of 1984 defines "semiconductor chip product" and "mask work" as follows:

      (1) a "semiconductor chip product" is the final or intermediate form of any product

           (a) having two or more layers of metallic, insulating, or semiconductor material, deposited or otherwise placed on, or etched away or otherwise removed from, a piece of semiconductor material in accordance with a predetermined pattern; and

           (b) intended to perform electronic circuitry functions;

grant protection to useful aspects of useful articles, with no separable artistic features,[148] and that this protection was necessary.[149] Additionally, the protection already provided to computer programs under 17 U.S.C. section 117[150] would not be sufficient for protecting chips.[151] This is because chips may not necessarily contain entire programs. Rather, they might contain only the central information processor and memory storage capacity.[152] Also, the Copyright Office believed that patent protection did not exist for chips, although patent protection might be available for some aspects, e.g., the processes used in the manufacture of chips.[153] Under the Semiconductor Chip Protection Act of 1984,[154] a mask work fixed in a semiconductor chip product is eligible for protection. The rights accorded mask work owners, under the Act, are set forth as follows:

> The owner of a mask work provided protection under this chapter has the exclusive right to do and to authorize any of the following:
>
> (1) to reproduce the mask work by optical, electronic, or any other means;
>
> (2) to import or distribute a semiconductor chip product in which the mask work is embodied; and
>
> (3) to induce or knowingly to cause another person to do any of the acts described in paragraphs (1) and (2).[155]

Notwithstanding the rights set forth in section 905, reverse engineering is permitted for the purposes of teaching or analyzing the techniques used in the product.[156]

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(2) a "mask work" is a series of related images, however fixed or encoded
    (a) having or representing the predetermined, three-dimensional pattern of metallic, insulating or semiconductor material present or removed from the layers of a semiconductor chip product; and
    (b) in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product . . .

148. *Id.* at 33.

149. *Id.* at 26.

150. *See supra* notes 115-116 and accompanying text.

151. Schrader *supra* note 138, at 40-41.

152. *Id.*

153. *Id.* at 50. Processes are protected by the patent law. 35 U.S.C. §§ 100, 101.

154. 17 U.S.C. § 902 (a)(1).

155. 17 U.S.C. § 905 (defining exclusive rights in mask works). "Mask work" is defined in *supra* note 147.

156. 17 U.S.C. § 906. Limitation on exclusive rights: reverse engineering; first sale
(a) Notwithstanding the provisions of section 905, it is not an infringement of the exclusive rights of the owner of a mask work for:
    (1) a person to reproduce the mask work solely for the purpose of teaching, analyzing, or evaluating the concepts or techniques embodied in the mask work or the circuitry, logic flow, or organization of components used in the mask work; or

2. *Case Law Under the Chip Act*

There is little case law discussing the Chip Act; however, one such case is *Brooktree Corporation v. Advanced Micro Devices, Inc.*,[157] which involved alleged infringement of mask works.[158] In that case, the Ninth Circuit Court said:

> The Semiconductor Chip Protection Act provides for the grant of certain exclusive rights to owners of registered mask works, including the exclusive right "to reproduce the mask work by optical, electronic, or any other means", and the exclusive right "to import or distribute a semiconductor chip product in which the mask work is embodied." 17 U.S.C. § 905. Mask works that are not "original," or that consist of "designs that are staple, commonplace, or familiar in the semiconductor industry, or variations of such designs, combined in a way that, considered as a whole, is not original," are excluded from protection. 17 U.S.C. § 902 (b). Protection is also not extended to any "idea, procedure, process, system, method of operation, concept, principle, or discovery, regardless of the form in which it is described, explained, illustrated or embodied" in the mask work. 17 U.S.C. § 902 (c).[159]

In summary, copyright law has been changed in two key ways to accommodate computers. First, the owner of a copy of a computer program is permitted to make a copy by reading the program into the computer in order to run the program and also in order to make a backup copy.[160] Second, semiconductor chip works receive copyright protection.[161]

V. PATENTS

United States patent law is derived from Article 1, section 8, clause 8 of the United States Constitution, which gives Congress the power to "promote the progress of science and useful arts by securing for limited

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(2) a person who performs the analysis or evaluation described in paragraph (1) to incorporate the results of such conduct in an original mask work which is made to be distributed.

(b) Notwithstanding the provisions of section 905(2), the owner of a particular semiconductor chip product made by the owner of the mask work, or by any person authorized by the owner of the mask work, may import, distribute, or otherwise dispose of or use, but not reproduce, that particular semiconductor chip product without the authority of the owner of the mask work.

17 U.S.C. §906.

157. 977 F.2d. 1555 (9th Cir. 1992).

158. *Id.* at 1561.

159. *Id.* at 1563.

160. *See supra* notes 116-136 and accompanying text.

161. *See supra* notes 137-159 and accompanying text.

times to . . .inventors the exclusive right to their . . .inventions."[162] Pursuant to this grant of power, Congress has passed statutes relating to patents in 35 U.S.C. sections 1-376.[163]

Patent law requires that all patentable inventions consist of appropriate subject matter,[164] are novel,[165] and are non-obvious.[166] There are four United States Supreme Court cases which have dealt with patents and computers which will be discussed below.

A. *GOTTSCHALK V. BENSON*[167]

In *Benson*, the patent applicant sought to patent a method of converting binary coded decimal (BCD) to binary.[168] The claim was not limited to any particular machine or end use, and purported to cover any use of the claimed method in a general purpose digital computer of any type.[169] The Court characterized the claimed invention as a method of programming a general purpose digital computer to convert signals from binary-coded decimal form into pure binary form, and that a procedure which solves a given type of mathematical problem is known as an 'algorithm'.[170] The Court treated the claimed invention as a scientific truth and a principal in the abstract,[171] and said that a scientific truth is not a patentable invention, although "a novel and useful structure created with the aid of knowledge of scientific truth may be."[172] The Court added that "[t]ransformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines."[173] In denying the patent, the Court stated:

> It is conceded that one may not patent an idea. But in practical effect that would be the result if the formula for converting BCD numerals to pure binary numerals were patented in this case. The mathematical formula involved here has no substantial practical application except in

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162. U.S. CONST. art 1, § 8, cl. 8; *see* Victor de Gyarfas, *Software as Patentable Subject Matter: A Comparison of International Approaches*, New Matter, The Intellectual Property Section, State Bar of California at 7 (Fall 1993).

163. *Id.*

164. 35 U.S.C. § 101.

165. 35 U.S.C. § 102.

166. 35 U.S.C. § 103.

167. 409 U.S. 63 (1972).

168. *Id.* at 64. With some computers, decimal numbers are read into the computer in binary coded decimal form, and must be converted to binary before arithmetic operations can be performed. When the result is computed, it is converted back from binary to BCD for outputting on the printer.

169. 409 U.S. 63, 64 (1972).

170. *Id.* at 65.

171. *Id.* at 67-68.

172. *Id.* at 67, *citing* Mackay Co. v. Radio Corp., 306 U.S. 86, 94.

173. 409 U.S. at 70.

connection with a digital computer, which means that [if the patent is granted], the patent would wholly pre-empt the mathematical formula and in practical effect, would be a patent on the algorithm itself.[174]

It appears that *Benson* does not change the law, and that the inclusion of computers does not require a distinct form of analysis. *Benson* seems to reiterate the rule that a scientific truth cannot receive patent protection.[175] If a scientific truth is combined with other elements to transform an article to a different state or thing, a process patent might issue.[176]

B. *DANN V. JOHNSTON*[177]

In *Johnston*, the claimant applied for a patent on a "machine system for automatic record-keeping of bank checks and deposits."[178] The system permitted a bank to furnish a customer with subtotals of various categories of transactions completed in connection with the customer's single account, thus saving the customer the time and/or expense of conducting the bookkeeping himself.[179]

The system worked in a way that allowed a bank customer to write his or her own code on each check. For example, food expenditures might be coded "123," fuel expenditures "124," and rent "125." When the bank processed the check, the category codes would be entered magnetically onto the checks. The computer system would read these codes, and organize the regular periodic bank statements to reflect expenses in each category.[180]

The Court denied the patent on grounds of obviousness,[181] saying that the test for obviousness "is not one which turns on whether the invention is equivalent to some element in the prior art but rather whether the difference between the prior art and the subject matter in question'is a [difference] sufficient to render the claimed subject matter unobvious to

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174. *Id.* at 71-72. The Court seems to treat the applicant's method of converting from one number system to another as a scientific truth similar to the chemical principal "that the elements of neutral fat require to be severally united with an atomic equivalent of water in order to separate each other and become free." *Id.* at 70. However, the scientific truth instead would appear to be that binary coded decimal numbers can be converted to binary numbers; and the claimant's method was one of many ways to accomplish this.

175. *Id.* at 67.

176. *Id.* at 70. Of course, 35 U.S.C. section 102 (novelty) and § 103 (non-obviousness) would also need to be satisfied.

177. 425 U.S. 219 (1976).

178. *Id.* at 220.

179. *Id.*

180. *Id.* at 221.

181. *Id.* at 227-29.

one skilled in the applicable art.'"[182] The Court noted that under the claimant's system, information that previously may have appeared on several, separate bank account statements could now be seen on a single bank statement. The Court also noted "that banks have long segregated debts attributable to service charges within any given separate account and have rendered their customers subtotals for those charges."[183] Thus, the patent was denied on grounds of obviousness.[184]

The computer aspects of *Johnston* did not cause any changes in the law. The case merely uses 35 U.S.C. section 103 of the Patent Statutes,[185] citing obviousness as a ground for denying the patent. Although a programmed computer was used in the banking process,[186] this fact did not necessitate a new analysis.

C. *PARKER V. FLOOK*[187]

In *Flook*, the claimant filed for a patent for a method of monitoring and controlling a chemical catalytic conversion process.[188] The Court denied the patent, holding that the only novel feature was the inclusion of a mathematical formula, which is an unpatentable feature.[189]

The method consisted of three steps: (1) an initial step in which the present value of some variable (e.g. temperature) was measured; (2) a second step which used an algorithm, or mathematical formula, to calculate an updated alarm limit value; and (3) the actual adjustment of the alarm limit to its updated value.[190]

The *Flook* court held that the patent application did not purport to explain how to select the appropriate margin for safety, the weighting factor,[191] or any other variables. The patent application also failed to disclose any chemical processes at work. It only provided a formula for computing an updated alarm limit.[192] The Court said that the only difference between the prior art and the claim was the inclusion of the formula.[193] The mathematical formula, under *Benson*, is treated as well known and, thus, not patentable.[194] Additionally, the Court stated

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182. *Id.* at 228, *citing the lower court's opinion*, 502 F.2d 765, 772 (C.C.P.A. 1974) (Markey, C. J., *dissenting*).
183. *Id.* at 227.
184. *Id.* at 229-30.
185. 35 U.S.C. § 103.
186. 425 U.S. at 220-21.
187. 437 U.S. 584 (1978).
188. *Id.* at 585.
189. *Id.*
190. *Id.* The alarm limit is used to signal the presence of an abnormal condition. *Id.*
191. *Id.* at 586.
192. *Id.*
193. *Id.* at 585-86.
194. 409 U.S. 63 (1972). *See supra* notes 167-176, and accompanying text.

"[t]he process itself, not merely the mathematical algorithm, must be new and useful."[195]

The *Flook* opinion suggests two possible reasons why the patent was denied. First, the patent claims only an algorithm, also called a mathematical formula by the Court.[196] As found in *Benson*,[197] a mathematical formula is a law of nature and not patentable.[198] Second, the three-step catalytic conversion process was well known. The only new aspect was the formula (or algorithm) in the second step. It is possible to read the opinion as stating that an old process, with one of the steps improved, does not qualify as a new and useful process under section 101.[199] If this is what the Court is saying, it would appear to change the law. In *Mac-Kay Radio & Telegraph Co. v. Radio Corporation of America*,[200] the United States Supreme Court allowed a patent where the invention was achieved by the logical application of a known scientific law (the formula recited in the claim) to a familiar type of antenna.[201] However, if the law has been changed by *Flook*, it is not because a computer was involved in the case. The new law would apply to any inventions, not only computer-related inventions. There are two reasons that it is doubtful the Court meant to overrule *MacKay*: first, the patent statute permits a patent for a "new and useful improvement of a process,"[202] and second, it is likely that if the Court meant to overrule its reasoning in *MacKay*,[203] it would have done so expressly.[204]

D. *DIAMOND V. DIEHR*[205]

At first glance, the facts of *Diehr* appear similar to *Flook*.[206] However, the facts were distinguishable enough to warrant a different outcome. In *Diehr*, the Court allowed the granting of the patent.[207]

The claim in *Diehr* was a for a process for curing synthetic rubber which included the use of a mathematical formula and a programmed digital computer.[208] Unlike the new formula in *Flook*, in *Diehr* a well-

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195. 437 U.S. at 591.

196. *Id.* at 585-86.

197. 409 U.S. 63 (1972).

198. *Id.* at 66, 71-72. *See also Flook*, 437 U.S. at 585.

199. 35 U.S.C. § 101.

200. 306 U.S. 86 (1939).

201. *Id.* at 94.

202. 35 U.S.C. § 101.

203. 306 U.S. 86 (1939).

204. *See In Re Walter*, 618 F.2d 758, 766 (C.C.P.A. 1980), where the Court of Customs and Patent Appeals also doubts the Supreme Court meant in *Flook* to overrule *MacKay*.

205. 450 U.S. 175 (1981).

206. 437 U.S. 584 (1978). *See supra* notes 187-204, and accompanying text.

207. 450 U.S. at 177, 191-93.

208. *Id.* at 177.

known formula was used in the process of transforming rubber to a cured state. [209] The process used was apparently a vast improvement over the prior art.[210] The Court said that the claimant was not trying to preempt the use of the algorithm.[211] The Court added:

> The respondents' claims describe in detail a step-by-step method for [molding precision synthetic rubber products], beginning with the loading of a mold with raw, uncured rubber and ending with the eventual opening of the press at the conclusion of the cure. Industrial processes such as this are the types which have historically been eligible to receive the protection of our patent laws.[212]

The Court in *Diehr* distinguished the case from *Flook*[213] by saying that the applicant in *Flook* did not explain how variables were determined, nor did it disclose the chemical processes at work, the monitoring of process variables, or the means of setting off an alarm or adjusting an alarm system.[214] In contrast, the *Diehr* applicant described the steps of the process in more detail, including installing rubber in a press, closing the mold, constantly determining the temperature of the mold and recalculating the care time using a computer, and then opening the press at the proper time.[215] Apparently the Court believed that the claimed process in *Diehr* was new,[216] while the claimed process in *Flook* was not,[217] and that in *Flook*, all that was provided was a formula.[218] The Court in *Diehr* added that the process satisfied the subject matter requirement of 35 U.S.C. section 101,[219] but later could be found not to satisfy the novelty requirement of section 102[220] or the non-obviousness requirement of section 103.[221]

Apparently, the ruling in *Diehr* did not result in any changes to the law. Recall that the Court in *Diehr* said that "[i]ndustrial processes such as this are the types which have historically been eligible to receive the protection of our patent laws."[222] The *Diehr* process fell into a definition announced by the Court in a case which dates back to 1877:

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209. *Id.* at n.2, and accompanying text.
210. *Id.* at 177-79.
211. *Id.* at 187, 192-93.
212. *Id.* at 184.
213. 437 U.S. 584 (1978).
214. 450 U.S. at 186-87.
215. *Id.* at 187.
216. *Id.* at 189.
217. 437 U.S. at 591-93.
218. 450 U.S. at 187.
219. *Id.* at 188-89.
220. 450 U.S. at 191.
221. *Id.*
222. 450 U.S. at 184.

A process is a mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing. If new and useful, it is just as patentable as a piece of machinery.[223]

In summary, computers overall do not seem to have changed patent law. Two themes have emerged from the Supreme Court cases, but both themes existed in the law prior to computers: (1) a scientific truth is not patentable; and (2) a process, a portion of which uses a programmed computer, is patentable if it is a new and useful process or improvement, is novel, and is non-obvious. But these two statements have been part of the patent law before computers, and thus do not represent changes to the law.

VI. PRIVACY

Because computers allow the quick collection, vast storage, and quick dissemination of information about individuals, there are privacy concerns which were unknown prior to computers.[224] One of the concerns relating to the collection of information is its misuse.[225] For example, a buyer who uses a credit card might expect that the information concerning the purchase will be used only in conjunction with that purchase. However, there is a high probability that the information which will be stored in a computer system may have value to others. At the present time, however, it is unclear whether such information is legally protectible.[226] In *United States v. Miller*,[227] for example, the United States Supreme Court found that a bank customer had no legitimate expectation of privacy in bank records.[228] California, under its own constitution,[229] has held that bank records are private and must be treated as confidential.[230] Therefore, it appears to be unclear what federal or state constitutional protections exist regarding potential misuse of computerized information.

A. U.S. CONSTITUTIONAL PROTECTION NOT INVOLVING COMPUTERS

The right to privacy is not mentioned specifically in the United States Constitution,[231] yet has been the subject of Constitutional contro-

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223. *Id.* at 183, *citing* Cochrane v. Deener, 94 U.S. 780, 787-788 (1877).
224. *See* SCOTT, *supra* note 2, at 15-49 through 15-72; Wilkinson v. Times Mirror Corporation, 215 Cal. App. 3d 1034, 1040-41 (Cal. Ct. App. 1990).
225. *See* SCOTT, *supra* note 2, at 15-54 through 15-56.
226. *Id.*
227. 425 U.S. 435 (1976).
228. *Id.* at 441-43; *see* SCOTT, *supra* note 2, at 15-55.
229. Privacy is an "inalienable right." CAL. CONST. art. I, § 1 (amended 1974).
230. Valley Bank of Nevada v. Superior Court, 15 Cal. 3d 652, 656-58 (Cal. 1975).
231. Roe v. Wade, 410 U.S. 113, 152 (1973).

versy and discussion. For example, in *Harris v. United States*,[232] a case where the defendant in a criminal matter urged that evidence was seized in violation of his rights under the Fourth Amendment,[233] the United States Supreme Court said:

> This Court has consistently asserted that the rights of privacy and personal security protected by the Fourth Amendment ". . . are to be regarded as of the very essence of constitutional liberty; and that the guaranty of them is as important and as imperative as are the guaranties of the other fundamental rights of the individual citizen. . . ."[234]

In addition to finding the right to privacy in the Fourth Amendment, the Court has found this right in other amendments. In *Griswold v. Connecticut*,[235] defendants in a criminal case were convicted under Connecticut law of advising married couples on the means of preventing conception through the use of contraceptive devices.[236] In reversing the conviction, the Court said that the right of privacy surrounding the marriage relationship found its origins in the Bill of Rights.[237] The Court found that the right of association is guaranteed by the First Amendment,[238] the prohibition against quartering soldiers in homes is in the Third Amendment,[239] the right to be free from unreasonable searches and seizures comes from the Fourth Amendment,[240] the right to be free from self incrimination emanates from the Fifth Amendment,[241] and that the Ninth Amendment guarantees that "the enumeration in the Constitution, of certain rights, shall not be construed to deny or disparage others retained by the people."[242]

And in *Roe v. Wade*,[243] a case involving criminal prosecutions for procuring abortions[244] the Court, in reversing the convictions,[245] held that the right of privacy is founded in the Fourteenth Amendment's con-

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232. 331 U.S. 145.
233. *Id.* at 146-47. The Fourth Amendment says:
   "The right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures, shall not be violated and no Warrants shall issue, but upon probable cause, supported by Oath or affirmation, and particularly describing the place to be searched, and the persons or things to be seized."
U.S. CONST. amend. IV.
234. 331 U.S. at 150 (citing Gouled v. United States, 255 U.S. 298, 304 (1962)).
235. 381 U.S. 479 (1965).
236. *Id.* at 480.
237. *Id.* at 484-486.
238. *Id.* at 484.
239. *Id.*
240. *Id.*
241. *Id.*
242. *Id.*
243. 410 U.S. 113 (1973).
244. *Id.* at 116.
245. *Id.* at 164-166.

cept of personal liberty and restrictions upon state action.[246]

Thus, it can be seen that the right to privacy has Constitutional origins, although privacy is not mentioned specifically in the Constitution. But, it is not entirely clear what constitutes privacy. In the cases just discussed, the Court has found protected privacy rights in situations involving searches and seizures,[247] birth control,[248] and abortions.[249] Yet it is not possible to know exactly what future situations will be governed by federal Constitutional rights of privacy.

1. *U.S. Constitutional Protection Relating to Computers*

In *Whalen v. Roe,*[250] the United States Supreme Court was asked to decide whether the State of New York could "record, in a centralized computer file, the names and addresses of all persons who have obtained, pursuant to a doctor's prescription, certain drugs for which there is both a lawful and unlawful market."[251] A commission, created by the New York legislature, had found that there was "no effective way to prevent the use of stolen or revised prescriptions, to prevent unscrupulous pharmacists from repeatedly refilling prescriptions, to prevent users from obtaining prescriptions from more than one doctor, or to prevent doctors from over-prescribing, either by authorizing an excessive amount in one prescription or by giving one patient multiple prescriptions."[252]

As a result of this report, New York passed legislation which required that copies of prescriptions be sent to the State. The State would then store in the computer system information about the prescribing physician, the dispensing pharmacy, the drug and dosage, and the name, address, and age of the patient in the computer system.[253] A group of patients and physicians commenced litigation in an attempt to prevent the State from implementing the legislation.[254] They claimed that the legislation invaded a constitutionally protected zone of privacy.[255] They argued that the mere existence of the information created a concern that the information would become known publicly, thereby causing some patients to become reluctant to use and some physicians to become reluc-

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246. *Id.* at 152-153.
247. *See supra* notes 232-34, and accompanying text.
248. *See supra* notes 235-42, and accompanying text.
249. *See supra* notes 243-46, and accompanying text.
250. 429 U.S. 589 (1977).
251. *Id.* at 591.
252. *Id.* at 591-592.
253. *Id.* at 593.
254. *Id.* at 595.
255. *Id.* at 598. The Court, relying on *Roe v. Wade, supra* notes 243-46, and accompanying text, found the right to privacy in the Fourteenth Amendment's concept of personal liberty. *Whalen,* 429 U.S. at 598 n. 23.

tant to prescribe needed medication.[256]

The Court found that the State had a legitimate interest in accumulating the information in order to stop drug abuse,[257] and further that New York's scheme provided adequate assurances that there would not be public disclosure of the information.[258] The prescription forms were retained in a vault; the computer tapes were kept in a locked cabinet. When the tapes were used, they were used on a computer that was not connected to computers outside of the computer room. The rooms where information was kept were protected by wire fence and alarm systems, and public disclosure of the information was a criminal violation.[259] Therefore, the Court found there was no real concern that the information would be disclosed publicly.[260] More importantly, the Court concluded:

> A final word about issues we have not decided. We are not unaware of the threat to privacy implicit in the accumulation of vast amounts of personal information in computerized data banks or other massive government files. The collection of taxes, the distribution of welfare or social security benefits, the supervision of public health, the direction of our Armed Forces and the enforcement of the criminal laws, all require the orderly preservation of great quantities of information, much of which is personal in character and potentially embarrassing or harmful if disclosed. The right to collect and use such data for public purposes is typically accompanied by a concomitant statutory or regulatory duty to avoid unwarranted disclosures. Recognizing that in some circumstances that duty arguably has its roots in the Constitution, nevertheless New York's statutory scheme, and its implementing administrative procedures, evidence a proper concern with, and protection of, the individual's interest in privacy. We therefore need not, and do not, decide any question which might be presented by the unwarranted disclosure of accumulated private data whether intentional or unintentional or by a system that did not contain comparable security provisions. We simply hold that this record does not establish an invasion of any right or liberty protected by the Fourteenth Amendment.[261]

And, concurring, Justice Brennan offered:

> What is more troubling about this [New York's] scheme, however, is the central computer storage of the data thus collected. Obviously, as the State argues, collection and storage of data by the State that is in itself legitimate is not rendered unconstitutional simply because new technology makes the State's operations more efficient. However, as the example of the Fourth Amendment shows, the Constitution puts limits not

256. 429 U.S. at 600.
257. *Id.* at 597-598.
258. *Id.* at 593-594.
259. *Id.* at 593-595.
260. 429 U.S. at 600-601.
261. *Id.* at 605-606.

only on the type of information the State may gather, but also on the means it may use to gather it. The central storage and easy accessibility of computerized data vastly increase the potential for abuse of that information, and I am not prepared to say that future developments will not demonstrate the necessity of some curb on such technology.[262]

Computers do not change federal constitutional privacy law. While *Whalen v. Roe*[263] dealt with computerized storage of medical information, and although both the majority and concurring opinions indicated an awareness of computerized invasions of privacy,[264] the opinions did not offer any new legal analysis.

Whalen said that the United States District Court had found that the State of New York had been unable to demonstrate the need for the legislation.[265] Although there was a time when legislation would have been invalidated on that basis,[266] such is no longer the law.[267] The Court said that it has "frequently recognized that individual states have broad latitude in experimenting with possible solutions to problems of vital local concern."[268] The Court held that the States have a vital interest in controlling the distribution of dangerous drugs and supported experimentation with new techniques for control.[269] The Court felt that the patient-identification requirement was a reasonable exercise of New York's broad police powers.[270]

Thus, the Court in *Whalen*,[271] while recognizing the potential of computerized invasion of privacy, relied on prior decisions in holding the legislation to be reasonable and not in violation of the United States Constitution. Additionally, *Whalen* found that the Constitutional protection from invasion of privacy stems from the Fourteenth Amendment's concept of personal liberty.[272] Since that Amendment regulates State action and not private persons or entities,[273] the regulation of individuals or entities, who use computers to invade privacy, must come from another source.

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262. *Id.* at 606-607.

263. 429 U.S. 589 (1977); *see supra* notes 250-62, and accompanying text.

264. 429 U.S. at 605-607.

265. *Id.* at 596.

266. *Id.* (citing Lochner v. New York, 198 U.S. 45 (1905)).

267. 429 U.S. at 596-97.

268. *Id.* at 597 n. 20 (citing New State Ice Co. v. Liebmann, 285 U.S. 262, 311 (1932)).

269. 429 U.S. at 598 n.22 (citing Robinson v. California, 370 U.S. 660, 664 (1962)).

270. 429 U.S. at 598.

271. 429 U.S. 589 (1977).

272. *Id.* at 598 n.23.

273. "[N]or shall any State deprive any person of life, liberty, or property, without due process of law...." U.S. CONST. amend. XIV, § 1. This clause, which prohibits States from denying federal constitutional rights and which guarantees due process, applies to the actions of States and not to actions of private persons or entities. Rendell-Baker v. Kohn, 457 U.S. 830, 837 (1982).

B. DO COMPUTERS CHANGE STATE PRIVACY LAW?

Research has located no state constitutions which prohibit invasion of privacy by computer. The California Constitution comes the closest to such a prohibition. The California State Constitution provides:

> All people are by nature free and independent and have inalienable rights. Among these are enjoying and defending life and liberty, acquiring, possessing, and protecting property, and pursuing and obtaining safety, happiness, and privacy.[274]

While the privacy rights protected under the Fourteenth Amendment of the United States Constitution apply only to state action,[275] the California constitutional right to privacy applies to both governments and individuals.[276]

In addition to the California Constitution, the California legislature has declared that computers pose a threat to privacy, under Section 1798.1 of the California Civil Code legislative declaration and findings:

> The Legislature declares that the right to privacy is a personal and fundamental right protected by Section 1 of Article I of the Constitution of California and by the United States Constitution and that all individuals have a right of privacy in information pertaining to them. The Legislature further makes the following findings:
>
> (a) The right to privacy is being threatened by the indiscriminate collection, maintenance, and dissemination of personal information and the lack of effective laws and legal remedies.
>
> (b) The increasing use of computers and other sophisticated information technology has greatly magnified the potential risk to individual privacy that can occur from the maintenance of personal information.
>
> (c) In order to protect the privacy of individuals, it is necessary that the maintenance and dissemination of personal information be subject to strict limits.[277]

While there are cases under the California constitutional right to privacy, none involve the use of computers to invade privacy. Also, there are no cases brought under California Civil Code section 1798.1. This is not surprising since that code section deals only with a general right to privacy, but no specific topic. A California statute will be discussed as an example of state legislation regulating potential computer invasion of privacy.

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274. CAL. CONST. art I, § 1 (amended 1974). Privacy was added to the California Constitution in 1974. Valley Bank of Nevada v. Superior Court of San Joaquin County, 15 Cal. 3d 652, 656 (Cal. 1975).

275. *See supra* note 273, and accompanying text.

276. Wilkinson v. Times Mirror Corporation, 215 Cal. App. 3d 1034, 1040-41 (Cal. Ct. App. 1989).

277. CAL. CIV. CODE § 1798.1 (West 1978).

1. *Credit Reporting*

Because computers allow the quick collection, storage, and dissemination of vast amounts of information,[278] credit reporting companies have become big businesses. They store credit histories of millions of people in their computers.[279] In response, California has passed the Consumer Credit Reporting Agencies Act.[280] The Act requires that the credit reports be accurate and respect the consumer's right to privacy.[281]

Some of the key provisions of the legislation:
* define "consumer credit report."[282]
* define "consumer credit reporting agency."[283]

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278. *See supra* note 224, and accompanying text.

279. *See, e.g., Mortgage Applicants Facing New Electronic Credit Risk,* SACRAMENTO BEE, Feb. 13, 1994, Real Estate 17 (credit evaluation systems rely on unverified and often inaccurate data); *Data Firm Faces FTC Charge,* LOS ANGELES TIMES, Jan. 13, 1993, Business Section 1 (TRW Credit Reporting Agency accused of illegally selling consumers' credit information).

280. CAL. CIV. CODE §§ 1785.1 - 1785.35 (West 1982); *See supra* note 277 and accompanying text. The legislative findings, leading to the passage of the Act, were:

The Legislature finds and declares as follows:

(a) An elaborate mechanism has been developed for investigating and evaluating the credit worthiness, credit standing, credit capacity, and general reputation of consumers.

(b) Consumer credit reporting agencies have assumed a vital role in assembling and evaluating consumer credit and other information on consumers.

(c) There is a need to insure that consumer credit reporting agencies exercise their grave responsibilities with fairness, impartiality, and a respect for the consumer's right to privacy.

(d) It is the purpose of this Title to require that consumer credit reporting agencies adopt reasonable procedures for meeting the needs of commerce for consumer credit, personnel, insurance, hiring of a dwelling unit, and other information in a manner which is fair and equitable to the consumer, with regard to the confidentiality, accuracy, relevancy, and proper utilization of such information in accordance with the requirements of this Title.

(e) The Legislature hereby intends to regulate consumer credit reporting agencies pursuant to this title in a manner which will best protect the interests of the people of the State of California.

(f) The extension of credit is a privilege and not a right. Nothing in this Title shall preclude a creditor from denying credit to any applicant providing such denial is based on factors not inconsistent with present law.

(g) Any clauses in contracts which prohibit any action required by this Title are not in the public interest and shall be considered unenforceable.

281. CAL. CIV. CODE § 1785.1.

282. "Consumer credit report" means any written, oral or other communication of any information by a consumer credit reporting agency bearing on a consumer's credit worthiness, credit standing, or credit capacity, which is used or is expected to be used, or collected in whole or in part, for the purpose of serving as a factor in establishing the consumer's eligibility for: (1) credit to be used primarily for personal, family, or household purposes, or (2) employment purposes, or (3) hiring of dwelling unit, as defined in subdivision (c) of Section 1940, or (4) other purposes authorized in Section 1785.11.

Id. § 1785.3 (c).

283. *Id.* § 1785.3 (d).

* require that the consumer be allowed to inspect all files regarding the consumer.[284]
* allow the consumer credit reporting agency to furnish the credit report only pursuant to court order; as directed by the consumer; for credit, employment, or insurance purposes; in connection with the consumer's eligibility for a government granted license or benefit; for dwelling purposes; or other legitimate business purpose.[285]
* prohibits certain information from being included in the report, e.g: bankruptcies older than ten years; lawsuits older than seven years; unlawful detainer actions; paid tax liens more than seven years old; and arrests or convictions older than seven years.[286]
* allow the consumer to dispute the completeness or accuracy of information; correct the disputed information if it is incorrect; or if the reporting agency is unable to resolve the dispute, note in the file that a dispute exists about the information.[287]
* require that the consumer be notified if denied credit, insurance, or rent is increased as a result of information in the report.[288]

Without the ability of the credit reporting agencies to use computers in order to collect, store, and disseminate vast amounts of personal information, it is unlikely that so much information could be accumulated. The seemingly insurmountable job of storing, sorting, and searching all of the data manually, without the use of high-speed computers, would appear to make it almost impossible to have extensive credit reports on so many people.[289] Aware of this, the California legislature's scheme is intended to guaranty the accuracy and proper use of the information.[290]

C. FEDERAL PRIVACY LEGISLATION

One example of federal privacy legislation is the Privacy Act of

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"Consumer credit reporting agency" means any person who, for monetary fees, dues, or on a cooperative nonprofit basis, regularly engages in whole or in part in the business of assembling or evaluating consumer credit information or other information on consumers for the purpose of furnishing consumer credit reports to third parties, but does not include any governmental agency whose records are maintained primarily for traffic safety, law enforcement, or licensing purposes. "Consumer credit reporting agency" also does not include a person solely by reason of conveying a decision whether to guarantee a check in response to a request by a third party.

284. *Id.* § 1785.10.
285. CAL. CIV. CODE § 1785.11.
286. *Id.* § 1785.13 (a).
287. *Id.* § 1785.16.
288. *Id.* § 1785.20.
289. *See supra* note 279.
290. *See supra* note 277, and accompanying text.

1974.[291] This was enacted to balance the government's need to accumulate certain information and the individual's right to privacy in computerized record keeping systems.[292]

The Act applies to all executive departments, independent regulatory agencies, and government corporations.[293] It does not apply to Congress, federal courts, the District of Columbia, or state governments.[294]

The Act is based upon eight principles:[295]

1. Openness
    The existence of a personal record keeping system shall not be a secret.[296] This policy is implemented under the Privacy Act, which says that no agency may conceal the existence of its record-keeping system. Each agency must publicize the kind of and use of the information in its system. The information is published in the Federal Register and also provided to the individual to whom the information pertains.[297]

2. Individual Access
    Individuals may see and copy information concerning the record-keeping systems. There are some exceptions. For example, the Central Intelligence Agency, and some law enforcement agencies are not required to allow access to their systems.[298]

3. Individual Participation
    The individual may request the agency to correct information in the system. If the agency refuses, the individual may file a statement of disagreement.[299]

4. Collection Limitation
    Agencies may only collect certain types of information in certain manners.[300] Agencies may collect information which is relevant and necessary to the agency's purpose;[301] collect information directly from the individual when practicable;[302] and inform the individual when information is gathered from other sources.[303]

5. Limits on the Use of Information

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291. 5 U.S.C. § 552a (1982).

292. SCOTT, *supra* note 2, § 15.35.

293. SCOTT, *supra* note 2, § 15.35 (citing 5 U.S.C. § 552(e) (1982)).

294. *Id.*

295. *Id.* at § 15.35 (citing Privacy Protection Study Comm'n., *Personal Privacy in an Information Society* 17 (1977)).

296. *Id.* at § 15.35.

297. SCOTT, *supra* note 2, § 15.35[A] (citing 5 U.S.C. § 552(e)(4)(1982)).

298. *Id.* at § 15.35[B] (citing 5 U.S.C. § 552a(j)(1982)).

299. *Id.* at § 15.35[C] (citing 5 U.S.C. § 552a(f)(g)(1)(1982)).

300. SCOTT, *supra* note 2, § 15.35[C].

301. SCOTT, *supra* note 2, § 15.35[D] (citing 5 U.S.C. § 552a(e)(1)).

302. SCOTT, *supra* note 2, § 15.35[D] (citing 5 U.S.C. § 552a(e)(2)).

303. SCOTT, *supra* note 2, § 15.35[D] (citing 5 U.S.C. § 552a(e)(3)).

1994] COMPUTERS AND THE LAW An agency can disclose information only to agency employees needing the information in the performance of their duties. In order to disclose to anyone else within the same agency, permission of the individual is required.[304]

6. Disclosure Outside of the Agency
Under limited circumstances, information can be disclosed to someone outside of the Agency;[305] for example, law enforcement activity.[306]

7. Information Management
An agency must keep records which are accurate, relevant, and necessary to accomplish an agency's purpose.[307]

8. Accountability
Agencies are accountable for their own information gathering and record keeping.[308] This accountability is implemented in two ways. First, individuals can review and challenge their records, and collect damages incurred as a result of an agency's misconduct.[309] Second, agency employees are subject to criminal penalties for violations of the Act.[310]

In summary, the computer has permitted collection, storage, and dissemination of vast amounts of information at rapid speeds. This has raised concerns that some information collected about individuals may be incorrect,[311] or if correct, used for incorrect purposes.[312]

Sources of keeping information private may be the federal or state constitutions,[313] or legislation.[314] Without computers, much of the concern about what constitutes privacy or an invasion thereof, and how to keep information private, would disappear.

VII. CRIMINAL LAW

The area of criminal law is a place where the computer has caused changes to the law. In order to demonstrate this, consider the case of *Lund v. Commonwealth.*[315] Lund, a graduate student at Virginia Poly-

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304. SCOTT, *supra* note 2, at 15-66, 15-67 (citing 5 U.S.C. § 552a(b)(1)).
305. SCOTT, *supra* note 2, at 15-63, 15-67 (citing 5 U.S.C. § 552a(b)).
306. SCOTT, *supra* note 2, at 15-67 (citing 5 U.S.C. § 552a(b)(7)).
307. SCOTT, *supra* note 2, at 15-63, 15-67 (citing 5 U.S.C. § 552a(e)(1)(5)).
308. *Id.* at §15.35[H].
309. SCOTT, *supra* note 2, §15.35[H] (citing 5 U.S.C. § 552a(g)(1)(1982)).
310. *Id.* 15-68 (citing 5 U.S.C. § 552a(i)(1982)).
311. *See* Wilkinson v. Times Mirror Corporation, 215 Cal. App. 3d 1034, 1040-41 (Cal. App. 1 Dist. 1989) *rehearing denied* (1990).
312. *See* Whalen v. Roe, 429 U.S. 589, 600 (1977).
313. *See supra* notes 231-277, and accompanying text.
314. *See supra* notes 278-310, and accompanying text.
315. 232 S.E.2d 745 (Va. 1977).

technic Institute and State University, was charged with larceny for us-
ing computer time on the school's computer without permission.[316] He
needed to use the computer for the preparation of his dissertation. He
used the school computer by sending his request to the computer center
which ran his jobs for him.[317] Several faculty members testified that
they would have assigned computer time to Lund if he had requested
it.[318] Lund, knowing he did not have specific authority to use the com-
puter, did so anyway. He testified he did not do anything wrong because
he was using the computer to do work on his doctoral thesis.[319] Never-
theless, he was charged with larceny because his computer use was un-
authorized.[320] He was found guilty of grand larceny, and placed on five
years probation.[321]

On appeal, in reversing the conviction, the Virginia Supreme Court
said:

> . . . the unauthorized use of the computer is not the subject of larceny.
> Nowhere in [the applicable code] do we find the word "use." The lan-
> guage of the statutes connotes more than just the unauthorized use of
> the property of another. It refers to a taking and carrying away of a
> certain concrete article of personal property.[322]

Therefore, the court found that the unauthorized use of computer
time could not be construed as the subject of Virginia's larceny code.[323]

Subsequent to the *Lund* case, the Virginia Legislature passed the
Virginia Computer Crimes Act.[324] The Act is broken into various sec-
tions, including: computer; computer data; computer network; computer
operation; computer program; computer services; and computer
software.[325]

In addition to the definitions, the Virginia Act lists the following

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316. *Id.* He also was charged with theft of keys, computer cards, and computer
printouts. *Id.* This article addresses only the computer time theft because the court's anal-
ysis illustrates how the theft did not fall under the statute. *Id.* at 748.

317. *Id.* at 747.

318. *Id.*

319. *Id.*

320. *Id.*

321. 232 F.2d at 745.

322. *Id.* at 748.

323. *Id.*

324. VA. CODE ANN. §§18.2-152.1-.14 (Michie 1984).

325. *Id.* at 18.2-152.2 Definitions.

The following is a list of defined terms for this article.

"Computer" means an electronic, magnetic, optical, hydraulic or organic device or
group of devices which, pursuant to a computer program, to human instruction, or to per-
manent instructions contained in the device or group of devices, can automatically perform
computer operations with or on computer data, and can communicate the results to another
computer or to a person. The term "computer" includes any connected or directly related
device, equipment, or facility which enables the computer to store, retrieve or communicate

computer programs, computer data or the results of computer operations to or from a person, another computer or another device.

"Computer data" means any representation of information, knowledge, facts, concepts, or instructions which is being prepared or has been prepared and is intended to be processed, is being processed, or has been processed in a computer or computer network. "Computer data" may be in any form, whether readable only by a computer or only by a human or by either, including, but not limited to, computer printouts, magnetic storage media, punched cards, or stored internally in the memory of the computer.

"Computer network" means a set of related, remotely connected devices and any communications facilities including more than one computer with the capability to transmit data among them through the communications facilities.

"Computer operation" means arithmetic, logical, monitoring, storage or retrieval functions and any combination thereof, and includes, but is not limited to, communication with, storage of data to, or retrieval of data from any device or human hand manipulation of electronic or magnetic impulses. A "computer operation" for a particular computer may also be any function for which that computer was generally designed.

"Computer program" means an ordered set of data representing coded instructions or statements that, when executed by a computer, causes the computer to perform one or more computer operations.

"Computer services" includes computer time or services or data processing services or information or data stored in connection therewith. "Computer software" means a set of computer programs, procedures and associated documentation concerned with computer data or with the operation of a computer, computer program, or computer network.

"Financial instrument" includes, but is not limited to, any check, draft, warrant, money order, note, certificate of deposit, letter of credit, bill of exchange, credit or debit card, transaction authorization mechanism, marketable security, or any computerized representation thereof.

"Owner" means an owner or lessee of a computer or computer network or an owner, lessee, or licensee of computer data, computer programs, or computer software.

"Person" shall include any individual, partnership, association, corporation or joint venture.

"Property" shall include:

1. Real property;
2. Computers and computer networks;
3. Financial instruments, computer data, computer programs, computer software and all other personal property regardless of whether they are:
   a. Tangible or intangible;
   b. In a format readable by humans or by a computer;
   c. In transit between computers or within a computer network or between any devices which comprise a computer; or
   d. Located on any paper or in any device on which it is stored by a computer or by a human; and
4. Computer services.

A person "uses" a computer or computer network when he:
   a. Attempts to cause or causes a computer or computer network to perform or to stop performing computer operations;
   b. Attempts to cause or causes the withholding or denial of the use of a computer, computer network, computer program, computer data or computer software to another user; or
   c. Attempts to cause or causes another person to put false information into a computer.

computer crimes: computer fraud;[326] computer trespass;[327] computer invasion of privacy;[328] theft of computer services;[329] personal trespass by computer;[330] limitation on prosecution;[331] computer as instrument of

A person is "without authority" when he has no right or permission of the owner to use a computer, or, he uses a computer in a manner exceeding such right or permission.

326. *Id.* at § 18.2-152.3 Computer fraud.

Any person who uses a computer or computer network without authority and with the intent to:

1. Obtain property or services by false pretenses;
2. Embezzle or commit larceny; or
3. Convert the property of another shall be guilty of the crime of computer fraud. If the value of the property or services obtained is $200 or more, the crime of computer fraud shall be punishable as a Class 5 felony. Where the value of the property or services obtained is less than $200, the crime of computer fraud shall be punishable as a Class 1 misdemeanor.

327. *Id.* at § 18.2-152.4 Computer trespass; penalty.

Any person who uses a computer or computer network without authority and with the intent to:

1. Temporarily or permanently remove computer data, computer programs, or computer software from a computer or computer network;
2. Cause a computer to malfunction regardless of how long the malfunction persists;
3. Alter or erase any computer data, computer programs, or computer software;
4. Effect the creation or alteration of a financial instrument or of an electronic transfer of funds;
5. Cause physical injury to the property of another; or
6. Make or cause to be made an unauthorized copy, in any form, including, but not limited to, any printed or electronic form of computer data, computer programs, or computer software residing in, communicated by, or produced by a computer or computer network shall be guilty of the crime of computer trespass, which shall be punishable as a Class 1 misdemeanor. If such act is done maliciously and the value of the property damaged is $2,500 or more, the offense shall be punishable as a Class 6 felony.

328. VA. CODE ANN. § 18.2-152.5 Computer invasion of privacy.

A. A person is guilty of the crime of computer invasion of privacy when he uses a computer or computer network and intentionally examines without authority any employment, salary, credit or any other financial or personal information relating to any other person. "Examination" under this section requires the offender to review the information relating to any other person after the time at which the offender knows or should know that he is without authority to view the information displayed.

B. The crime of computer invasion of privacy shall be punishable as a Class 3 misdemeanor.

329. *Id.* at § 18.2-152.6 Theft of computer services.

Any person who willfully uses a computer or computer network, with intent to obtain computer services without authority, shall be guilty of the crime of theft of computer services, which shall be punishable as a Class 1 misdemeanor.

330. *Id.* at § 18.2-152.7 Personal trespass by computer.

A. A person is guilty of the crime of personal trespass by computer when he uses a computer or computer network without authority and with the intent to cause physical injury to an individual.

forgery;[332] property capable of embezzlement;[333] venue for prosecution;[334] article not exclusive;[335] civil relief — damages;[336] and

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B. If committed maliciously, the crime of personal trespass by computer shall be punishable as a Class 3 felony. If such act be done unlawfully but not maliciously, the crime of personal trespass by computer shall be punishable as a Class 1 misdemeanor.

331. *Id.* at § 18.2-152.9 Limitation of prosecution.

Notwithstanding the provisions of § 19.2-8, prosecution of a crime which is punishable as a misdemeanor pursuant to this article must be commenced before the earlier of (i) five years after the commission of the last act in the course of conduct constituting a violation of this article or (ii) one year after the existence of the illegal act and the identity of the offender are discovered by the Commonwealth, by the owner, or by anyone else who is damaged by such violation.

332. VA. CODE ANN. § 18.2-152.14 Computer as instrument of forgery.

The creation, alteration, or deletion of any computer data contained in any computer or computer network, which if done on a tangible document or instrument would constitute forgery under Article 1 (§ 18.2-168 et seq.) of Chapter 6 of this Title, will also be deemed to be forgery. The absence of a tangible writing directly created or altered by the offender shall not be a defense to any crime set forth in Article 1 (§ 18.2-168 et seq.) of Chapter 6 of this Title if a creation, alteration, or deletion of computer data was involved in lieu of a tangible document or instrument.

333. *Id.* at § 18.2-152.8 Property capable of embezzlement.

For purposes of § 18.2-111, personal property subject to embezzlement shall include:
1. Computers and computer networks;
2. Financial instruments, computer data, computer programs, computer software and all other personal property regardless of whether they are:
   a. Tangible or intangible;
   b. In a format readable by humans or by a computer;
   c. In transit between computers or within a computer network or between any devices which comprise a computer; or
   d. Located on any paper or in any device on which it is stored by a computer or by a human; and
3. Computer services.

334. *Id.* at § 18.2-152.10 Venue for prosecution.

For the purpose of venue under this article, any violation of this article shall be considered to have been committed in any county or city:
1. In which any act was performed in furtherance of any course of conduct that violated this article;
2. In which the owner has his principal place of business in the Commonwealth;
3. In which any offender had control or possession of any proceeds of the violation or of any books, records, documents, property, financial instrument, computer software, computer program, computer data, or other material or objects that were used in furtherance of the violation;
4. From, to, or through which any access to a computer or computer network was made whether by wires, electromagnetic waves, microwaves, or any other means of communication;
5. In which the offender resides; or
6. In which any computer that is an object or an instrument of the violation is located at the time of the alleged offense.

335. *Id.* at § 18.2-152.11 Article not exclusive.

The provisions of this article shall not be construed to preclude the applicability of any other provision of the criminal law of this Commonwealth which presently applies or may

severability.[337]

Virginia is not alone in having passed computer crime legislation. With the exception of Vermont, every other state[338] and the federal government[339] have also passed specific computer crime legislation. Virginia's legislation demonstrates that the computer has changed the law.

If *Lund* were to have committed the same acts after the passage of the statute, it appears he would have violated the section on "Theft of computer services" which states:

> Any person who willfully uses a computer or computer network, with intent to obtain computer services without authority, shall be guilty of the crime of theft of computer services, which shall be punishable as a Class 1 misdemeanor.[340]

Lund sent his job to the computer center,[341] thereby using computer services without authority.[342] Consequently, today it would appear that

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in the future apply to any transaction or course of conduct which violates this article, unless such provision is clearly inconsistent with the terms of this article.

336. VA. CODE ANN. § 18.2-152.12 Civil relief; damages.

A. Any person whose property or person is injured by reason of a violation of any provision of this article may sue therefor and recover for any damages sustained, and the costs of suit. Without limiting the generality of the term, "damages" shall include loss of profits.

B. At the request of any party to an action brought pursuant to this section, the court may, in its discretion, conduct all legal proceedings in such a way as to protect the secrecy and security of the computer, computer network, computer data, computer program and computer software involved in order to prevent possible recurrence of the same or a similar act by another person and to protect any trade secrets of any party.

C. The provisions of this article shall not be construed to limit any person's right to pursue any additional civil remedy otherwise allowed by law.

D. A civil action under this section must be commenced before expiration of the time period prescribed in § 8.01-40.1.

337. *Id.* § 18.2-152.13 Severability.

If any provision or clause of this article or application thereof to any person or circumstances is held to be invalid, such invalidity shall not affect other provisions or applications of this article which can be given effect without the invalid provision or application, and to this end the provisions of this article are declared to be severable.

338. SCOTT, *supra* note 2, at §16.14. A WESTLAW search found no computer crime legislation in Vermont (Feb. 21 1994).

339. *Id.* at §16.11. The federal legislation includes the Computer Fraud and Abuse Act, passed in 1984 and amended in 1986. *Id.*; 18 U.S.C. § 1030. Essentially, the Act makes it illegal to access, without authorization, a federal computer, to damage information in the computer, to affect the use of the computer, or to commit fraud through the illegal access. 18 U.S.C. § 1030.

340. Va. Code Ann. at § 18.2-152.6.

341. 232 N.E.2d at 746.

342. VA. CODE ANN. § 18.2-152.2 provides:

"Computer services" includes computer time or services or data processing services or information or data stored in connection therewith.

A person "uses" a computer or computer network when he:

1. attempts to cause or causes a computer or computer network to perform or stop performing computer operations.

Lund would be convicted.

A. IS THE COMPUTER CRIMES ACT NECESSARY?

In an apparent attempt to deal with many acts that might involve computers, the Virginia legislature seems to have covered acts that were already covered. For example, the Act specifies that a computer can be the subject of embezzlement.[343] However, it appears that computers are already the subject of embezzlement under the general embezzlement statute that covers tangible personal property.[344]

In addition to laws passed in order to prevent computer crime, the computer has been influential in criminal investigations. For example, computer fingerprint matching has led to the arrest of defendants who otherwise might not have been located.[345]

Accordingly, as the *Lund*[346] case shows, without a statute making unauthorized use of the computer a crime, the criminal code of Virginia did not have a section making that activity a crime.[347] Therefore, computer crime legislation became necessary to prevent this type of unwanted activity in the state of Virginia.[348] The federal government and forty-nine of the fifty states have such legislation.[349]

Other terms necessary to define in order to prove that Lund would be guilty are "computer," "computer operation," "person," "without authority," and "owner." *See supra* note 325.

343. *See supra* note 333.

344. VA. CODE ANN. § 18.2-111 (Michie 1984) Embezzlement deemed larceny; indictment; statement from attorney for the Commonwealth.

If any person wrongfully and fraudulently . . . embezzle[s] any . . . personal property, tangible or intangible, which he shall have received for another or for his employer, principal or bailor, or by virtue of his office, trust, or employment, or which shall have been entrusted or delivered to him by another or by any court, corporation or company, he shall be deemed guilty of embezzlement. Embezzlement shall be deemed larceny and upon conviction thereof, the person shall be punished as provided in sections 18.2-95 or 18.2-96.

345. *See, e.g., Computer Fingerprint Hund Finds '75 Killing Suspect*, SACRAMENTO BEE, Wed., Jan. 12, 1994, State Final Edition, at Supcal Section, B4.

346. 217 Va. 688, 232 S.E.2d 745 (Va. 1977). *See also supra* notes 315-323, and accompanying text.

347. *Id.*

348. It might be argued that computers were not the only item which might be used without authority, but the use is not criminal because it is not covered by any criminal statute. For example, in *People v. Ashworth*, the court held that the unauthorized use of machinery and spinning facilities of another to process wool did not constitute larceny under New York's false pretenses statute because, although the items were used, they were not taken. 220 App. Div. 498, 222 N.Y.S. 24, 27 (1927).

349. *See supra* notes 338 and 339, and accompanying text.

VIII. EVIDENCE

The use of computers by business and government has not resulted in large changes to the rules of evidence, but merely in refinement of those rules.[350] This article will examine computer-related evidence of an act, condition, or event that might be introduced at a judicial proceeding.[351] This article will look at a New Jersey case in which the rules of evidence had no special category for computer-related evidence and at the Federal Rules which do specifically mention computers.

In *Monarch Federal Savings and Loan Assoc v. Genser*,[352] the plaintiff, Monarch, requested that certain computer printouts be admitted into evidence under the business record exception to the hearsay rule.[353] Under New Jersey law "[e]vidence of a statement offered to prove the truth of the matter stated which is made other than by a witness while testifying at the hearing is hearsay evidence and is inadmissible except as provided in Rules 63(1) through 63(33)."[354]

The court said that the records were business records, and that the admissibility of business records was governed by Rule 63(13), which provides:

> [a] writing offered as a memorandum or record of acts, conditions or events is admissible to prove facts stated therein if the writing or the record upon which it is based was made in the regular course of business, at or about the time of the act, condition or event recorded, and if the sources of information from which it was made and the method and circumstances of its preparation were such as to justify its admission.[355]

The court further noted that the New Jersey business record exception was fashioned after the Uniform Rule of Evidence 63(13),[356] which was based on the basic theory:

> . . .that records which are properly shown to have been kept as required normally possess a circumstantial probability of trustworthiness, and therefore ought to be received in evidence unless the trial court, after examining them and hearing the manner of their preparation explained, entertains serious doubt as to whether they are dependable or worthy of confidence.[357]

The Monarch court held that the critical issue in the case was to determine "[w]hat is the proper foundation to support the authenticity of

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350. SCOTT, *supra* note 2, at 18-3.
351. *Id.* at 18-16.
352. 383 A.2d 475, 156 N.J. Super. 107 (N.J. Sup. Ct., Chancery Div. 1977).
353. 383 A.2d at 478, 479.
354. N.J. STAT. ANN. RULE 63.
355. 383 A.2d at 480, *citing* N.J. STAT. ANN. RULE 63(13).
356. 383 A.2d at 480.
357. *Id.*, *citing* Mahoney v. Minsky, 39 N.J. 208, 188 A.2d 161, 166 (N.J. 1963).

a computer printout?"[358] In answering this question, the court reviewed computer evidence cases from around the country,[359] and concluded that these cases weigh six considerations when determining foundation requirements:[360]

1. Necessity for original witness with personal knowledge.

The court considered whether the foundation witness must have personal knowledge of the act or event recorded or, more specifically, if there is a "need to produce the witness who originally supplied the information recorded on the computer tape?"[361] The court concluded that the majority of courts had not required that the foundation witness have such personal knowledge and that it would not be required in this case.[362]

2. Qualifications of the foundation witness.[363]

The court determined that no particular qualifications were needed beyond those necessary to lay a proper foundation for the evidence:

No specific person must be called to supply the foundation testimony for the admission of business records. However, whoever testifies must be in a position to supply the foundation specified in Evid. R. 63(13), i.e., the regular course of business, the time of the making of the record and the event recorded, the sources of information recorded, and finally, the methods and circumstances of the computer record's preparation. This court agrees with the following statement . . . :

a proper foundation for (computer) evidence is laid by testimony of a witness who is familiar with the computerized records and the methods under which they were made so as to satisfy the court that the methods, the sources of information, and the time of preparation render such evidence trustworthy. Thus, in providing information as to the methods of preparation, the foundation witness should also be able "to testify as to the type of computer employed, the permanent nature of the record storage, and how daily processing of information to be fed into the computer was conducted, resulting in permanent records."[364]

3. Computer records made in the regular course of business.[365]

The court held that computer records must be made in the regular course of business. This would include testimony that the computer printouts were routinely prepared rather than being prepared specifi-

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358. 383 A.2d at 479.

359. *Id.* at 479-88.

360. *Id.* at 484. "To gain admission of computer-generated materials into evidence, an offeror must lay the proper foundation for authenticating the materials and establishing the foundational predicates for their introduction under one or more evidentiary rules." *See also,* SCOTT, *supra* note 2, at 18-17, *citing* FED. R. EVID. 901(a), 901 (b)(9).

361. 383 A.2d at 484.

362. *Id.*

363. *Id.*

364. *Id.* at 485-86, *quoting* State v. Springer, 197 S.E.2d at 536.

365. *Id.* at 486.

cally for trial, and that they were relied upon as sufficiently accurate for business purposes.[366]

4. Time of preparation of the computer printout.[367]

Regarding this consideration, the court said:

> [t]he requirement that the entry be made "at or about the time of the act . . . recorded," Evid. R. 63(13), is satisfied so long as the input is placed into the computer "within a reasonable time after each act or transaction to which it relates." . . . It is not required that the printout itself be made at that time. . . . Although the printout can be made at some later date, it cannot be made specifically in preparation for trial or else it will not have been made in the regular course of business. . . . Requiring the above proof is also consistent with the mandates of Evid. R. 63(13).[368]

5. Source of information from which the computer printout was made.[369]

The court said that this element includes the source of the computer program and that the reliability and trustworthiness of the information fed into the computer be established. In particular, the foundation witness should describe in detail the sources of information upon which the printout was based, and explain, where necessary, the sources and meaning of any calculations, formulas or abbreviations appearing in the computer printout. Additionally, it should be shown that the information printed can be verified.[370]

Although the court did not spend much time discussing this fifth element, its implementation might be complex and time consuming. For example, if the computer programs perform complicated mathematical and statistical functions, it might need to be shown that the formulas used by the computer programs were the proper formulas and that they were programmed correctly. This might require testimony from mathematicians to explain what formulas should have been programmed, computer programmers to confirm that these were in fact the formulas used, and include a person who tested the programs to show that the correct results were computed.

6. Method and circumstances of the preparation of the computer printout.

This consideration appears to overlap with the fifth consideration. The court noted that this factor could include (1) the competency of the computer operators (persons who feed information to the computer), (2)

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366. *Id.*

367. *Id.*

368. *Id., citing* United States v. Russo, 480 F.2d 1228, 1240 (6th Cir. 1973), *cert. denied* 414 U.S. 1157 (1974).

369. *Id.*

370. *Id.* at 486-87.

the type of computer used and its acceptance in the field as efficient equipment, (3) the procedure for the input and output of information, including controls, tests, and checks for accuracy and reliability (this sub-part of element six may overlap with the court's fifth element since the accuracy of the computer programs may need to be shown through the testimony of mathematicians, programmers and system testers), (4) the mechanical operations of the machine, and (5) the meaning and identity of the printouts.[371]

Subsequent to discussing the six considerations, the court noted in conclusion that under Evid. R. 63(13) a proper foundation for the admissibility of a computer printout as a business record should be provided by a person who may lack personal knowledge of the events recorded but is sufficiently familiar with the computerized record and the methods under which they were prepared so as to testify that (1) the computer record, as opposed to the printout, was made within a reasonable time after the happening of event or transaction recorded, (2) the computer record and printouts were made in the regular course of business, and (3) the methods and circumstances, as heretofore explained in this opinion, demonstrated that the computer and the printout were reliable and trustworthy so as to justify their admission.[372]

Thus, as *Monarch*[373] shows, at least in New Jersey, computer-printouts can be admitted into evidence upon a proper foundational showing even in the absence of specific legislation relating to computers.[374]

The Federal Rules of Evidence also appear to say that a computer printout of an act, event, or condition is hearsay if offered to prove the truth of the matter asserted in the printout.[375] However, the printout still is admissible into evidence if it meets the requirement of trustworthiness.[376] In order to demonstrate this, an examination of the Rules is necessary: Under the Federal Rules of Evidence a "statement" is (1) an oral or written assertion or (2) nonverbal conduct. . . .[377] "Hearsay" is a statement, other than one made by the declarant while testifying at the trial or hearing, offered in evidence to prove the truth of the matter asserted.[378] Hearsay is not admissible except as provided by these rules or

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371. *Id.* at 487.

372. *Id.* at 487-89, (finding that the plaintiff did not meet the proper foundation requirements, but permitting the plaintiff additional time to do so).

373. 383 A.2d 475, 156 N.J. Super. 107 (N.J. Super. Ct. Ch. Div. 1977).

374. *See supra* notes 354-358 and accompanying text.

375. *See* FED R. EVID. 801(a), 801(c), 802, 803(6), which are set forth at *infra* notes 377, 378, and 380, and accompanying text.

376. *See* FED. R. EVID. 803(6), *infra* note 380 and accompanying text.

377. FED. R. EVID. § 801 (a).

378. *Id.* at 801.

by other rules prescribed by the United States Supreme Court pursuant to statutory authority or by Act of Congress.[379] However, the Federal Rules of Evidence allow a hearsay statement to be admitted if the statement meets the requirements of the business record exception, which states the following:

> A memorandum, report, record, or data compilation, in any form, of acts, events, conditions, opinions or diagnoses, made at or near the time by, or from information transmitted by, a person with knowledge, if kept in the course of a regularly conducted business activity, and if it was the regular practice of that business activity to make the memorandum, report, record, or data compilation, all as shown by the testimony of the custodian or other qualified witness, unless the source of information or the method or circumstances of preparation indicate lack of trustworthiness. The term "business" as used in this paragraph includes business, institution, association, profession, occupation, and calling of every kind, whether or not conducted for profit.[380]

In addition to meeting the business record exception to the hearsay rule, it is required that the computer printout be either an "original" or a "duplicate."[381] The following shows that under the Federal Rules of Evidence, a computer printout satisfies the requirement of being an "original:"

1. To prove the content of a writing, recording or photograph, the original writing, recording or photograph is required, except as provided in these rules or by act of Congress.[382]

2. An "original" of a writing or recording is the writing or recording itself or any counterpart intended to have the same effect by a person executing or issuing it. An "original" of a photograph includes the negative or any print therefrom. *If data are stored in a computer or similar device, any printout or other output readable by sight, shown to reflect the data accurately, is an "original."*[383] [Emphasis added.]

Therefore, it appears that the Federal Rules of Evidence call the computer printout an "original" of the writing and allow the printout into evidence if the business record hearsay exception of trustworthiness is met.[384]

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379. *Id.* 802(6).

380. *Id.* 803(6).

381. *Id.* 1002, 1003, *infra* notes 382 and 385 and accompanying text.

382. Id. at 1002. Note also that "'writings' and 'recordings' consist of letters, words, or numbers, or their equivalent, set down by handwriting, typewriting, printing, photostating, photographing, magnetic impulse, mechanical or electronic recording, or other form of data compilation." *Id.* at 1001(1).

383. *Id.* at 1001(3).

384. *Id.* at 801(c), 802, 803(6), 1001(1), 1001(3), 1002.

If the definition of "original" does not include the computer printout, the question remains whether the printout could still be admitted as a "duplicate." A duplicate "is admissible to the same extent as an original unless (1) a genuine question is raised as to the authenticity of the original or (2) in the circumstances it would be unfair to admit the duplicate in lieu of the original."[385]

By definition, "a 'duplicate' is a counterpart produced by the same impression as the original, or from the same matrix, or by means of photography, including enlargements and miniatures, or by mechanical or electronic re-recording, or by chemical reproduction, or by other equivalent techniques which accurately reproduces the original."[386] It is not obvious whether the printout is a duplicate of the original under this definition. If the original is the data stored on some computer medium, then it is in binary magnetic or electronic impulses.[387] The printout is in letters we can read, so it is not technically an exact reproduction of the binary impulses, but rather a translation of them.[388] If we call this translation, the printout, a duplicate then it is admissible; if it is not a duplicate, then it is not admissible. If not a duplicate, then it is necessary to include the printout either in the definition of "original," as was done in Federal Rule of Evidence 1001(3),[389] or in the definition of "duplicate."

Even if it were necessary to include the printout in the definition of "original"[390] to meet the requirement that the writing be an original,[391] this change would not seem to be much of a revision to the evidence rules. The contents of the printout must still meet the requirements of the business record exception,[392] which was available long before computers.[393] To date, the computer has not been instrumental in any major change to the Federal Rules of Evidence relating to admissibility of evidence. Furthermore, although the printouts may be admitted into evidence, a trier of fact still decides whether to believe or disbelieve the contents.[394]

Thus, as the New Jersey *Monarch*[395] case has shown, it may not be necessary to revise the evidence rules in order to admit computer

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385. *Id.* at 1003.
386. *Id.* at 1001(4).
387. *See, e.g.*, JOHN C. LAUTSCH, AMERICAN STANDARD HANDBOOK OF SOFTWARE LAW 42-53 (Reston Publishing Co. 1985).
388. *Id.* at 119.
389. *See supra* note 383 and accompanying text.
390. *Id.*
391. *See supra* notes 381, 382 and accompanying text.
392. *See supra* note 380 and accompanying text.
393. Scott, *supra* note 2, at 18-22.
394. *Id.* at 18-18 through 18-19.
395. *See supra* notes 352-74, and accompanying text.

printouts into evidence.[396] As the Federal Rules of Evidence indicate,[397] however, rulemakers may determine that it is necessary to state specifically whether or not printouts can be admitted. But even then, the printouts would have to satisfy the business record exception to the hearsay rule, a requirement that has existed long before records were kept on computers.[398]

IX. CONCLUSION

This article has been an attempt to determine whether computers have made changes in the law. Not surprisingly, the answer seems mixed: yes, large changes in some areas;[399] yes, small changes in other areas;[400] and no, virtually no changes in still other areas.[401]

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396. *Id.*

397. *See supra* notes 375-94, and accompanying text.

398. *Id.*

399. Copyright, *see supra* notes 101-161, and accompanying text; Privacy, *supra* notes 224-314, and accompanying text; and Criminal Law, *supra* notes 315-349 and accompanying text.

400. State Taxation, *see supra* notes 66-100, and accompanying text; and Evidence, *supra* notes 350-398, and accompanying text.

401. Uniform Commercial Code, *see supra* notes 7-65, and accompanying text; and Patents, *see supra* notes 162-223, and accompanying text.