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The Advantages and Disadvantages of Juries in Technical Cases

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ARTICLES

THE ADVANTAGES AND DISADVANTAGES OF JURIES IN TECHNICAL CASES

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The complaints expressed concerning juries for disputes in technical cases have centered on charges that:

> (1) juries are not competent (or at least are less competent than judges) to comprehend the facts involved in technical disputes and to understand and treat rationally the intellectually demanding legal issues in complex cases;[1] and
>
> (2) they are subject to biases (more so than judges) that too often preclude or influence them against their fair consideration of the evidence they do comprehend in accordance with the instructions they do understand.[2]

No one doubts that there are serious, recurrent and pervasive problems in consistently achieving rational and just results in technical cases decided by juries. But the vast literature concerning ju-

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1. *E.g.*, Neil J. Vidmar, *Empirical Research and the Issue of Jury Competence*, LAW & CONTEMP. PROBS., Autumn 1989, at 1 (citations omitted):

> Many contemporary critics would endorse Judge Jerome Frank's assertion that the jury applies law it doesn't understand to facts it can't get straight. The civil jury has received the most criticism. A leader of the attack during the 1970's and 1980's was former Chief Justice Warren Burger, who complained that jurors are not competent to deal with the complex disputes that come to trial in the federal courts.

2. *See, e.g.*, Jeffery R. Boyll, *Psychological, Cognitive, Personality and Interpersonal Factors in Jury Verdicts*, 15 LAW & PSYCHOL. REV. 163, 163 (1991) (quoting one expert as stating: "So overwhelming is the data on behalf of juror bias throughout the trial, that for the most part behavioral scientists do not accept the idea of impartiality and regard it as legal fiction.").

ries, except for some reports that measure jury performance by comparison with cases decided by a judge, rarely attempts to assess explicitly the comparative advantages and disadvantages of a bench trial.

The choice faced by the litigant most often is between (i) a small number (6 to 12) of unknown jurors from a known, relatively confined geographical area (although not always with a homogeneous population) and (ii) a known judge (or one of a few identifiable judges) vastly superior to the average juror in intelligence, relevant training and experience and with a record of prior decisions. Given that choice, the litigant who believes in his or her case most often would be inclined to favor a bench trial. I would suggest, however, that a rational litigant with a strong case might prefer a jury in certain types of cases, including technical cases, particularly where the facts may be interpreted in different ways according to the perspective and attitude of the viewer.

Illustratively, a rational litigant might choose a jury to decide in a libel case whether a defamatory statement concerning a public official was written with the requisite "malice" (recklessness) to meet the constitutional standard of libel;[3] or to decide in a section 1983 case[4] whether a governmental official undertook a warrantless search in such circumstances and in such a way as to deprive the plaintiff of his or her "clearly established" constitutional right;[5] or to decide whether a tying arrangement was imposed as an exercise of "market power," injuring competition in a reasonably defined market.[6]

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3. *See* Charles E. Wyzanski, Jr., *A Trial Judge's Freedom and Responsibility*, 65 HARV. L. REV. 1281 (1952). *But see* Monitor Patriot Co. v. Roy, 401 U.S. 265 (1971) (restricting jury's authority to determine the relevance of a defamatory statement to the defendant's status as a public figure).

4. 42 U.S.C. § 1983:

> Every person who, under color of any statute, ordinance, regulation, custom, or usage, of any State or Territory or the District of Columbia, subjects, or causes to be subjected, any citizen of the United States or other person within the jurisdiction thereof to the deprivation of any rights, privileges, or immunities secured by the Constitution and laws, shall be liable to the party injured in an action at law, suit in equity, or other proper proceeding for redress.

5. *See* Brady v. Gebbie, 859 F.2d 1543 (9th Cir. 1988), *cert. denied*, 489 U.S. 1100 (1989); Brisk v. City of Miami Beach, 726 F. Supp. 1305 (S.D. Fla. 1989). *But see* Anderson v. Creighton, 483 U.S. 635 (1987), *on remand*, 724 F. Supp. 654 (D. Minn. 1989); *cf.* Reynolds v. Avalon, No. 90-4250 (D.N.J. Aug. 5, 1992) (municipality liability for sexual harassment presented a jury question). *See generally* John M. Baker, *The Shrinking Role of the Jury in Constitutional Litigation*, 16 WM. MITCHELL L. REV. 697 (1990).

6. *See* Eastman Kodak Co. v. Image Technical Servs., 112 S. Ct. 2072 (1992); Digidyne Corp. v. Data General Corp., 734 F.2d 1336 (9th Cir. 1984), *cert. denied*, 473 U.S. 908 (1985).

In each case the nature of the question to be resolved is such that the attitude that the decisionmaker brings to the task is likely to have as much or more to do with the result reached than the evidence or argument presented in the courtroom. Thus, the popularity of the public official is likely to have a significant bearing on consideration of his or her libel claim; whether one is sympathetic or unsympathetic to police aggressiveness seems likely to have a great deal to do with the outcome of the posed warrantless search case; and the attitude of the decider toward big business, small business and business conduct may be outcome-determinative in the tying case involving a claim of business leverage. Any attempt to explain such a decision in terms of rationality may well be characterized in good part as rationalization.

Likewise, a reasonable litigant might prefer a jury in certain technical cases — to decide, for example, whether a Mondrian-type pattern by an alleged copyright infringer is "substantially similar" to a Mondrian pattern created and copyrighted by the copyright holder, which itself imitated the Mondrian style;[7] or whether a patent should be invalidated because of "obviousness;"[8] or whether a computer program reflects creative artistry or a constrained application of unwavering engineering rules.[9]

The attitude of the decider toward the artistic subtleties involved in creating variations of the original Mondrian theme seems likely to be influential in a determinative way of the posed "substantial similarity" case.[10] The attitude of the decider toward the creative role of workmen might well prove decisive in determining

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7. *See, e.g.*, North Coast Indus. v. Jason Maxwell, Inc., 972 F.2d 1031 (9th Cir. 1992).

8. *See* J. Robert Chambers, *Jury Trials in Patent Cases: The First Six Years of the Federal Circuit*, 29 IDEA. 275 (1988).

9. *See, e.g.*, Computer Assocs. Int'l v. Altai, Inc., 23 U.S.P.Q.2d (BNA) 1241 (2d Cir. Jun. 22, 1992).

10. Judge Schroeder, in her opinion for the court in *North Coast*, 972 F.2d at 1035 and n.1., showed an appreciation for the artistry of Mondrian and art history in the following passages, among others:

> Mondrian 'developed a distinctive style of nonobjective painting based on the reduction of pictorial elements to vertical and horizontal lines, using the three primary colours and non-colours. His work has exerted a powerful influence on 20th-century art, including architecture, advertising art, and topography.' 12 Encyclopaedia Britannica 343 (15th ed.) (1982). [Strange as it may seem, Mondrian's exquisite sense for nonsymmetrical balance is so specific that critics well acquainted with his work have no difficulty in distinguishing fakes from genuine pictures. HORST W. JANSON, HISTORY OF ART 729-730 (1991) (revised and expanded by Anthony F. Janson).] If we were to accept the view that, as a matter of law the differences in the placement of geometric shapes should be regarded as trivial, we would be forced to conclude that Mondrian's creativity with geometric shapes ended with his first painting, and that he went

whether some combination of old elements was obvious to the skilled artisan.

The importance of attitude has only recently been revealed in several cases involving the protection of computer programs under the copyright law, as illustrated by the following examples.

First in *Computer Associates*,[11] the rulings of the trial judge (Circuit Judge George Pratt) and the court of appeals both plainly reflected a brooding hostility to the protection of computer programs that heavily influenced and probably was determinative of the result.[12] The decision acknowledged that protection of computer programs as "literary works" was mandated by the Software Protection Act of 1980.[13] It also acknowledged the "powerful" syllogism that "if computer programs are literary works, as we are told by the legislature[,] then the non-literal structures of computer programs are protected by copyright."[14] But the court nevertheless drew upon the academic arguments originally advanced in opposition to enactment of the Software Protection Act to devise a method of defeating protection for virtually any computer program (and which probably also would deprive any literary work of meaningful protection).[15] Indeed, the opinion directly undermines the congressional enactment by (i) treating computer programs as "essentially utilitarian [in] nature,"[16] "dictated by considerations of efficiency"

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on to paint the same painting a thousand times. This is not the judgment of art history, and it cannot be the correct judgment of a court as a matter of law. . . .

11. Computer Assocs. Int'l, Inc. v. Altai, Inc., 775 F. Supp. 544 (E.D.N.Y. 1991), *aff'd*, 23 U.S.P.Q.2d (BNA) 1241 (2d Cir. 1992) (withdrawn and superseded on other grounds, 982 F.2d 693 (2d Cir. 1992)).

12. The facts of the case, as recited in the opinion of Circuit Judge Herbert Walker for the court of appeals, are as follows:

An employee of Computer Associates (CA) left CA to work for Altai and wrongfully took with him copies of the source code for two versions of CA's valuable ADAPTER program. At Altai, the employee created a competing program (called OSCAR) using the stolen source code.

The appeal involved only the rewritten program and presented the question of whether the rewritten program was substantially similar to CA's ADAPTER program. *Computer Associates*, 23 U.S.P.Q.2d at 1246-48.

13. "While computer programs are not specifically listed as a part of the . . . statutory definition [of literary works], the legislative history leaves no doubt that Congress intended them to be considered literary works." *Computer Associates*, 23 U.S.P.Q.2D at 1249. Pub. L. No. 96-517, § 10(a), 94 Stat. 3028 (codified as amended at 17 U.S.C. § 101 (1980)) (including a computer program within the copyright category of literary works). *Id.*

14. *Computer Associates*, 23 U.S.P.Q.2d at 1249-50.

15. The direction of the court was that the trial court should "break down the allegedly infringed program into its constituent structural parts" and then "sift out all non-protectable material" so as to confine protection to the "kernel, or possibly kernels, of creative expression [left] after following this process of elimination." *Id.* at 1253-54.

16. *Id.* at 1251.

or by "market externalities"[17] — in effect denying the contribution of any significant creativity in the writing of computer programs; (ii) viewing copyright as "not ideally suited to deal with the highly dynamic technology of computer science;"[18] (iii) recommending "further legislative investigation;"[19] and (iv) rejecting prior decisions as attempts "to fit the proverbial square peg in a round hole."[20]

Secondly, the ultimate decision of District Court Judge Vaughn Walker in *Apple Computer, Inc. v. Microsoft Corp.*[21] was similar in tone and the outcome, emasculating protection for the copyrighted audiovisual works in issue (in particular, the Apple Macintosh graphical user interface), was thus quite predictable.[22]

Given that analysis, a reasonable litigant might well conclude

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17. *Id.* at 1253-54.

18. *Id.* at 1257.

19. *Computer Associates*, 23 U.S.P.Q.2d at 1257.

20. *Id.* Both Judge Pratt and Judge Walker plainly were impressed by the views of Dr. Randall Davis of MIT, appointed by Judge Pratt as the court's expert. Indeed, Judge Pratt even cited and relied on Dr. Davis to criticize the decision of the Third Circuit in *Whelan Assocs. v. Jaslow Dental Lab.*, 797 F.2d 1222 (3d Cir. 1986), as "fundamentally flawed . . . by failing to distinguish between the static and dynamic ["behavior"] views of a program." 775 F. Supp. at 560. Neither court noted that Dr. Davis was well known for his view that the congressional decision to extend copyright protection to computer programs should be reexamined.

The court of appeals also was influenced by the criticism of *Whelan* by David Nimmer (referred to in Judge Walker's opinion as "[t]he leading commentator in the field" *Computer Associates*, 23 U.S.P.Q.2d at 1252. Perhaps he was referring to Mr. Nimmer's deceased father, Professor Melville Nimmer.).

21. 799 F.Supp. 1006, (N.D. Cal. 1992).

22. *Id.* at 1023. Judge Walker rejected comparison of defendants' interface works with the Macintosh interface on the ground that

> [t]he elements of such an arrangement [the graphical interface] serve a purely functional purpose in the same way that the visual displays and user commands of the dashboard, steering wheel, gear shift, brakes, clutch and accelerator serve as the user interface of an automobile. See *Synercom Technology, Inc. v. University Computing Co.*, 462 FSupp 1003, 1013 (N.D. Tex. 1978). Purely functional items or an arrangement of them for functional purposes are wholly beyond the realm of copyright as are other common examples of user interfaces or arrangements of their individual elements—the dials, knobs and remote control devices of a television or VCR, or the buttons and clocks of an oven or stove. Of course, the elements of these everyday user interfaces are seldom conflated into metaphoric images, but that does not mean that the user interface of a computer is less functional.

Id. at 1023-1024. The court also emphasized that the features of the Macintosh had proven so popular that today's "graphical user interfaces almost always incorporate the basic elements of the Macintosh interface." *Id.* at 1025. Judge Walker's opinion, citing the *Computer Associates* court of appeals opinion, also criticized *Whelan* and cited with favor other well-known critics of the copyright protection granted by Congress to audiovisual works insofar as the law was applied to protect computer interfaces. *See id.* at 1020.

that it would be safer to have such cases determined by a jury rather than a judge because:

> (1) less educated persons are likely to have their biases in such matters less well formulated by what they learn outside the courtroom, reducing the risk of the decider learning things that are not so and of decisions based on unknown and non-reviewable evidence;[23] and
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> (2) the 6 to 12 persons in a jury are more likely to round off or balance differing biases[24] and, in result, resort to the particulars of the case to reach a verdict.

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23. NEIL J. VIDMAR, ASSESSING THE IMPACT OF STATISTICAL EVIDENCE, A SOCIAL SCIENCE PERSPECTIVE, IN THE EVOLVING ROLE OF STATISTICAL ASSESSMENTS AS EVIDENCE IN THE COURTS 279-319 (S. Fienberg ed., 1989) (reviewing data showing that judges are not immune from factual misunderstandings). *Cf.* Dan R. Gallipeau, Jurors' Perceptions in Patent Litigation (Litigation Sciences 1992) (pointing out the risk that a juror with some technological experience may be viewed as an expert even though his information may be inaccurate, making jurors "with little or moderate experience . . . typically a great deal 'safer' "—a comment that is equally applicable to judges who may view themselves as "experts").

In addition to other examples of judges assuming facts contrary to the evidence (and sometimes contrary to all evidence), there may be cited the view of a tax court judge that a computer program was like "a light switch" and not "intellectual property":

> My preconceived notion, prior to this educational process, and perhaps even with it, because I'm not sure there's a difference, is that the computer program was a means of coding a sequence of magnetic or electromagnetic impulses that actually operated hardware. And I am under the impression that that's the way it works.
>
> If that's the case, from a functional standpoint, why is a computer program any different than a light switch? And I remember in the initial briefing that came, there was talk about intellectual property, and this is intellectual property and, therefore, it's not tangible.
>
> Well, I don't believe it's intellectual property. I believe it's more mechanical than intellectual. I don't think there's any art involved in a computer program. I recognize that the guy that does it — lots of people can do it better than other people can, and it takes a lot of training and a lot of work to put one of them together.
>
> But basically it's just — I hate to use that word because I don't mean to belittle anybody's work effort — but it's sequencing electrical impulses.

Reporter's Transcript of Proceedings at 28-29, IBM Corp. v. City of Scottsdale, No. TX 91-00795 (Ariz. Super. Ct. Aug. 21, 1992). (Fortunately, the tax court judge recognized that evidence concerning his preconceptions was required and he subsequently invited such evidence to be proffered.)

24. Valerie P. Hans, *The Jury's Response to Business and Corporate Wrongdoing*, LAW & CONTEMP. PROBS., Autumn 1989, at 177, 184-185; Phoebe C. Ellsworth, *Are Twelve Heads Better Than One?*, LAW & CONTEMP. PROBS., Autumn 1989, at 205, 206 ("Ideally, . . . the final verdict is forged from a shared understanding of the case. This understanding is more complete and more accurate than any of the separate versions that contributed to it, or indeed than their average. This transcendent understanding is the putative benefit of the deliberation process. . . . A judge does not have this vivid reminder that alternative construals are possible."). *See also* Harry Kalven, Jr., *The Dignity of the Civil Jury*, 50 VA. L. REV. 1055, 1067 (1964):

Approaching the question of comparing jury competence in a different way, no doubt a judge is much more likely than a jury to grasp the complexities of a patent claim, Bayes' Theorem or any other sophisticated factual or legal question. However, where the question is put and explained and commented upon by the testimony of competing experts (as is frequently the case in technical cases), the most important question in the rendering of justice may be whom to believe. There are at least some experienced trial lawyers who think that juries answer that question correctly (or at least satisfactorily) at least as often as judges do.[25]

There is another reason for viewing jury trials in technical cases with greater equanimity: much can be done to assist juries in better performing the tasks assigned to them, and thus to enhance the predictability of jury verdicts and increase satisfaction with jury trials. Among the procedural improvements that have been suggested, some of which have been adopted by some courts with good results, include the following:

- Providing the jury an explanation of the nature of the case and the questions presented, including preliminary instructions, at the beginning of the case, and not just at the end;[26]

Often in the debate over the jury the capacity of *one* layman is compared to the capacity of one judge, as though this were the issue. The distinctive strength and safeguard of the jury system is that the jury operates as a group. Whether twelve lay heads are better than one judicial head is still open to argument, but it should be recognized that twelve lay heads are very probably better than one.

25. *See* SIR PATRICK DEVLIN, TRIAL BY JURY 149 (1956) ("I think it must be agreed that there are some determinations in which twelve minds are better than one, however skilled, and most people would accept that the determination whether a witness is telling the truth is one of them."). *See also* WALTER R. HART, LONG LIVE THE AMERICAN JURY 66 (1964) ("The advantage of a right to trial by jury in either a civil case or a criminal case is that the parties get the benefit of the group thinking, discussion and decision of twelve individuals, whereas in a trial by judge, the decision is made by one individual who, however learned, does not have the advantage of presenting his reasons in discussion with others and hearing reasons advanced by others who have opposing views.")

26. See the report of the experiments conducted by the district judges of the Second Circuit, reported in Judicial Council of the Second Cir., *Report of the Committee on Juries* 42-43 (Aug. 1984); the Survey of Juror Attitudes, Ninth Cir. Judicial Council, *Final Report* 7 (1986); and the report of Wisconsin judges in Comm. on Improving Jury Communications, Wis. Judicial Council, *Draft Final Report* 17-18 (May 1985).

Candor requires recognition of the role of the judge in achieving a fair trial by a jury. Fortunately, most judges are scrupulously fair in treating all witnesses and counsel for all parties with courtesy and being careful not to influence the jury for or against any party by any inadvertent conduct or any unfair advertent conduct. Everyone who has ever spent any time in a courtroom knows how powerfully the judge may influence a jury. *See* David Hittner, *A Judge's View of Jury Service: A Personal Perspective*, TEX. BAR J., March 1984, at 227, 228 (explaining that the author's jury experience "gave me an insight into how important both actual and apparent impartiality is in insuring a fair trial").

- Providing the jury with interim (perhaps daily) statements of what the evidence about to be presented is intended to prove and summaries as to what the evidence just presented is claimed to have proven;[27]
- Requiring tutorials as to the technological matter to be referred to by the witnesses during the course of the trial and requiring glossaries of the technical terms to be furnished to the jury;[28]
- Providing the jury in long trials with interim summations by counsel;[29]
- Encouraging counsel to use summary charts and demonstrative evidence in opening statements and throughout the trial;[30]
- Encouraging expert witnesses to make greater use of lecture-type presentations (perhaps with the precaution of requiring written text) so as to have the testimony presented in a more coherent fashion;
- Encouraging jurors to take notes and providing them with notebooks;[31]
- Permitting the jurors to participate in the trial by asking questions (through the judge);[32]
- Simplifying the jury instructions and making them more understandable and instructive concerning the objectives of the law to be applied;[33]
- Simplifying the forms of verdict or making better use of jury interrogatories;[34]
- Placing tighter limits on the time allotted for trial;[35] and
- Using "blue ribbon" jury panels to the extent constitutionally permissible, reversing the trend favoring the selection of

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27. Comm. on Fed. Courts of the N.Y. State Bar Ass'n, *Improving Jury Comprehension in Complex Civil Litigation*, 62 ST. JOHN'S L. REV. 549, 554-55 (1988); Boyll, *supra* note 2, at 174.

28. Mitchell Zimmerman, *Educating the Judge and Jury: The Technology Tutorial*, COMPUTER LAW., May 1990, at 1.

29. *See* Pierre N. Leval, *From the Bench: Westmoreland v. CBS*, LITIGATION, Fall 1985, at 7-8, 66-67.

30. *See* James G. Apple, *Is the Jury Listening?*, 13 AM. J. TRIAL ADVOC. 851, 859-60 (1989).

31. Comm. on Fed. Courts, *supra* note 27, at 559-60; Steven I. Friedland, *The Competency and Responsibility of Jurors in Deciding Cases*, 85 NW. U. L. REV. 190, 209-11 (1990).

32. Comm. on Fed. Courts, *supra* note 27, at 560-61; Friedland, *supra* note 31, at 211-18; Mark A. Frankel, *A Trial Judge's Perspective on Providing Tools for Rational Jury Decisionmaking*, 85 NW. U. L. REV. 221 (1990).

33. Comm. on Fed. Courts, *supra* note 27, at 562-63.

34. *Id.* at 565-70; Ellsworth, *supra* note 24, at 224.

35. *See* Roger W. Kirst, *Finding a Role for the Civil Jury in Modern Litigation*, 69 JUDICATURE 332, 337-38 (1986).

> less educated and ill-informed jurors to favor the selection in regular course of better-educated and presumably better-informed jurors.[36]

In sum, jury trials are not necessarily to be feared or disdained by judges, by plaintiffs or by defendants. Occasionally, they may rationally be preferred both by courts and all parties. Greater attention is required, however, to improving the conduct of jury trials.

36. Friedland, *supra* note 31, at 196; Hans, *supra* note 24, at 190.

SELF-HELP REMEDIES FOR SOFTWARE VENDORS

Henry Gitter†

The rapid growth of the computer industry has created a new operating environment for business. Many firms are now completely dependent on computers to conduct their business affairs. This dependence requires that disputes between software vendors and their clients be resolved quickly and with no disruption to the client's computer system.[1] Recently, a software vendor used what it characterized as "self-help repossession" to resolve a dispute with one of its clients. Such action raises issues that must be examined before this remedy can be sanctioned for use in this novel application.[2] This article examines self-help repossession within the context of computer software contracts, and asserts that its use should be confined to a limited set of facts.

The first part of this article describes the October 1990 *Revlon* case where self-help was used to repossess computer software.[3] The article then discusses the background and rationale underlying self-help repossession. Part II reviews the Uniform Commercial Code's (U.C.C.) support of self-help repossession and the weaknesses inherent in the U.C.C.'s provisions as they apply to software disputes. Part III outlines other legal doctrines containing self-help provisions that fail to support software repossession. Finally, Part IV proposes the use of self-help repossession in a limited set of circum-

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1. Software disputes can arise under two sets of circumstances. The most common scenario is when the client and vendor disagree on the performance of the software and the client refuses to pay for it. Less common is when the client flatly refuses to pay for the software despite agreeing that it performs as expected.

2. Among the techniques used by software vendors to repossess software are preplanted time bombs. A time bomb is a software device that, if not deactivated by the vendor, will cause the software to stop functioning. The vendor may also gain access to the client's system and shut down the software.

3. Revlon Group, Inc. v. Logisticon, Inc., No. 705933 (Cal. Super. Ct., Santa Clara Cnty., complaint filed Oct. 22, 1990).

stances and explores other forms of self-help that do not rely on repossession.

I. REPOSSESSION: PAST AND PRESENT

A. Revlon v. Logisticon

A dispute between the Revlon Group (Revlon) and one of its software suppliers thrust the issue of software repossession into the headlines.[4] Logisticon, Inc. (Logisticon) agreed to develop and install software for Revlon's warehouse inventory system.[5] The contract called for development in stages with milestone payments for successfully completed phases. Logisticon obtained dial-up access[6] to Revlon's computer system in order to develop and test the software. The first phase was installed but Revlon was dissatisfied with the software's operation. After Logisticon attempted to remedy the problems, Revlon informed them that it would withhold a portion of the first payment and cancel the remainder of the contract. Logisticon responded by dialing into Revlon's computer system and disabling its software. The firm advised Revlon that the software would be restored upon payment and that none of Revlon's data was affected.

Disabling the software disrupted Revlon's two main distribution centers, closed operations for three days and caused $20 millon in product delivery delays. Revlon brought suit against Logisticon alleging misappropriation of trade secrets as well as contract claims. The suit settled out of court, and the settlement terms remained undisclosed.[7]

B. *Self-Help Repossession and the U.C.C.*

Self-help[8] is action taken to enforce or protect one's rights without resort to the legal system.[9] Records show that self-help was available to would-be plaintiffs as far back as Greek jurisprudence.[10]

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4. Andrew Pollack, *Revlon Accuses A Supplier Of Sabotaging Its Software*, N.Y. TIMES, October 25, 1990, at D1, col. 1.

5. *See* Jeffery B. Ritter, *Disabling Software Devices: 'Revlon' Inspires Contracting Strategies*, COMPUTER LAW STRATEGIST, January 1991, at 1-2 for the facts of *Revlon*.

6. Dial-up access allows someone to access a computer from a remote location using a modem and a telephone line.

7. *"Repossession" by Disabling Software In User's Warehouse Spurs Suit, But Parties Settle*, THE COMPUTER LAWYER, December 1990, at 34.

8. For an excellent overview of the history of self-help repossession see James R. McCall, *The Past as Prologue: A History of the Right to Repossess*, 47 S. CAL. L. REV. 58 (1978).

9. BLACK'S LAW DICTIONARY 1220 (5th ed. 1979).

10. *See* McCall, *supra* note 8, at 63-75.

English common law recognized self-help, after years of suppression, due to concerns that violence would result from its execution.[11] The self-help remedy quickly gained recognition in American courts,[12] and was later codified into such diverse areas of the law[13] as commercial,[14] tort and nuisance,[15] self-defense[16] and landlord/tenant law.[17] The U.C.C. limits self-help to repossession within the commercial law arena and regulates its use against debtors.[18] A secured creditor may repossess its collateral from a debtor in default without judicial intervention.[19] This remedy is not without rules, as creditors are forbidden from using violence or the threat of violence to repossess their collateral.[20]

C. *Rationale for Self-Help In Commercial Disputes*

1. Consumer Debtors

The arguments supporting self-help repossession for consumers focus on efficiency. Proponents contend that self-help repossession offers a two-fold economic benefit. Self-help repossession increases the amount of credit available to consumers while decreasing the cost of credit.[21] In addition, judicial efficiency is increased by reducing the caseload of overburdened courts.[22]

The arguments opposing self-help repossession extend beyond purely economic terms. Those opponents of self-help repossession focus on the unfair advantage that creditors have over debtors. The Supreme Court responded to these concerns in cases such as *Fuentes v. Shevin*,[23] by imposing due process requirements when state

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11. *Id.* at 68.

12. *Id.* at 73. *See also Right of Conditional Seller To Retake Property Without Judicial Aid*, 55 A.L.R. 184 (1991) for a collection of early self-help cases.

13. For a complete discussion of self-help in "non commercial" settings see Douglas I. Brandon, et al., *Self-Help: Extrajudicial Rights Privileges and Remedies in Contemporary American Society*, 37 VAND. L. REV. 845 (1984).

14. *See* U.C.C. §§ 2A-525, 9-313(8), and 9-503.

15. For a complete discussion of self-help in tort and nuisance cases see Jon K. Wactor, Note, *Self-Help: A Viable Remedy for Nuisance? A Guide for the Common Man's Lawyer*, 24 ARIZ. L. REV. 83 (1982).

16. *Brandon et. al., supra* note 13, at 878.

17. *Id.* at 937.

18. JAMES J. WHITE & ROBERT S. SUMMERS, HANDBOOK OF THE LAW UNDER THE UNIFORM COMMERCIAL CODE § 25-11 at 1063, § 26-6 at 1094-1102 (1980).

19. *See* U.C.C. § 9-503.

20. *Id.*

21. James J. White, *The Abolition of Self-Help Repossession: The Poor Pay Even More*, WIS. L. REV. 503, 522-523 (1973).

22. *Brandon et al., supra* note 13, at 849.

23. 407 U.S. 67 (1972).

action was used to enforce a creditor's self-help remedies. The Court held that due process requires a creditor to seek a writ of possession from a judge and hold an immediate hearing after repossessing a debtor's goods.

Opponents further disparage self-help repossession because it encourages unethical practices by creditors.[24] Among the practices criticized are the use of violence and the excuse of a minor breach to justify repossession. These and other unscrupulous repossession practices diminish public respect for law.

2. Business Debtors

The issues raised by self-help repossession in business are similar to those in the consumer world. Proponents contend that it is more efficient to seize the collateral rather than litigate the dispute. This lowers the cost of doing business, in turn allowing sellers to offer lower prices. Self-help repossession also protects business by ensuring that their goods are not destroyed by the debtor.[25] Opponents to self-help repossession in business raise the same arguments as those in the consumer realm. In response, Professor Gilmore states that repossession causes little trouble in the business world.[26]

II. SOFTWARE REPOSSESSION AND THE U.C.C.

A. *Applicability of the U.C.C. to Software*

The current trend in computer law is to treat software as goods under the U.C.C.[27] This allows vendors to rely on the U.C.C.'s self-help provisions in contract disputes with their clients. Both custom and "off the shelf" software[28] have been deemed goods, although not all courts have agreed with this viewpoint.[29] In contrast, courts have agreed that ancillary services (such as training) are not consid-

24. *See* Thomas D. Crandal, *Proposal For Consumer Credit Reform: A Definition Of Default, A Right To Cure, And A Right To Notice And An Opportunity For A Hearing Before Repossession*, 13 GONZ. L. REV., 11, 31-33 (1977). *See also* GRANT GILMORE, SECURITY INTERESTS IN PERSONAL PROPERTY, § 44.1 at 1212 (1965).

25. Soia Mentschifkoff, *Peaceful Repossession Under the Uniform Commercial Code: A Constitutional and Economic Analysis*, 14 WM. & MARY L. REV. 767, 779 (1973).

26. *See* GILMORE, *supra* note 24, at 1212.

27. RRX Industries v. Lab Con, Inc., 772 F.2d 543 (9th Cir. 1985). The court held that software would be treated as goods under the U.C.C. so long as the sales aspects of the transaction predominated.

28. "Off the shelf" software has already been developed and is sold to buyers ready to use.

29. *See* H/R Stone, Inc. v. Phoenix Business Systems, Inc., 660 F. Supp. 351 (S.D. N.Y. 1987) (hardware and custom software are not goods under the U.C.C.).

ered goods.[30]

Once software is classified as goods, then there are two areas within the U.C.C. that vendors can rely on to repossess computer software: secured transactions and leases.[31] The following sections present arguments that both sides can use when litigating the use of self-help repossession in software disputes. Attorneys counseling their clients should carefully consider these arguments before resorting to self-help.

B. *Secured Transactions and the U.C.C.*

1. Article 9

U.C.C. Article 9 governs transactions in instances where a creditor retains a security interest in the goods held by the debtor.[32] Section 9-503 allows a secured creditor to repossess its collateral when the debtor defaults,[33] unless otherwise specified in the security agreement. Repossession may proceed so long as neither the creditor nor the debtor breaches the peace.[34]

Breach of peace is a term of art describing the prohibition against violence or threats of violence by the two parties against each other.[35] It requires that the creditor gain the consent of the debtor before entering his property to repossess the collateral.[36] Consent is revoked by any objection raised by the debtor, even if the repossession occurs in a public place.[37] In turn, creditors may resort to skillful deception in order to obtain a debtor's consent to repossession.

Apparently the deceptive creditor appeals to judges, as courts

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30. *RRX*, 772 F.2d at 546.

31. *See* U.C.C. § 2A-525, § 9-313(8), § 9-503.

32. WHITE & SUMMERS, *supra* note 18, § 26-6 at 1094-1102.

33. U.C.C. § 9-503 provides:

> Unless otherwise agreed a secured party has on default the right to take possession of the collateral. In taking possession a secured party may proceed without judicial process if this can be done without breach of the peace or may proceed by action. If the security agreement so provides the secured party may require the debtor to assemble the collateral and make it available to the secured party at a place to be designated by the secured party which is reasonably convenient to both parties. Without removal a secured party may render equipment unusable, and may dispose of collateral on the debtor's premises under Section 9-504.

34. *Id.*

35. For an in-depth discussion of what the term "breach of peace" means see Eugene Mikolajczyk, Note, *Breach of Peace and Section 9-503 and the Uniform Commercial Code - A Modern Definition for an Ancient Restriction*, 82 DICK. L. REV. 351 (1978).

36. WHITE & SUMMERS, *supra* note 18, § 26-6 at 1095.

37. *Id.*

have found consent where the creditor has misrepresented his purpose in entering and taking the debtor's property. For example, in a nineteenth century case, consent by misrepresentation was upheld in the repossession of a piano by creditors who posed as "piano tuners."[38] On the other hand, consent by misrepresentation is barred when state action or the color of state action is involved.[39]

2. Secured Transactions and Software

Secured transactions are used in intellectual property to provide capital to firms by using their software as collateral.[40] In addition, software development contracts can be structured as secured transactions.[41] Upon default, a creditor with a valid security interest may use judicial or non-judicial action to stop the debtor from using the secured intellectual property.[42]

An effective security interest requires that the creditor reserve its rights to the software in order to transfer ownership upon repossession.[43] These rights include ownership of the copyright in the source code, object code and documentation.[44] The creditor must also reserve the rights in the software storage media[45] and any licenses or contracts affecting the software.[46]

3. Breach of Peace

Self-help repossession in computer transactions requires an examination of the breach of peace doctrine within the software environment. Under breach of peace doctrine a creditor may not enter the locked premises of the debtor without consent.[47] In computer systems, the locked door is replaced by the mechanisms that limit

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38. Mikolajczyk, *supra* note 35, at 368.

39. *Id.* at 369.

40. *See generally* G. Larry Engle & Mark F. Radcliffe, *Intellectual Property Financing for High-Technology Companies*, 19 U.C.C. L.J. 3 (1986).

41. *See* Raymond T. Nimmer & Patricia A. Krauthaus, *Secured Financing and Intellectual Property Rights*, 2 HIGH TECH. L.J. 195 (1987).

42. *Id.* at 218-220.

43. A recent case has held that a security interest in a copyright needs to be filed with the Copyright Office, rather then with the state. *See* Peregrine Entertainment, LTD v. Capital Federal Savings & Loan Ass'n, 116 B.R. 194 (C.D. Cal. 1990).

44. Engle & Radcliffe, *supra* note 40, at 29.

45. These are the devices the software is stored on and include tapes and disks.

46. Engle & Radcliffe, *supra* note 40, at 29.

47. *See* Mikolajczyk, *supra* note 35, at 359, where courts have held that a creditor's entry onto locked premises constitutes a breach of peace when repossessing his property. But see Cherno v. Bank of Babylon, 282 N.Y.S.2d 114 (Sup. Ct. 1967); *aff'd*, 228 N.Y.S.2d 862 (2d Dept. 1968) where the court upheld a creditor's entry onto the debtor's business premises using a key obtained without the debtor's consent.

access to authorized users. The arguments surrounding breach of peace in the computer environment depend on whether the vendor is characterized as an authorized or unauthorized user.

Opponents can employ two arguments to oppose software repossession by unauthorized users. First, a creditor gaining access to a computer system without a valid access code is breaching the peace. Entry to a "locked" computer system without consent is similar to a creditor breaking through a locked door. Second, federal computer crime statutes bar unauthorized access to computer systems.[48] These statutes reinforce the characterization of unauthorized systems access as the equivalent of entry through a locked door. A creditor wishing to repossess software, without authorized access, is prohibited by both the breach of peace doctrine and federal law. Creditors, however, have other means at their disposal to repossess software, without relying on unauthorized access.

In the more common scenario, as in *Revlon*,[49] the vendor is authorized to access a client's system, but abuses that access by using it to repossess the disputed software. One can draw an analogy between consent by misrepresentation and a creditor's use of its authorized access to repossess software. A client gives a software vendor consent to access its system to develop and test software. The vendor obtains consent by misrepresentation when it enters a client's system under the guise of software development to repossess its software.

As stated earlier, consent by misrepresentation is allowed except where state action or the color of state action is involved. Accordingly, vendors engaged in self-help will argue that their access is merely consent by misrepresentation and therefore no breach of peace occurs. On the other hand, clients will argue that the use of common carriers (*e.g.*, a telephone company) regulated by the government should be included under the definition of state action. Under this rationale, a creditor breaches the peace when it uses a common carrier while gaining a client's consent to enter its system by misrepresenting its purpose. The client's argument fails, however, due to a Supreme Court ruling that privately owned utilities, though heavily regulated, do not function under state action.[50]

Any argument opposing self-help repossession on breach of

48. *See* 18 U.S.C.A. § 1030(a) (West Supp. 1991) which prohibits unauthorized access to computer systems.

49. Revlon Group, Inc. v. Logisticon, Inc., No. 705933 (Cal. Super. Ct., Santa Clara Cnty., complaint filed Oct. 22, 1990).

50. *See* Jackson v. Metropolitan Edison Co., 419 U.S. 345 (1974).

peace grounds fails because its underlying rationale is no longer applicable.[51] The ban against breaching the peace is meant to discourage violence. In the software environment, unlike consumer and business repossessions, the chance of violence is minimal since repossession is possible without human contact. As a result, arguing that repossessing software is a breach of the peace is difficult to sustain.

Clients may yet have the final word under Federal law. In addition to barring unauthorized use, the Computer Crime Act prohibits a computer user from exceeding its authorized access.[52] Clients can argue that they give their vendors access to their systems strictly for software development and testing purposes. A vendor's use of that system to repossess its software exceeds its authorization and is therefore illegal.[53]

4. Consequential Damages

Neither the U.C.C. nor the traditional self-help doctrine allows a debtor to recover the consequential damages of the creditor's repossession.[54] These damages include the loss of earnings due to the disruption of the debtor's business. The rationale behind this is easily seen: a debtor brings the loss on himself by defaulting on his debt. The increased consequential damages due to software repossession require that we reconsider self-help in light of computer technology.

In the past, the small business owner was better able to foresee the ramifications of not paying for its goods. In today's more complex arena, a small business may be unsophisticated both legally and technically. Accordingly, the business owner may be unaware that

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51. Mikolajczyk, *supra* note 35, at 352. The prohibition against breaching the peace is used to prevent violence.

52. 18 U.S.C.A § 1030(a)(4) (West Supp. 1991) defines a violation of the Act as "knowingly and with intent to defraud . . . exceeds authorized access and by means of such conduct furthers the intended fraud and obtains anything of value, unless the object of the fraud and the thing obtained consists only of the use of the computer. . . ." Further, 18 U.S.C.A. § 1030(e)(6) (West Supp. 1991) defines exceeding authorized access as accessing "a computer with authorization and to use such access to obtain or alter information in the computer that the accesser is not entitled so to obtain or alter. . . ."

53. The district court in Minnesota rejected a similar argument made by two agricultural dealers who leased computer hardware and software. The court found that the vendor's access to deactivate the software was authorized under the terms of the contract. The lessees' had defaulted on payment triggering the contract's cancellation clause. American Computer Trust Leasing v. Jack Farnell Implement Co., 763 F. Supp. 1473 (D. Minn. 1991).

54. There are, however penalties for a creditors' willful repossession. *See* 35 A.L.R. 3rd-4th, 1041 (1991) for a collection of these cases.

the contract allows the vendor to repossess his software.[55] It is doubtful that the contract will make specific reference to self-help remedies, even if it indicates the vendor may rely on any U.C.C. remedy. In a dispute about software performance, the buyer, not realizing the consequences of its action, may withhold payment rather than seek legal action. The vendor, taking advantage of the client's innocence, is able to render the business helpless by repossessing its software. Large businesses are often protected against this practice because of their ability to access legal and technical resources easily.

The large business computer user presents an additional set of issues. Computer software is unlike the usual class of repossessed collateral. Interconnected computer networks are the new highways that transport information just as highways move goods. A network links many separate computers allowing data to flow around the country and the world. As in *Revlon*,[56] software repossession can disable a local system as well as cripple an entire network. The results can be widespread, not only disabling the intended business, but also damaging other businesses that are part of interconnected computer networks. The AT&T telephone outage in January 1990 is an example of what can happen when a critical piece of software fails.[57] The losses resulting from a failure due to software repossession can easily exceed the value of the disputed computer system. As a result, one can argue that creditors should not be allowed to wield such power unchecked by the judicial system.

Despite these arguments, self-help repossession is not restricted, even if it causes a business to fail. Clients, therefore, should insist that self-help repossession be specified in the contract or barred as a remedy.[58] This would remove the element of surprise in software repossession and limit consequential damages.

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55. A vendor can structure a software contract as a secured transaction in order to take advantage of the self-help repossession provision in the U.C.C.

56. Revlon Group, Inc. v. Logisticon, Inc., No. 705933 (Cal. Super. Ct., Santa Clara Cnty., complaint filed Oct. 22, 1990).

57. *See* Edmund L. Andrews, *Telephone Techology Questioned After Failures*, N.Y. TIMES, June 28, 1991, at A16, col. 1 for an example of how a single software failure affected most of the phone lines on the East Coast.

58. One Court issued an injunction against a software vendor using a drop-dead device, without disclosing it to the client. Frank & Sons v. Information Solutions, Inc., No. 88-C-1474-E (N.D. Okla. 1988). *See also* Clayton X-ray Co. v. Professional Systems Corp., 812 S.W.2d 365 (Mo. Ct. App. 1991), where the court assessed punitive damages against a programmer who used a "lockeys" device to enforce his/her contract with the client. *See also* Werner v. Lewis, New York Law Journal, Aug. 4, 1992 (N.Y. Civ. Ct. N.Y. Cnty, Aug. 4, 1992). *But see* American Computer Trust Leasing v. Jack Farwell Implement Co., 763 F.

C. *Fixtures*

1. Traditional Fixture Doctrine

Fixture doctrine[59] is another area within secured transactions permitting creditors to repossess their collateral. Fixtures are goods so attached to the particular real estate that the property owner may have an interest in them under local real estate law.[60] A conflict arises when a creditor lends money to a debtor to purchase goods and the real propety holder asserts a priority over them. In turn, creditors can use a fixture filing to assert their priority over the real estate holder.[61]

The repossession provisions under U.C.C. Sections 9-503 and 9-313(8) are similar in that a secured party must adhere to the breach of peace provision. Neither section allows the debtor to collect damages for lost business revenues or consequential damages due to the repossession.[62] Debtors gain a measure of protection as creditors are liable for conversion upon seizing other property of the debtor. Unlike section 9-503, there are instances when a creditor must give notice prior to repossessing its collateral. In addition, repossession is allowed despite "material damage" to the premises, but the creditor must reimburse the property owner for any physical damage to its real property.

2. Software as a Fixture

In software repossession, both parties may use the U.C.C. fixture provisions to support their positions. To take advantage of the provisions, computer software must be considered a fixture. The definition of a fixture varies from state to state. However the U.C.C. refers to "readily removable office machines" when discussing fixtures. White & Summer's inclusion of small computers within this category takes no great leap of faith, but its expansion to encompass computer software has not been considered by the

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Supp. 1473 (D. Minn. 1991), where the court upheld deactivation of software as a remedy in a vendors dispute with its clients.

59. WHITE & SUMMERS, *supra* note 18, § 25-11 at 1054-1064.

60. American Law of Property defines as goods so related to the property that a disinterested observer would consider it part of the property. *See* AMERICAN LAW OF PROPERTY § 19.1, at 3-4 (A. James Casner et al. eds., 1952). *See also* U.C.C. § 9-313(1)(a).

61. Creditors can use one of two methods to protect security interests in fixtures. The creditor can file in the real estate record before the mortgage creditor. The second method allows a creditor to obtain a purchase money security interest in the goods if the mortgage creditor has filed first. *See* U.C.C. § 9-313(4)(a)(b).

62. *See* U.C.C. § 9-313(8), comment 9.

courts and arguments in its favor may be difficult to sustain.[63]

Those seeking to characterize software as a fixture might do so in a number of ways. First, software supplied with the hardware at the time of sale may be considered part of the hardware and therefore a fixture. Independently supplied software may be characterized as part of a fixture once it is loaded onto the computer, and finally, a creditor may use a fixture filing to cover the software.

Under the fixture provisions of the U.C.C., a debtor can avoid being surprised by a creditor's repossession. Section 9-313(8) forces a creditor to seek the permission of the real estate holder who has priority over the creditor, before repossessing the collateral. Where the client owns the computer site, a software vendor seeking to repossess his software can be prevented from carrying out the repossession. In the alternative, a vendor may have to contact the owner of the computer site, who in turn may give notice to the client.

While fixture doctrine may pre-empt the surprise of repossession, the argument against granting consequential damages to the client becomes stronger. Section 9-313(8) also states that no compensation is allowed for "loss of business" due to repossession. Clients may argue that the consequential business damage due to software repossession is more analogous to physical damage than to real property, and therefore business losses should be compensated. This argument would appear to be difficult to sustain.

D. *Leases - Article 2A*

In the computer industry many software contracts are written in the form of a lease. Article 2A of the U.C.C. is a new provision that was written to regulate leases.[64] To date at least eighteen states have adopted Article 2A.[65] Section 2A-525 allows the lessor to disable or remove the leased goods upon default by the lessee.[66] Similar to Article 9, the lessor may undertake self-repossession so long as the peace is not breached.[67]

Article 2A may give software vendors their most powerful argument in support of software repossession. It allows a creditor to

63. WHITE & SUMMERS, *supra* note 18, § 25-11 at 1060.

64. For a history of Article 2A see Amelia H. Boss, *History of Article 2A: A Lesson For Practitioners and Scholars Alike*, 39 ALA. L. REV. 575, 579 (1988).

65. *See* GUIDE TO COMPUTER LAW (CCH) § 7230 (1991).

66. *See* U.C.C. § 2A-525(c) which provides that "the lessor may proceed under subsection (2) [repossession] without judicial process if it can be done without breach of the peace. . . ."

67. *Id.*

disable the leased item upon the lessee's default.[68] This language follows the rationale underlying section 9-503, allowing a secured party to disable its goods if repossession is impossible or impractical.[69] Vendors can argue that physical repossession of computer software is impractical because the client can retain a copy of the software and continue to use it. As a result, disabling the software is the vendors only recourse if the client withholds payment. There has been little litigation under Article 2A, although commentators have noted that it may be applicable to software leases.[70]

III. NON-U.C.C. PRINCIPLES

Self-help repossession is limited to U.C.C. Articles 2A and 9 even though computer disputes are litigated under other legal theories. In the areas of replevin, lien, licensing and bankruptcy, self-help repossession of computer software is barred. Despite these limitations, examining the impact of these theories on self-help repossession raises interesting arguments for practitioners.

A. *Replevin*

Replevin actions allow sellers to repossess their goods from defaulting buyers.[71] Actions to replevy goods require that the creditor file and post a bond with the court before repossessing its collateral. Some states allow a debtor to post a higher bond in order to recover the goods until the issues in dispute are heard.[72] The Supreme Court limits on self-help repossession[73] are also applicable to replevin actions.

In computer disputes, replevin may be a useful alternative to self-help repossession as vendors may reclaim their software under judicial authority.[74] Replevin actions also allow clients to air their

68. U.C.C. § 2A-525(b) provides that "without removal the lessor may render unusable any goods employed in trade or business. . . ."

69. *See* U.C.C. § 9-503 and comment. The comment uses heavy equipment as an example of collateral that cannot easily be repossessed.

70. *See* Edwin E. Huddleson, *Old Wine in New Bottles UCC Article 2A - Leases*, 39 ALA. L. REV. 615 (1988).

71. *See generally* DAN B. DOBBS, REMEDIES § 513 at 399 (1973).

72. *See* Honeywell Information Systems v. Demographics Systems, Inc, 396 F. Supp. 273, 278 (S.D.N.Y. 1975).

73. *See* Fuentes v. Shevin, 407 U.S. 67 (1972).

74. F. & M. Schaefer Corp. v. Electronic Data Systems Corp., 430 F. Supp. 988 (S.D.N.Y. 1977); *aff'd*, 614 F.2d 1286 (2d Cir. 1979). *Also see* the following cases where replevin was used in computer cases: Computer Leasing Co. v. Computing & Software, Inc., 306 N.E.2d 191 (Ohio Ct. of Com. Pleas 1973) and Honeywell Information Systems v. Demographics Systems, Inc., 396 F. Supp. 273 (S.D.N.Y. 1975).

consequential damages in an appropriate forum. These arguments will have little effect on courts since they have held that, absent contract provisions to the contrary, the vendor's breach generally does not give the client the right to default on the contract.[75] As a result, computer software may be replevied, while the client must sue for damages caused by a vendor's breach of warranty.

The court in *F. & M. Schaefer Corp. v. Electronic Data Systems Corp.*,[76] discussed the good faith defenses that clients might use when arguing against a replevin action.[77] These defenses would allow a buyer, when faced with a breach by the seller, to withhold payment without automatically being subject to replevin. The court rejected all of Schaefer's defenses, but gave the most weight to their fraudulent misrepresentation argument. Future courts may discourage replevying a computer system from a defaulting buyer based on a vendors intentional misrepresentation of the system's capabilities.

B. *Liens*

Lien theory is another area that permits a creditor to use self-help.[78] A lien is an encumbrance on a debtor's property for the payment or discharge of a particular debt. The property acts as security until the debt is satisfied, and can be sold by the court to enforce the lien. The authority to place a lien arises under both common law and specific statutes.

Certain classes of professionals are allowed liens on property held for their client, to ensure payment for rendered services. An attorney can choose between two types of liens to collect a debt owed by a client. A charging lien allows the attorney to be reimbursed out of any judgement obtained for the client.[79] An attorney may instead enforce a retaining lien, permitting him to hold his client's papers until the debt is satisfied. The right of an attorney under a retaining lien extends solely to those documents in the attorney's possession.[80] Unlike charging liens, retaining liens require no judicial action to enforce.

There are two other major classes of professionals that can

75. Honeywell Information Systems v. Demographics Systems, Inc, 396 F. Supp. 273, 278 (S.D.N.Y. 1975).

76. 430 F.Supp. 988 (S.D.N.Y. 1977); *aff'd*, 614 F.2d 1286 (2d Cir. 1979).

77. *Id.*

78. *See* 51 AM. JUR. 2D *Liens* § 1 (1991).

79. *See* 7 AM. JUR. 2D *Attorneys At Law* § 315 (1991).

80. For a collection of cases discussing which of the client's property is subject to an attorney's lien see 70 A.L.R. 4th § 18 at 827 (1991).

place liens on their client's property. Accountants' liens, like attorneys' liens, allow them to keep their client's papers until the debt is paid.[81] Architect liens allow them a statutory right for unpaid services provided on real estate.[82]

A software developer seeking to enforce a lien can draw an analogy between himself or herself and a professional. The software developer and the professional both provide unique services for financial gain. In both cases the client can withhold payment. As a result, vendors will argue that they can repossess their client's software in order to enforce a professional lien for services they provided but for which they were not compensated.

Lien doctrine fails to support this argument as common law requires that the vendor already possess the software in order to enforce a lien. Statutory liens allow a vendor to enforce a lien without possession, but no statutes exist explicitly giving a software vendor this right.

Vendors may argue that they "possess" the software (by continuing to hold title) due to the client's breach and that they can therefore enforce a lien under common law. The client can respond by arguing that the vendor holds only a security interest in the software. Accordingly, self-help repossession is not available to the vendor unless its security interest is perfected under Article 9 of the U.C.C.

Software vendors may also argue that their case is analogous to a professional lien where the final work is held back until payment is completed. This argument fails because disabling software requires an affirmative action as compared to the passive nature of a professional lien.

C. *Licenses*

The Copyright Act allows authors to license their works. Vendors can license software to their clients through either a site license or a one copy per machine basis. A vendor may impound the software of a client that violates its license provisions. Courts have held that the Copyright Act's impoundment provision does not go so far as to authorize self-help repossession.[83]

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81. *See* 1 AM. JUR. 2D *Accountants* § 11-12 (1991).

82. *See* 5 AM. JUR. 2D *Architects* § 20-22 (1991).

83. *See* Warner Bros., Inc. v. Dae Rim Trading, Inc., 877 F.2d 1120 (2d Cir. 1989).

D. *Bankruptcy Proceedings*

The "automatic stay" provisions of the 1978 Bankruptcy Code prevent secured creditors from using self-help repossession when a debtor files for bankruptcy.[84] The stay applies during the entire bankruptcy proceeding unless lifted by the court, although a creditor can apply to the court for an exemption. As a result, the Bankruptcy Code does not permit self-help repossession by software vendors.[85]

IV. ACCEPTABLE FORMS OF SELF-HELP

Self-help repossession should be barred in the majority of software disputes. The danger lies when its availability is not delineated in the contract and it is used without warning. The subsequent consequential damages caused by disabling the client's computer systems can be disproportionate to the value of the disputed software. Despite these drawbacks, self-help repossession should be allowed in software disputes in some limited situations.

Software repossession can be justified when the client is in a more powerful position than the vendor and can afford extensive litigation. In this instance, one can argue that a small vendor's only leverage is self-help repossession. Although attractive on its face, the consequences to the small vendor may be self-defeating. Upon reasoned reflection, it should be clear that any "victory" achieved through self-help repossession will indeed be short-lived. The damage to the vendor's reputation can sour relations between old clients and make new business difficult to obtain.[86]

Allowable self-help alternatives do exist and are used in the software industry. There are vendors who display a warning message on the client's computer screen indicating that the software will be disabled if payment is not received after a trial period. Other vendors automatically disable a demonstration version of software after a fixed period of time. These methods allow a software vendor to supply a client with software while maintaining a measure of control.

A vendor may argue that resorting to self-help repossession is justified because litigation is unwieldy and expensive. Alternate dispute resolution processes (ADR) are available to the parties so that

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84. *See* 11 U.S.C.A. § 362 (West Supp. 1991).

85. *See generally* Terence W. Thompson, *Software Suppliers Rights in Clients Bankruptcy*, 3 SOFTWARE L.J. 1, 14 (1989).

86. RICHARD A. POSNER, THE ECONOMICS OF CONTRACT LAW 179-180 (1979).

software disputes can be resolved without employing self-help repossession.[87] ADR encompasses a broad range of dispute resolution processes, including negotiation, mediation and arbitration, with the advantages of lower cost than litigation and faster resolutions. Disadvantages of ADR include the inability to appeal a decision and a lack of provisional remedies. Vendors may be hesitant to use ADR because preliminary relief may be unobtainable to stop use of disputed software. Despite these disadvantages, ADR remains an attractive alternative as shown by IBM and Fujitsu's use of ADR to resolve their dispute.[88]

When deciding whether a software vendor may use self-help repossession, the following issues should be considered. Does one party have an unfair advantage (economic, legal or technical) over the other? Was the contract structured as a secured transaction or lease so that self-help is available under the U.C.C.? Did the contract specify repossession as a possible remedy or was a boilerplate provision (*e.g.*, all remedies under the U.C.C. are available) used? Did the client's business and type of software make widespread consequential damages reasonably foreseeable? Were any other means used to resolve the dispute before self-help was employed? These questions allow a starting point for analysis, although specific circumstances may require consideration of other factors.

V. CONCLUSION

High technology is making computers and software available to an increasing market. This growth will spawn an increasing number of disputes involving software. Following in Logisticon's footsteps, vendors may see self-help repossession as an attractive option to litigation.

Self-help has historically been condoned as a means of resolving disputes. Starting with Greek jurisprudence, continuing through English common law and by its acceptance into American law, self-help is a viable alternative to the legal process. The U.C.C. provides for self-help by allowing secured creditors and lessors to repossess their property upon default by the debtor. Society imposes a measure of restraint by barring creditors and debtors from engaging in violence during the process. Replevin, liens, licenses and bankruptcy are areas of commercial law that also place limits

87. *See* Brian T. Nash, *Analysis of Alternate Dispute Resolution in Computer Disputes*, 2 SOFTWARE L.J. 29 (1987).

88. *See* N.Y TIMES, November 11, 1991, at A1, col. 5 for a full description of the dispute between IBM and Fujitsu as well as its eventual settlement.

on self-help repossession. These doctrines, as well as the U.C.C. provisions, were formulated before the explosion in technology. The authors of these doctrines and provisions could not foresee self-help's application to computer software. Accordingly, traditional issues that surrounded self-help repossession must be reviewed within the arena of computer software.

Self-help repossession of software should not be allowed in the majority of software disputes for two reasons. First, it can cause consequential damages that are disproportionate to the disputed software. These damages can extend from the intended target business to affiliated businesses whose only connection to the creditor is through a computer network. Second, the circumstances under which self-help repossession are employed may be fundamentally unfair to the naive client. They are afforded little opportunity to take measures to protect their computer systems and business interests.

The circumstances surrounding the use of self-help repossession in software disputes must be closely examined and alternate means of dispute resolution considered before the use of this remedy is sanctioned.

A PROPOSAL FOR FEDERAL LEGISLATION PROTECTING INFORMATIONAL PRIVACY ACROSS THE PRIVATE SECTOR

Joshua D. Blackman†

I. INTRODUCTION

Information technology is providing businesses with powerful new marketing tools. Before the computer revolution, direct marketers flooded mailboxes with junk mail for relatively few sales. Now software can pinpoint target groups by comparing mailing lists or by using "point-of-sale"[1] information to identify consumers likely to buy certain products.[2] Similarly, records kept in the computer memory of TRW, Trans Union Corporation and Equifax, Inc. gather the financial minutiae of most (more than 170 million) American adults.[3] From this financial data, mailing lists based on an infinite variety of criteria are created and sold. While consumers have legislative permission to obtain copies of their credit reports

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1. The Chief Executive Officer of Citicorp's Point-of-Sale (POS) Information Services, Jerry Saltzgaber, described the features of a POS system:

> When they join, consumers receive a personalized card with either a mag stripe or a UPC bar code. Then by presenting these cards at the checkout counter consumers automatically get credit for all the store coupons in effect at that time and all purchases are recorded by household.
>
> . . . .
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> [The database is used] for a wide variety of direct marketing applications, including delivering bar soap samples to competitive brand users, sending disposable diaper coupons and baby food coupons to households with infant children — *inferred from prior purchases* — and targeting the best prospects for magazine subscription acquisition programs.

Data Protection, Computers, and Changing Information Practices, Hearings on H.R. 685 Before the Subcommittee on Government Information, Justice, and Agriculture of the House Committee on Government Operations, 101st Cong., 2nd Sess. 86 (1990) [hereinafter *Hearing Record*] (emphasis supplied).

2. This practice is known in the direct mail industry as "profiling." *Swedes Worry That European Community Membership Will Compromise Databases*, COMPUTERGRAM INT'L, Jan. 10, 1991, *available in* LEXIS, NEXIS World Library, Txtline File.

3. Peter Kerr, *Big Credit Bureau to Let Consumers See Reports Free*, N.Y. TIMES, Oct. 15, 1991, at A1.

"for a reasonable charge,"[4] nothing other than corporate discretion prevents credit reporting agencies from selling those personal records to whomever they choose.

The most intimate personal information regarding nearly every American adult, including age, marital status, salary, home address and phone, medical procedures paid for (or unpaid for), and debts owed, is thereby freely traded, without the authorization of the individual from whom it was collected. Not only does this practice intrude on individual privacy by its unauthorized disclosure of personal data, it also perpetuates an economic imbalance. Private companies with the resources to collect or purchase personal data are presently able to exploit that information virtually free from legislative restraint and gain economically without compensating the people whom that data describes, or protecting them in case damage ensues due to its mishandling.

The 1989 murder of actress Rebecca Schaeffer is an extreme, though illustrative example of the destruction that the lack of informational privacy can cause. Ms. Schaeffer, the co-star of the television series "My Sister Sam," was killed outside her Los Angeles apartment by an obsessed fan who acquired her address from the California Department of Motor Vehicles.[5]

Although governmentally-held personal information is purportedly protected from misuse,[6] no such restrictions on the DMV's distribution of this personal data existed at the time of Ms. Schaeffer's death. The lack of protection for similar records retained in innumerable private sector databases reveals the potential for abuse of the personal information of every citizen.

Consider, for example, what happened to Supreme Court nominee Robert Bork during his confirmation hearings. A Washington D.C. weekly newspaper published a list of the 146 videotapes Bork and his wife had rented over a two year period.[7] Fortunately for Mr. Bork and his wife, their videotape choices were socially inoffen-

4. The Federal Fair Credit Reporting Act § 612, 15 U.S.C. § 1681j (1988).

5. James Harney, *DMV: Registered Driver: License Plate: Confidentiality*, USA TODAY, Mar. 10, 1992, at 3A.

6. The Privacy Act of 1974 provides: "No agency shall disclose any record . . . by any means of communication to any person, or to another agency, except pursuant to a written request by, or with the prior written consent of, the individual to whom the record pertains. . . ." 5 U.S.C. § 552a(b) (1988).

Similarly, the Right to Financial Privacy Act of 1978 provides that: "[N]o Government authority may have access to . . . the information contained in the financial records of any customer from a financial institution unless . . . such customer has authorized such disclosure . . . ." 12 U.S.C. § 3402(1) (1988).

7. *Personalities*, WASH. POST, Sept. 26, 1987, at C3.

sive. Had the list included pornography or other provocative material, damage to his career or their marriage may have been great.

In response to that incident, Congress passed the Video Privacy Protection Act,[8] proscribing disclosure of personal data by "videotape service provider[s]."[9] However, there is no similar protection for records about the purchase of magazines, books, music, computer software, mail order merchandise, airline tickets, foods, film developing and the range of consumer goods and services purchased by American citizens.[10] Companies are free to collect and sell this information without restriction or notice to consumers.[11] The following troubling examples illustrate the extensive potential for privacy invasions permitted by the current lack of protections.

> Purchasers of pregnancy-testing kits may receive solicitations from pro- and anti-abortion groups, or from sellers of birth-control products and diaper services. Purchasers of weight-loss products or participants in diet programs may be targeted for promotional offers from sellers of candy, cookies and ice cream, or, conversely, those whose purchases of the latter exceed the average may receive offers for weight-loss products and services. Subscribers to gay and lesbian publications may be targeted by religious and therapeutic organizations or face employment denials, harassment, and even blackmail. Frequent travelers and those with multiple residences may receive solicitations from sellers of home-security products, and such lists would be a boon to sophisticated burglars. A list of tobacco users might be of interest to potential employers and insurance companies. A list of those with credit troubles and excessive indebtedness would certainly be of interest to promoters of scams that promise to help people obtain credit cards or get out of debt. A cynic might even hypothesize that such a list would be used by promoters of alcoholic beverages, sweepstakes advertising, and gambling junkets.[12]

Individuals are also not protected from the errors made by mailing-list merchants. According to Bankcard Holders of

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8. The Video Privacy Protection Act of 1988, Pub. L. No. 100-618, 102 Stat. 1395 (1988) (codified at 18 U.S.C. § 2710 (1988)).

9. 18 U.S.C. § 2710(b)(1). The Act provides: "A video tape service provider who knowingly discloses, to any person, personally identifiable information concerning any consumer of such provider shall be liable to the aggrieved person for the relief provided in subsection (d)." *Id.*

10. *See* 137 CONG. REC. H755, H756 (daily ed. Jan. 29, 1991) [hereinafter Rep. Wise's Introductory Remarks] (statement of Rep. Wise introducing H.R. 685).

11. *Id.*

12. Gary T. Marx, *Privacy and Technology*, WHOLE EARTH REV., Winter 1991, at 90, 92.

America, a consumer advocacy group, thirty-five percent of those who pay to see their own credit reports find that their credit report contains someone else's data.[13]

> [In one such incident,] Michael Riley, a Washington-based Time magazine reporter, jumped at the mail solicitation he received in late 1989 for a pre-approved Citibank visa card. A few weeks later, his wife, Arline, was about to buy a blouse when the cashier told her the card was no good.
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> When the Rileys checked further with Citibank, they were told that their car had been repossessed, they faced $70,000 in tax liens and that they had filed for bankruptcy. As it turned out, Citibank, which had purchased its credit information from TRW, according to Riley, had confused Michael George Riley with a Michael Gilbert Riley.[14]

Horror stories like this could be avoided if legislation required that data collectors acquire the data subject's consent prior to distributing personal information.

Medical records are similarly unprotected. Health insurers maintain vast databases of patients' medical records, which the insurers claim they keep private.[15] But self-insured employers also have access to such data which they can use to educate or even discipline employees.[16] Only employer discretion, not legislation or regulation, determines how employee medical records are used.[17]

The marketing industry claims that access to such information is vital to the health of their business.[18] The claims are that no harm is done to the consumer by the free dissemination of this information. On the contrary, argue claim marketers, the consumer is able to enjoy greater, focused access to the products she wants and will receive less junk mail if tailored marketing can be achieved via free access to this personal data.[19] But this argument ignores the threats to personal privacy engendered by the unrestricted free trade in personal data.

While large marketing firms may have security measures in place to prevent disclosure of the personal data in their computer

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13. Daniel Mendel-Black & Evelyn Richards, *Peering Into Private Lives: Computer Lists Now Profile Consumers by their Personal Habits*, WASH. POST, Jan. 20, 1991, at H1, H6.

14. *Id.*

15. Milt Freudenheim, *Software Controls on Health Costs*, N.Y. TIMES, Feb. 18, 1992, at D2.

16. *Id.*

17. *Id.*

18. *See* Mendel-Black & Richards, *supra* note 13, at H6.

19. *See id.*

memories to those who might mishandle that data, smaller companies might not be able to afford such care. Smaller companies also might not have the assets to recompense a consumer damaged by the misuse of her data.

Nonetheless, in order to offer marketing opportunities to small businesses, Lotus Development and Equifax were planning to market a CD-ROM product known as Lotus Marketplace: Households ("Marketplace") in 1991.[20] The Marketplace database cataloged information on 80 million households[21] and 120 million consumers[22] including names, addresses, estimated income, and propensity to buy over 100 consumer product categories.[23] The product was to retail for $695, and was targeted at small businesses.[24] But Marketplace was never released because some 30,000 consumers demanded that their names be removed from the CD-ROM.[25] However, no existing legislation would have prevented its sale. The protection of personal privacy should not depend merely on consumer protests, the timely reporting of a potentially threatening product's release, or the fortuitous decision of company executives.

Protection of personal data in the private sector historically has been provided by legislation tailored to remedy narrowly perceived problems. Congress has passed legislation to protect consumer's informational privacy in the financial,[26] cable television,[27] and the video retailing industries.[28] Such niche legislation, however, does not effectively protect personal privacy across the broad spectrum of situations where it is threatened.

Personal data is also protected by the private sector itself, but only when it serves private sector interests. As noted by the Chief Executive Officer of Citicorp's Point-of-Sale Information Services, Jerry Saltzgaber, "[t]hose of us involved in consumer marketing are the best agents for protecting the consumer's privacy, because if we don't, we won't have a business."[29]

However, there is an inherent conflict of interests when companies serve as both collectors and protectors of personal data. Ar-

20. Jacob Sullum, *Secrets for Sale: Do Strangers with Computers Know Too Much About You?*, REASON, Vol. 23, April 1992, at 29.
21. Mendel-Black & Richards, *supra* note 13, at H1.
22. Sullum, *supra* note 20, at 29.
23. *See* Mendel-Black & Richards, *supra* note 13, at H1.
24. Sullum, *supra* note 20, at 29.
25. *Id.*
26. Right to Financial Privacy Act of 1978 §§ 1101-22, 12 U.S.C. §§ 3401-22 (1988).
27. Cable Communications Policy Act of 1984 § 631, 47 U.S.C. § 551 (1988).
28. Video Privacy Protection Act of 1988 § 2(a)(2), 18 U.S.C. § 2710 (1988).
29. *Hearing Record*, *supra* note 1, at 88.

guably, when a company is threatened by an economic recession, for example, one cannot expect it to put consumers' interests above its own. Nor can it be expected to forego the exploitation of all its assets, including its consumer database, to protect its business interests. Thus personal data is subject to the vagaries of the economy and corporate discretion. Such an insecure system for protecting personal data is inadequate to guarantee informational privacy rights. Individuals need protection from the private sector itself, both from unnecessary collection of personal data and from its unauthorized disclosure.

In an attempt to reconcile the interests of personal privacy and American business development, Representative Robert Wise of West Virginia has proposed the establishment of a Data Protection Board (DPB).[30] Rep. Wise's bill is an idea whose time has come,[31] but the proposed "watchdog"[32] DPB has not been provided with the teeth to accomplish its stated purpose. As proposed, the DPB only has advisory power.[33]

The "Functions of the Board" section of the House bill[34] provides that the DPB shall develop guidelines for use by Federal agencies in implementing the Privacy Protection Act of 1974[35] (the "Privacy Act").[36] In addition, with respect to the Privacy Act, the DPB shall assist federal agencies, publish a guide, issue advisory opinions, investigate compliance, and make recommendations for amending the Freedom of Information Act[37] and the Privacy Act.[38]

Representative Wise has proposed two goals for the DPB: to protect personal privacy and to ensure that American businesses can compete in the European Community.[39] However, neither goal

30. H.R. 685, 102d Cong., 1st Sess. (1991).

31. A Data Protection Board has been proposed in Congress at least twice before. Rep. Wise introduced a bill to establish such a board on November 15, 1989. H.R. 3669, 101st Cong., 1st Sess. (1989). Senator Samuel J. Ervin, Jr. introduced S. 3418 (which was passed to become the Privacy Act of 1974) to create a Federal Privacy Board on May 1, 1974.

In addition, the Computer Security Act of 1987, Pub. L. No. 100-235, § 3(2), 101 Stat. 1724, 1724-25 (codified at 15 U.S.C. § 278g-3(a)(3) (1988)), mandated that the National Institute of Standards and Technology develop "standards and guidelines for the cost-effective security and privacy of sensitive information in Federal computer systems." *Id.*

32. Rep. Wise's Introductory Remarks, *supra* note 10, at H756.

33. H.R. 685 § 2(c)(2)(A).

34. Provision (c) in H.R. 685, "Functions of the Board," would become section 5(c) of the Privacy Act of 1974. H.R. 685 § 2.

35. 5 U.S.C. § 552a (1988). The Privacy Act of 1974 protects individuals from unauthorized disclosures of personal data by the federal government. *Id.*

36. H.R. 685 § 2(c)(1)(A).

37. 5 U.S.C. § 552 (1988).

38. H.R. 685 § 2(c).

39. Rep. Wise's Introductory Remarks, *supra* note 10, at H755-56.

will be well served by a government board charged with merely "guiding," "opining" and "recommending" means of achieving informational privacy. Furthermore, a DPB whose primary legislative guides are the Privacy Act of 1974 and the Freedom of Information Act (which regulate governmentally held personal data) will have little impact on private sector users of consumer data.

The lack of a central U.S. data protection authority (like the DPB) has also left American industry unrepresented when international decisions are made about transborder data use by multinational companies. Furthermore, the data protection legislation of many countries prevents the transfer of personal data to another country in the absence of reciprocal data protection legislation,[40] which ensures that personal data will be as well protected in the transferee country as it was in its native country. The U.S. has no such reciprocal legislation.

The European Commission has issued draft Directives that would preclude transfers of personal data between countries that have not "ensure[d] an adequate level of protection."[41] The Commission may decide that a particular country has adequate personal data protection by reason either of its international commitments or domestic law.[42] Rep. Wise noted that "[a]doption of this Directive [without concomitant legislation in the U.S.] could make it expensive or impossible for American companies that need to transfer personal data to and from Europe to do business. The result could be a loss of jobs, profits, and business opportunities for America."[43]

The conflict between the United States' need for open access to the EC market and the EC's intention to require reciprocal data protection laws poses an economic imperative for the United States. Failure to put adequate data protection laws in place and represent U.S. business interests in this regard may cause U.S. businesses to suffer.[44] American banks, for example, which are prevented from transferring personal account data from Switzerland to New York will find it difficult to compete in the transnational market with Swiss banks which face no such impediment to transferring data.[45]

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40. *See Hearing Record*, *supra* note 1, at 3.

41. *Proposal for a Council Directive Concerning the Protection of Individuals in Relation to the Processing of Personal Data*, art. 24.1, 1990 O.J. (c277) 3,10 [hereinafter *Draft Directive*].

42. *Id.* at 10.

43. Rep. Wise's Introductory Remarks, *supra* note 10, at H756.

44. *Id.*

45. *See id.* Rep. Wise noted in his Opening Statement before the Subcommittee Hear-

The United States is faced with either creating legislation to protect personal data and national business interests, or subjecting American companies to a regulatory apparatus controlled in Brussels, review of American companies' management practices by European bureaucrats and the determination by European courts of American companies' legal liabilities.[46]

Recognizing, at least for argument's sake, that this latter alternative is not workable, the problem is how to balance the privacy concerns of American consumers and the European Commission against the profit-driven needs of American companies. Achieving this balance will ensure a competitive position for U.S. businesses in the E.C., and privacy protection for people.

The solution consistently chosen to resolve related problems by the U.S. government[47] and EC countries[48] is a simple one. Companies can satisfy privacy concerns by merely obtaining permission to use personal data (for purposes other than the purpose for which it was provided) from the source-individual. Business' resistance to adopting this solution on its own is great, due to perceived costs and a perceived loss of autonomy to exploit information.[49] However, such resistance can be neutralized, adherence ensured across the private sector, and reciprocal legislation requirements fulfilled if federal legislation is passed compelling businesses to acquire an individual's authorization prior to disclosing (or otherwise making use of) her personal data.

In order to demonstrate the viability of adopting such legisla-

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ings on the DPB bill that "[r]ecently, for instance, the French data protection commission stopped Fiat in France from transferring information about its employees to Fiat in Italy." *Hearing Record, supra* note 1, at 3.

46. Rep. Wise's Introductory Remarks, *supra* note 10, at H757.

47. The Privacy Act of 1974 provides: "No agency shall disclose any record . . . except pursuant to a written request by, or with *the prior written consent* of, the individual to whom the record pertains . . . ." 5 U.S.C. § 552a(b) (1988) (emphasis supplied). The Right to Financial Privacy Act of 1978 provides that "no Government authority may have access to . . . the information contained in the financial records of any customer from a financial institution unless . . . *such customer has authorized* such disclosure . . . ." 12 U.S.C. § 3402(1) (1988) (emphasis supplied).

48. The Directives proposed by the European Commission in July 1990 seek to harmonize the data protection laws of EC countries. Most of those countries, however, including Austria, Belgium, France, Germany, Greece, Italy, the Netherlands, Norway, Spain Switzerland and the United Kingdom already have data protection laws which require that stored data be used only for the purposes stated when the data was originally collected. Those same laws provide the data subject with objection, correction and erasure rights regarding personal data. *European Data Protection Survey*, BULL. (Info. Technology Law Group/Eur.) Issue 6, Autumn 1991.

49. Lovella Miles, *Feeling the Draft; European Community's Data Protection Directive*, MARKETING, May 30, 1991, at 16.

tion, this article will examine the legal and policy bases for such a privacy law and will explain why this form of privacy protection will provide benefits to all involved parties, far outweighing any potential harms.

II. BASES FOR PROTECTING INFORMATIONAL PRIVACY

A. *Constitutional Basis for Protecting Informational Privacy*

Although the United States Constitution does not contain the word "privacy," the Supreme Court has recognized various privacy rights based on several of the Amendments. Justice Douglas outlined the "zones of privacy" protected by the Bill of Rights in *Griswold v. Connecticut*.[50]

> The right of association contained in the penumbra of the First Amendment is [a zone of privacy]. The Third Amendment in its prohibition against the quartering of soldiers "in any house" in time of peace without the consent of the owner is another facet of that privacy. The Fourth Amendment explicitly affirms the "right of the people to be secure in their persons, houses, papers, and effects, against unreasonable searches and seizures." The Fifth Amendment in its Self-Incrimination Clause enables the citizen to create a zone of privacy which government may not force him to surrender to his detriment. The Ninth Amendment provides: "The enumeration in the Constitution of certain rights shall not be construed to deny or disparage others retained by the people."[51]

Griswold represented the Supreme Court's first recognition of a fundamental privacy right. Douglas' opinion held that Connecticut's anti-contraceptive statute violated the right of marital privacy, a right "older than the Bill of Rights."[52]

However, while the *Griswold* Justices agreed that there was a "right to privacy," they disagreed about the constitutional basis for the right.[53] Eight years later, Justice Blackmun's opinion in *Roe v.*

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50. 381 U.S. 479, 484 (1965).

51. *Id.*

52. *Id.* at 486.

53. Justice Goldberg attributed the "fundamental personal [privacy] right" to those unenumerated rights retained by the people pursuant to the Ninth Amendment. *Id.* at 486-87.

Justice Harlan applied a traditional due process analysis, holding that the Connecticut statute violated "basic values 'implicit in the concept of ordered liberty'." *Id.* at 500 (citing Palko v. Connecticut, 302 U.S. 319, 325 (1937)).

Justice White also found that the Connecticut Statute imposed on a Fourteenth Amendment liberty which he defined as "a 'realm of family life which the state cannot enter' without

Wade[54] identified the source of *Griswold's* "right to privacy" as the Due Process Clause of the Fourteenth Amendment.[55]

Douglas' "zones of privacy" were further defined in the Court's decisions following *Griswold*. The Court found that the Due Process Clause's substantive protection for "fundamental" rights safeguards the right to decide to marry,[56] the right to decide to end a pregnancy,[57] and the right of parents to make decisions regarding the education and upbringing of their children.[58]

The series of Supreme Court decisions leading from *Griswold* was narrowed by Justice White's opinion in *Bowers v. Hardwick*[59] to "a fundamental individual right to decide whether or not to beget or bear a child."[60] The *Bowers* Court claimed that "none of the rights announced in [the *Griswold* line of] cases bears any resemblance to the claimed constitutional right of homosexuals to engage in acts of sodomy,"[61] thereby upholding Georgia's anti-sodomy statute. Justice White's opinion shifted the Court's focus and holding away from the right to privacy to the very narrow right to engage in sodomy. Justice Blackmun's dissent acknowledged this shift, reasoning that

> [t]his case is [not] about "a fundamental right to engage in homosexual sodomy". . . . Rather, this case is about "the most comprehensive of rights and the right most valued by civilized men," namely, "the right to be let alone."[62]

By narrowly construing its prior privacy-related holdings, the *Bowers* Court ignored the Due Process basis for the right to privacy as identified in *Roe*. Instead, the Court relied on historical notions of liberty which precluded finding that the right to engage in sodomy was a "fundamental" right.[63]

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substantial justification." *Id.* at 502 (citing Prince v. Massachusetts, 321 U.S. 158, 166 (1943)).

54. 410 U.S. 113 (1973).

55. *Id.* at 153 ("This right of privacy, whether it be founded in the Fourteenth Amendment's concept of . . . liberty . . . *as we feel it is*, or . . . in the Ninth Amendment . . . is broad enough to encompass a woman's decision whether or not to terminate her pregnancy.") (emphasis supplied).

56. Loving v. Virginia, 388 U.S. 1 (1967).

57. Roe v. Wade, 410 U.S. 113 (1973).

58. Carey v. Population Servs. Int'l, 431 U.S. 678, 708 (1977)(Powell, J., concurring); and Parham v. J.R., 442 U.S. 584 (1979).

59. 478 U.S. 186 (1986).

60. *Id.* at 190.

61. *Id.* at 190-191.

62. *Id.* at 199 (quoting Olmstead v. United States, 277 U.S. 438, 478 (1928) (Brandeis, J., dissenting)).

63. *Id.* at 192-194.

The Court also constricted the right to privacy in *Paul v. Davis*.[64] That decision denied constitutional protection against the public disclosure by police of the respondent's arrest on a shoplifting charge, even though the respondent had never been convicted.[65] The Court characterized the respondent's claim as defamation, and therefore not within the meaning of either "liberty" or "property" as used in the Due Process Clause.[66]

Justice Rehnquist's majority opinion distinguished "fundamental" privacy rights "relating to marriage, procreation, contraception, family relationships, and child rearing and education" from the right to non-disclosure of personal information.[67] The opinion foreclosed Due Process protection of informational privacy unless unauthorized disclosure threatens the exercise of "fundamental" rights. Rather, Justice Rehnquist suggested the respondent seek relief via his state's tort laws.[68]

In a contrasting opinion issued a year later, *Whalen v. Roe*,[69] Justice Stevens wrote that "[t]he right to collect and use [personal] data for public purposes is typically accompanied by a concomitant statutory or regulatory duty to avoid unwarranted disclosures .... [I]n some circumstances that duty arguably has its roots in the Constitution ...."[70] The opinion recognized that the privacy which the Due Process Clause safeguards includes two different types of interests: "the individual interest in avoiding disclosure of personal matters, and ... the interest in independence in making certain kinds of important decisions."[71]

Read together, the *Davis* and *Whalen* opinions bear out one commentator's conclusion that "the Supreme Court suffers from a severe case of schizophrenia."[72] Justice Stevens' acknowledgment in *Whalen* of Due Process Clause protection for "disclosure of personal matters" contradicts Justice Rehnquist's denial in *Davis* of the Due Process right to informational privacy. The second right noted by Justice Stevens, however, the right to autonomy in personal decision-making, is consistent with the *Griswold* line of cases, and with

64. 424 U.S. 693 (1976).
65. *Id.*
66. *Id.* at 711-12.
67. *Id.* at 713.
68. *Id.* at 712.
69. 429 U.S. 589 (1977).
70. *Id.* at 605.
71. *Id.* at 599-600.
72. Michael P. Seng, *The Constitution and Informational Privacy, or How So-Called Conservatives Countenance Governmental Intrusion into a Person's Private Affairs*, 18 J. MARSHALL L. REV. 871, 875 (1985).

Davis's protection against unauthorized disclosure when such disclosure threatens the exercise of "fundamental" rights.

This reasoning is bolstered by the Court's decision in *Nixon v. Administrator of General Services.*[73] In that case, the Court held that President Nixon's assertions of informational privacy in his official records were outweighed by a public interest in the documents. The Court's use of a balancing test implies that the Court recognized a Constitutional right to informational privacy. If President Nixon did not have such a right, such balancing by the Court would have been unnecessary.[74]

The Court has also employed a balancing test to weigh "the right of every person 'to be let alone' . . . [against] the right of [businesses] to communicate."[75] In *Rowan v. U.S. Post Office Department,*[76] mailing list brokers brought suit to challenge the constitutionality of a statute[77] which required removal of consumers' names from mailing lists at the consumers' request.[78] The Court found that the statute violated neither the First Amendment's "right to communicate"[79] nor the Due Process Clause.[80] The Court affirmed the consumer's right to control the contents of her mailbox and the use of her name and address because "[t]o hold less would tend to license a form of trespass," and because "[n]othing in the Constitution compels us to listen to or view any unwanted communication."[81] Thus Chief Justice Burger's opinion found the right to privacy, in the context of prohibiting pandering

73. 433 U.S. 425 (1977). "One element of privacy has been characterized as 'the individual interest in avoiding disclosure of personal matters. . . .' " *Id.* at 457 (quoting *Whalen,* 429 U.S. at 599).

74. William C. Lindsay, *When Uncle Sam Calls Does Ma Bell Have to Answer?: Recognizing a Constitutional Right to Corporate Informational Privacy,* 18 J. MARSHALL L. REV. 915, 920 (1985).

75. Rowan v. U.S. Post Office Dep't, 397 U.S. 728, 736 (1970).

76. 397 U.S. 728 (1970).

77. Title III of the Postal Revenue and Federal Salary Act of 1967, 39 U.S.C. § 4009 (1964, Supp. IV).

78. 39 U.S.C. § 4009 . . . provides that

> a person who has received by mail "a pandering advertisement which offers for sale matter which the addressee in his sole discretion believes to be erotically arousing or sexually provocative," may request the Postmaster General to issue an order "directing the sender and his agents or assigns to refrain from further mailings to the named addressee." Such order would also require the sender to delete the addressee's name from his mailing lists and would prohibit him from trading in lists from which the deletion has not been made.

397 U.S. at 728.

79. *Id.* at 735.

80. *Id.* at 738.

81. *Id.* at 737.

advertisements in the mails, greater than businesses' right to communicate.

The *Rowan* decision provides a basis for individual control over the exploitation of personal information. The opinion clearly finds that one aspect of commercial solicitation is not necessarily protected under the First Amendment. Despite the limited focus of the statute challenged in *Rowan*, the Court found Congress' intent to be quite broad:

> In operative effect the power of the householder under the statute is unlimited; he may prohibit the mailing of a dry goods catalog because he objects to the contents - or indeed the text of the language touting the merchandise. Congress provided this sweeping power not only to protect privacy but to avoid possible constitutional questions that might arise from vesting the power to make any discretionary evaluation of the material in a governmental official.
>
> In effect, Congress has erected a wall - or more accurately permits a citizen to erect a wall - that no advertiser may penetrate without his acquiescence.[82]

Although the Court has not found informational privacy to be a fundamental right, its decisions support the notion that the individual's right to informational privacy exists, and must be balanced against the public interest.

As new technologies make collection of information about individuals easier and more insidious, the Court will increasingly be faced with decisions whether to allow intrusion into what Justices Warren and Brandeis termed the "inviolate personality" of the private individual.[83] To allow such intrusion will further limit individual liberty, will discourage personal autonomy and will surely usher in an era of "Big Brother," where the individual is unable to contribute to the greater human good for fear of incurring the government's wrath.

Although statutory protection (as urged by this article) is essential to ensure that businesses and individuals know their rights and responsibilities regarding informational privacy, such rights will be secure only if they are Constitutionally protected. One way

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82. *Id.* at 737-38.

83. Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARV. L. REV. 193, 205, 207, 213 (1890). Warren and Brandeis also noted that "[i]f we are correct in this conclusion [the existence of a right to privacy based on an inviolate personality], the existing law affords a principle which may be invoked to protect the privacy of the individual from invasion either by the too enterprising press, the photographer, or the possessor of any other modern device . . . ." *Id.* at 206.

to overcome the Court's selective application of the right to privacy is to amend the Constitution to acknowledge that its protections apply regardless of the technologies which threaten our freedoms. Professor Laurence H. Tribe has proposed the following 27th Constitutional Amendment to address the threats to the Constitution's core values in the technological age.

> This Constitution's protections for the freedoms of speech, press, petitions, and assembly, and its protections against unreasonable searches and seizures and the deprivation of life, liberty or property without due process of law, shall be construed as fully applicable without regard to the technological method or medium through which information content is generated, stored, altered, transmitted, or controlled.[84]

Professor Tribe's proposed Amendment is necessary to guarantee that the values of freedom, privacy and equality protected by the 18th century Bill of Rights continue unfettered. It would be more comforting if the Supreme Court itself were to consistently interpret the terms of the Constitution so that, for example, the right to privacy found in the Due Process Clause applied equally whether one freely provided a personal phone number, or it was acquired without one's permission via Caller I.D. technology.[85]

But the Court's decisions are not so consistent. For example, while *Roe v. Wade*[86] acknowledged a woman's right to choose how she uses her body, *Bowers v. Hardwick*[87] deprived homosexuals of that same right. Though these cases are based on physically-oriented rights, the rights we have in intangible personalty, like our personal information, are no less precious and no less deserving of protection.

In the context of achieving consistency in the protection of fundamental rights across technologies, acceptance of Professor Tribe's proposal is appropriate. But in the context of non-fundamental rights such as informational privacy, it is insufficient. Protection of informational privacy requires legislation tailored to the reality of the marketplace. Such legislation will not merely assert the existence of such rights regardless of technology, but will also satisfy the

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84. John Markhoff, *Remember Big Brother? Now He's a Company Man*, N.Y. TIMES, Mar. 31, 1991, at E7.

85. Caller I.D. is a technological service provided by telephone companies in 22 states which "allows a subscriber to identify and record the telephone number of an incoming call, and therefore presumably to determine the caller's identity." Anthony Ramirez, *New York State Approves Caller-Identification Service*, N.Y. TIMES, Mar. 12, 1992, at D1.

86. 410 U.S. 113 (1973).

87. 478 U.S. 186 (1986).

commercial need for information in a manner that is fair to the consumer.

B. *Legislative Basis for Protecting Informational Privacy*

If the Supreme Court has stopped short of expressly recognizing the right to informational privacy, Congress has not been so timid. Congress' recognition of privacy rights is manifest in the proliferation of legislation protecting the individual from governmental intrusion[88] and from the exploitation of personal data by private organizations.

For example, the Fair Credit Reporting Act of 1970[89] prohibits consumer reporting agencies from disclosing consumer data except in specified circumstances.[90] The Right to Financial Privacy Act of 1978[91] provides individuals with the right to notice of a request before a financial institution may disclose records to government agencies.[92] The Cable Communications Policy Act of 1984[93] prohibits cable operators from disclosing personal data regarding subscribers without the consent of the subscriber.[94] The Electronic Communications Privacy Act of 1986[95] protects against the unauthorized interception of electronic communications.[96] The Video Privacy Protection Act of 1988[97] protects personal data held by videotape service providers.[98]

These laws clearly express that Congress has perceived the need to protect individual privacy. For example, included among the Congressional findings regarding the Fair Credit Reporting Act (FCRA) is the following:

> There is a need to insure that consumer reporting agencies exercise their grave responsibilities with. . . a respect for the consumer's right to privacy.[99]

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88. Freedom of Information Act, 5 U.S.C. § 552 (1988); Crime Control Act of 1973 § 812, 42 U.S.C. § 3789g (1988); Privacy Act of 1974 § 3, 5 U.S.C. 552a (1988); Right to Financial Privacy Act of 1978 §§ 1101-22, 12 U.S.C. §§ 3401-22 (1988); Privacy Protection Act of 1980 § 202, 42 U.S.C. § 2000aa-11 to -12 (1988).

89. 15 U.S.C. §§ 1681-81t (1988).

90. 15 U.S.C. § 1681b.

91. 12 U.S.C. §§ 3401-22 (1988).

92. 12 U.S.C. § 3403(a).

93. 47 U.S.C. §§ 521-611 (1988).

94. 47 U.S.C. § 551(c)(1).

95. 18 U.S.C. §§ 2510-21 (1988).

96. 18 U.S.C. § 2511.

97. 18 U.S.C. § 2710 (1988).

98. *Id.*

99. 15 U.S.C. § 1681(a)(4).

Ironically, the FCRA focuses little on privacy, and primarily on the accuracy of information held by consumer reporting agencies. Although it restricts distribution of credit reports to certain "permissible purposes,"[100] it does not prohibit general disclosure of consumer data.[101] Thus, although Congress' intention in enacting the FCRA, and the other legislation noted above, was to protect consumer privacy, these laws fall short of this goal.

Congress has recognized the need for and demonstrated a desire to protect personal privacy and commercial access to information, but has thus far failed to enact legislation that accomplishes both purposes in a comprehensive, effective manner. Satisfaction of Congress' intentions requires a law that establishes privacy standards for all industries to follow, and a mechanism to ensure its enforcement.

C. *Common-Law Basis for Protecting Informational Privacy*

1. Tort

Justice Rehnquist's assertion in *Paul v. Davis*[102] that individuals must look to state tort law to protect their privacy[103] acknowledges that such protection exists. Indeed, the common-law right of privacy has traditionally given rise to a tort action for a violation of that right.

Dean Prosser has identified four generally recognized state tort actions for invasion of privacy:[104] intrusion on physical solitude and seclusion,[105] public disclosure of private facts,[106] false light in the public eye,[107] and appropriation of one's name or likeness.[108] In the context of informational privacy, two of the actions described by Prosser are material: intrusion and public disclosure.

A tortious intrusion of an individual's privacy may stem from the fact that corporations sell personal information without the authorization of the individual from whom it was collected. The initial collecting of information may not constitute an intrusion on the

100. 15 U.S.C. § 1681b.

101. The allowable circumstances for furnishing a consumer report include "a legitimate business need . . . in connection with a business transaction involving the consumer." *Id.* § 1681b(3)(E).

102. 424 U.S. 693 (1976)

103. *See supra* note 68 and accompanying text.

104. WILLIAM L. PROSSER, HANDBOOK OF THE LAW OF TORTS 804 (4th ed. 1971).

105. *Id.* at 807.

106. *Id.* at 809.

107. *Id.* at 812.

108. *Id.* at 804.

individual. In fact, the individual seeking a magazine subscription, or insurance, or credit may initiate and volunteer information. However, when the collecting corporation sells that information to a third party, it provides the third party with unauthorized access to personal facts regarding the individual and is thereby intruding on the individual.

Prosser notes that this "form of invasion of privacy consists of intrusion upon the [individual's] physical solitude or seclusion."[109] In the context of informational privacy, courts have found a tortious violation of this interest where there was prying into confidential records such as bank records.[110]

Similarly, the selling or leasing of personal data constitutes a public disclosure of private facts. While the sale of a list of consumer data by one company to another may not appear to be "public" disclosure, list brokers sell thousands of lists every year, and such a distribution has been held to be public.[111] Also, consider the Marketplace information product announced in April 1990 by Lotus Development and Equifax, but never released.[112] By offering the names, addresses and consumer habits of 120 million Americans to small businesses, Marketplace assured a wide (public) disclosure of private facts and therefore a tortious invasion of informational privacy.

Despite the seemingly viable claim that the practice of selling mailing lists is an invasion of privacy by intrusion into another's seclusion, most such cases result in findings of nonliability.[113] It appears that courts are very reluctant to find damage to the consumer and resultant liability to the data collector/distributor based on mere unauthorized disclosure of personal information.[114] This result is unjust, but not unexpected, given a legal tradition which provides for tort recovery only when some palpable damage can be shown. The damage which results from an invasion of informational privacy is more commonly in the realm of lost opportunity than in physical or mental suffering. Thus claims based on viola-

109. *Id.* at 807.

110. Brex v. Smith, 146 A. 34 (N.J. Ch. 1929).

111. *See* STANDARD RATE & DATA SERVICE, DIRECT MAIL LIST RATES AND DATA (April 1993); Kerby v. Hal Roach Studios, 127 P.2d 577 (Cal. Ct. App. 1942) (holding the distribution of a letter to a thousand men to be a public distribution).

112. *See supra* notes 20 - 25 and accompanying text.

113. Jeffrey F. Ghent, *Unsolicited Mailing, Distribution, House Call, or Telephone Call as Invasion of Privacy*, 56 A.L.R.3d 457 §§ 8-16 (1974).

114. *Id.*

tions of property rights and, more likely, breach of contract present stronger bases for successful actions.

2. Property

Defining information as property and affording rights to information "owners" makes for a prescient argument. American intellectual property law has historically resisted conferring property rights to the possessor of information.[115] Rather, its goal has been the free circulation of information. Even more significantly, the existing statutory scheme for protecting intangible property does not provide for the essential difference between information and tangible property. Specifically, tangible property decreases in value when it is divided, while information does not.[116]

As the concentration of wealth in information increases, a legal scheme for protecting information rights will emerge of necessity. Property laws have historically developed in response to new definitions of wealth. Such laws will be based on an expanded definition of property which will encompass claims of informational privacy. Until these new laws are written, the copyright and patent schemes provide an exceedingly insufficient model for protection of rights in information.

The Constitutional clause on which the patent and copyright laws are based grants Congress the power "to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."[117] The statutes based on this clause have sought to balance the free dissemination of ideas against the state's interest in encouraging authors and inventors to maintain the "Progress of Science and useful Arts." Thus protection of author's and inventor's rights is limited to providing a financial return on their expressions, (not their ideas) for a limited time only.[118]

In the case of copyright law, authors are granted the exclusive

115. *See* Douglas G. Baird, *Common Law Intellectual Property and the Legacy of International News Service v. Associated Press*, 50 U. CHI. L. REV. 411, 411 (1983) ("That information once published should be presumptively free for all to use is a commonplace of intellectual property law.").

116. Thomas Jefferson wrote of information's unique ability to be infinitely divisible without losing value in 1813: "He who receives an idea from me, receives instruction himself without lessening mine; as he who lights his taper at mine, receives light without darkening me." 6 WRITINGS OF THOMAS JEFFERSON 180 (H. A. Washington ed., 1857).

117. U.S. CONST. art. I, § 8, cl. 8.

118. Current copyright law provides for rights to last for the life of the author plus 50 years. 17 U.S.C. § 302(a) (1988). Patent rights are granted for 17 years. 35 U.S.C. § 154 (1988).

right to copy, distribute, perform, display and license their creations,[119] thereby protecting the author's right to profit from the work. The information (ideas) contained in the work, however, are essentially public domain material.[120]

In *Feist Publications v. Rural Telephone Service*,[121] the United States Supreme Court asserted that facts are uncopyrightable because they are "discovered" by humans rather than "created."[122] The Copyright Act of 1976 as amended[123] provides that copyright protection does not extend to discoveries, even when embodied in a copyrighted work.[124]

Similarly, patent law grants to the inventor the right to exclude others from making, using and selling a patented invention.[125] Although patents themselves "shall have the attributes of personal property,"[126] the information on which the invention is based is public domain when the patent is granted.[127]

In dramatic contravention of the intellectual property tradition of denying property rights in information, two recent Supreme Court decisions classified information as private property.[128] In *Ruckelshaus v. Monsanto Co.*,[129] the Court held that research data submitted to a federal agency could be considered 'property' within the meaning of the Fifth Amendment to the Constitution.[130] In *Carpenter v. United States*,[131] the Court held that a newspaper "had a property right in keeping confidential and making exclusive use,

119. 17 U.S.C. § 106 (1988).

120. Section 107 of the Copyright Act provides in pertinent part that "use of a copyrighted work, including such use by reproduction in copies or . . . by any other means . . . for purposes such as criticism, comment, news reporting, teaching . . ., scholarship, or research, *is not an infringement of copyright.*" 17 U.S.C. § 107 (1988) (emphasis supplied).

121. 111 S.Ct. 1282 (1991).

122. *Id.* at 1287.

123. 17 U.S.C. §§ 101-810 (1988).

124. *Id.* § 102(b).

125. *See* 35 U.S.C. § 271 (1988).

126. 35 U.S.C. § 261 (1988).

127. 35 U.S.C. § 113 (1988) provides that: "[t]he applicant shall furnish a drawing where necessary for the *understanding* of the subject matter sought to be patented." (emphasis supplied). 35 U.S.C. § 10 (1988) provides that "[t]he Commissioner may furnish certified copies of specifications and drawings of patents issued by the Patent and Trademark Office, and of other records available either *to the public* or the person applying therefore." (emphasis supplied).

128. For an in-depth analysis of these two cases and the issue of whether property rights may exist in information, *see* Pamela Samuelson, *Information as Property: Do Ruckelshaus and Carpenter Signal a Changing Direction in Intellectual Property Law?*, 38 CATH. U. L. REV. 365 (1989).

129. 467 U.S. 986 (1984).

130. *Id.* at 1003.

131. 484 U.S. 19 (1987).

prior to publication," of the contents of a newspaper column.[132]

These two cases are the forerunners of a new concept about the legal status of information, a concept more appropriate to the changes wrought by the use of new technologies. If the informational rights of artificial persons like Monsanto[133] and the Wall Street Journal[134] are protected, it follows that the personal data of human beings is similarly deserving of protection.

Congress has clearly recognized the necessity that digitized information be considered "property." In the Senate Report on the Computer Fraud and Abuse Act of 1986,[135] the Committee on the Judiciary noted that a slew of enforcement problems had arisen in response to criminal conduct related to computers. "Computer technology simply does not fit some of the older, more traditional legal approaches to theft or abuse of property. For example, computer data may be 'stolen' in the sense that it is copied by an unauthorized user, even though the original data has not been removed or altered in any way."[136] The Committee found that these enforcement problems could be alleviated by recognizing computerized information as property.[137]

Recognition of the need to classify information as property is the first step towards protection of the bundle of rights that give property its value. But that recognition has only begun to creep into the minds of Justices and Congresspeople. Meanwhile, informational privacy is threatened by unregulated data merchants. Therefore, a more ready basis for protection than property law must be considered.

3. Contract

One of the primary tenets of informational privacy is that personal information collected for one purpose may not be disclosed for another purpose without the data subject's consent. The fact that an individual subscribes to a tennis magazine, for example, is not an invitation to tennis equipment manufacturers to mail adver-

132. *Id.* at 25-26. *Carpenter* also references another Supreme Court case that recognizes a property right in information, specifically the news: International News Serv. v. Associated Press, 248 U.S. 215, 236 (1918).

133. *See* Ruckelshaus v. Monsanto Co., 467 U.S. 986 (1984).

134. *See* Carpenter v. United States, 484 U.S. 19 (1987).

135. S. REP. NO. 432, 99th Cong., 2nd Sess. 1, *reprinted in* 1986 U.S.C.C.A.N. 2479.

136. 1986 U.S.C.C.A.N., *supra* note 134, at 2491.

137. *Id.* at 2492 ("The Committee intends S.2281 to affirm the government's recognition of computerized information as property.") The House bill was passed in lieu of the Senate bill after amending its language to contain much of the text of the Senate bill. *Id.* at 2479.

tisements to that individual. The danger is not in the receipt of unwanted mail. Rather, there is danger in societal acceptance of the idea that personal information is not subject to the individual's control. An extreme result of such a system is that total strangers may become privy to sensitive or (in the case of Rebecca Schaeffer)[138] dangerous information.

When a consumer provides information in conjunction with a purchase, there is an implicit contract. In the case of a magazine subscription, the consumer pays a subscription fee and provides a mailing address in order to receive a publication. The contract thus entails an agreement that the consumer's information (her name and address) will be used for the single purpose of delivering magazines.

When the publisher sells its subscription list to a third party, it does so in violation of the subscription "contract," and without the consent of the subscribers. List purchasers receive not only the subscriber's name and address, but also the information that each person on the list subscribed to a particular publication. This information can imply the financial position and social habits of the subscribers.

But even though the sale of mailing lists is common, the consumer is not implicitly consenting to the sale of her address when she purchases a magazine. Publishers seem to recognize this and occasionally provide a disclaimer enabling purchasers to be removed from shared mailing lists upon request.[139] While the presence of such a disclaimer might defeat a breach of contract claim by implying consent, disclaimers do not comprise actual consent, especially when hidden in the fine print, or when absent.

There are several reasons why basing an informational privacy claim on a contract theory could prove difficult. In *Shibley v. Time*,[140] the Ohio Court of Appeals found no invasion of privacy where the subscribers/plaintiffs claimed the publisher's sale of mailing lists amounted to the unconsented sale of individual "personality profiles," resulting in the publisher's unjust enrichment at the subscribers' expense.[141]

The *Shibley* opinion provides two significant reasons why any common law action, including breach of contract, provides a weak tool for pursuing an informational privacy claim. The primary diffi-

138. *See supra* note 5 and accompanying text.
139. *Hearing Record*, *supra* note 1, at 60-73.
140. 341 N.E.2d 337 (Ohio Ct. App. 1975).
141. *Id.*

culty for such a claimant is that the right of informational privacy is not widely recognized.[142] Without a right to privacy, the right of consent regarding that privacy is moot. Secondly, the court noted that "the practice complained of here [the sale of subscription lists] does not constitute an invasion of privacy even if appellants' unsupported assertion that this amounts to the sale of 'personality profiles' is taken as true because these profiles are only used to determine what type of advertisement is to be sent."[143] The court, therefore, implies that the direct marketer's unauthorized used of personal data is permissible.

State courts, therefore, provide no help to the individual damaged by unscrupulous or careless data merchants. The actual damage caused to individuals by privacy violations is hard to show in a courtroom. To argue, as in *Shibley*, that "personality profiles" are being appropriated without compensation to the individual sounds a bit far-fetched. After all, no physical or economic damage is evident. Most people are not even aware that their personal information is being regularly packaged and sold for a profit. Although the common law provides the theoretical support, at least in the tort and contract realms, for finding informational privacy rights, courts can not usurp the legislature's responsibility to write the law necessary to protect informational privacy.

D. *Public Policy Basis for Protecting Informational Privacy*

Perhaps the most obvious and impressive basis for protecting personal data is the direct impact which lack of protection has on people. In the Subcommittee[144] hearing[145] regarding the DPB bill,[146] a number of industry practices which impact on individuals were exposed.[147] These practices make clear that our current poli-

142. *See id.* at 339-40.

143. *Id.* at 339-40.

144. Subcommittee on Government Information, Justice, and Agriculture of the House Committee on Government Operations.

145. The hearing was held on May 16, 1990.

146. *Hearing Record, supra* note 1.

147. Representative Wise notes that it costs more to have an unlisted phone number, thereby causing the consumer to pay for privacy. *Id.* at 161.

Jerry Saltzgaber, Chief Executive Officer of Citicorp's Point-of-Sale (POS) Information Services described a far-reaching consumer database. "Citicorp POS maintains control of all names and addresses of our customers." *Id.* at 89.

David Czernik, Executive Director of the Louisiana Consumers League, described employers' information services which provide data about individuals' work and credit histories to prospective employers. By collecting and selling this information, companies are able to blacklist workers. Even if individuals are aware that these database records exist, it is very difficult for them to access their own records, much less correct errors. *Id.* at 139-160.

cies, which do not broadly regulate private use of personal data, place profit ahead of personal self-determination and commercial freedom before personal privacy rights.

For example, Caller I.D., a service made available through communications technology, has recently been introduced in New York State despite its negative impact on consumers.[148] The service is already available in 22 states and enables subscribers "to identify and record the telephone number of an incoming call, and therefore presumably to determine the callers' identity."[149] Advocates claim the service can be used to deter annoying calls by, for example, obscene callers.[150] But the more likely users of the service are businesses which will collect telephone numbers for commercial purposes, such as the preparation of mailing lists.[151]

There is no legislation to protect the consumer from the onslaught of this technology. Certainly, *Feist*[152] made clear that a telephone number itself, especially when publicly available in a telephone directory, is not protected. But when a woman calls an abortion clinic, and that fact is captured through a Caller I.D. service, her privacy has been violated. There should be a law protecting her informational privacy in such a case.

Although the legal establishment is just beginning to recognize the doctrinal changes that must occur to adapt to new technologies, such awareness is in its earliest stage. Perhaps, though, we can note that there is recognition for the importance of information protection for the economic health of the United States. Intellectual property exports, for example, "are one of the few areas where the United States enjoys a positive balance of trade."[153] In this age when information is a primary asset, when the effective management of information is widely recognized as the linchpin to industrial success,[154] there need to be safeguards to protect the rights of the developers and the possessors of information.

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148. Anthony Ramirez, *New York State Approves Caller-Identification Service*, N.Y. TIMES, Mar. 12, 1992, at D1.

149. *Id.*

150. *Id.*

151. *Id.*

152. 111 S.Ct. 1282 (1991). *See supra* note 122 and accompanying text for a discussion of this case.

153. Samuelson, *supra* note 129, at 397.

154. Charles E. Cantu, *Privacy*, 7 ST. LOUIS U. PUB. L. REV. 313, 315-16 (1988) (stating that "the dissemination of information [has become] big business").

III. WHY THERE IS A NEED FOR BROAD LEGISLATION PROTECTING INFORMATIONAL PRIVACY

A. *To Protect Individuals*

It is important to recognize that the interests in need of protection relative to the EC's proposed Directives are not merely those of consumers, but also those of American businesses and the U.S. national economy. These interests are interdependent. Although legislation which specifically protects personal data in the private sector may appear to favor consumer interests, it would effectively protect business and national interests as well.

At this point, however, developing technologies appear to be rapidly reducing the power of the individual relative to large organizations. The ability of credit card companies, for example, to identify a cardholder's whereabouts at specific times as on-line card verification occurs[155] clearly demonstrates that the surveillance and intrusive abilities of the private sector are beyond the self-protective abilities of most consumers. The failure of Congress to establish enforceable rights for personal data protection subjects the most intimate aspects of our personal lives to commercial sale. We need to strike the "delicate balance," as described by the Privacy Protection Study Commission[156] in 1977, between industry's right to access and trade in information and the individual's right to maintain confidentiality in and control over her personal records.[157]

Despite agreement that there is a "need" for this legislation, Congress has been reluctant to broadly protect[158] privacy rights in this regard. As noted in the Senate Report on the bill preceding the Privacy Act of 1974:[159]

> [T]he Committee[160] was persuaded to delay a decision on total application [of privacy protection legislation to the private sec-

155. *See* John Markoff, *American Express Goes High-Tech*, N.Y. TIMES, July 31, 1988, § 3, at 1, 6.

156. The Commission was created by the Privacy Act of 1974. Pub. L. No. 93-579, § 5, 88 Stat. 1896, 1905 (1974). The Commission ceased to exist on September 30, 1977. Pub. L. No. 95-38, 91 Stat. 179 (1977).

157. *See* THE PRIVACY PROTECTION STUDY COMMISSION, REPORT ON PERSONAL PRIVACY IN AN INFORMATION SOCIETY 5-6 (1977).

158. As noted earlier, narrow legislation to protect personal data in the private sector has been enacted. *See supra* notes 26-28 and accompanying text. For example, The Video Privacy Protection Act of 1988 § 2(a)(2), 18 U.S.C. § 2710 (1988), protects videotape rental data.

159. S. REP. No. 1183, 93d Cong., 2d Sess. 1, *reprinted in* 1974 U.S.C.C.A.N. 6916 [hereinafter Privacy Act Legislative History].

160. The Government Operations Committee, authors of the Senate Report on S. 3418 which was passed as P.L. 93-579, the Privacy Act of 1974.

> tor] by considerations of time and investigative resources for developing a full hearing record and for drafting the *needed* complex legislative solution for information abuses in the private sector . . . .[161]
>
> . . . .
>
> . . . [T]he decision to authorize . . . a study [on the data banks, automated data processing programs, and information systems of the private sector as well as of regional and other governmental agencies] is based on the Committee deferral at this time of legislation for abuses of privacy, due process, and confidentiality in the private sector, *a need particularly urgent* with the growth of national data banks, application of computer technology, and use of new information management practices.[162]

Acting on the advice of industry lobbyists, Congress has avoided imposing regulations on businesses that will protect the consumer, in favor of protecting business.

> The Committee has been advised by representatives of the Direct Mail Marketing Association and by numerous prominent direct mailers that this practice [of allowing consumers to request list merchants remove their names from mailing lists] creates more profitable lists by allowing for the removal of names of individuals who are unlikely to purchase goods or services from the soliciting organization.
>
> The purpose of this provision is to extend this practice to all organizations and *to expand the protection to all individuals.* It is consistent with the best practice in American industry and with the programs and standards of the Association representing those companies with direct interest in this problem.
>
> The Committee believes such a requirement is a simple and fair one which *will not necessitate a revision of private business procedures.*[163]
>
> Where lists are maintained by private companies, the Committee believes that the decision as to who should be allowed to rent or buy them is a decision best left up to each individual business.[164]

Although the Senate Report suggests an intention to protect individuals, lack of regulation actually frees businesses to manipulate personal data at will. This practice can be dangerous for the individual, as also acknowledged in the Senate report:

> Mailing lists constitute such personal information when, for ex-

161. Privacy Act Legislative History, *supra* note 160, at 6934 (emphasis supplied).
162. *Id.* at 6954 (emphasis supplied).
163. *Id.* at 6947 (emphasis supplied).
164. *Id.*.

> ample, they represent a group of individuals possessing a certain set of characteristics. *The disclosure of this personal information can be damaging to the individual.*[165]

If it is true, as the Committee believed, "that the decision . . . is best left up to each individual business,"[166] it is counterintuitive to regulate particular businesses as privacy threats arise, which is exactly what Congress has done by regulating the videotape retailing,[167] cable television[168] and credit reporting industries.[169]

This piece-meal approach to personal data protection makes it impossible for an individual to know her privacy rights. In the present legislative scheme, the individual cannot be assured that a given industry is required by law to protect the data she provides. If, for example, one orders videotapes from a mail-order service, one's records would be protected from disclosure.[170] But there is no legislative protection for information provided for the mail-order purchase of lingerie. Such data is exposed to unrestricted exploitation.

The current lack of a single standard of protection not only prevents the individual from effectively protecting herself, but prevents effective monitoring by a Data Protection Board. Enforcing the current legal scheme would require a DPB to oversee only those select industries (*e.g.*, videotape retailing and credit reporting) that are regulated. The majority of businesses remain free to trade in personal data and free of the proposed DPB's oversight.

In 1974, Congress passed comprehensive legislation to protect personal data stored by federal agencies, thereby setting a precedent for a comprehensive private sector law. The central concern of the Privacy Act of 1974[171] "was that information obtained for one purpose may not be used for a different purpose without the individual's consent."[172]

Ironically, though, "the Act allowed disclosure of records for

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165. *Id.* at 6946 (emphasis supplied).

166. *Id.* at 6947.

167. Video Privacy Protection Act of 1988 § 2(a)(2), 18 U.S.C. § 2710 (1988).

168. Cable Communications Policy Act of 1984 §§ 601-39, 47 U.S.C. §§ 521-611 (1988).

169. The Federal Fair Credit Reporting Act §§ 601-22, 15 U.S.C. §§ 1681-1681t (1988).

170. 18 U.S.C. § 2710(b)(1).

171. 5 U.S.C. § 552a (1988).

172. S. REP. No. 599, 100th Cong., 2nd Sess. 2, *reprinted in* 1988 U.S.C.C.A.N. 4342-1, 4342-2 [hereinafter Video Privacy Protection Act Legislative History]. The Privacy Act "establishes certain minimum information-gathering standards for all agencies to protect the privacy and due process rights of the individual and to assure that surrender of personal information is made with informed *consent* . . . ." Privacy Act Legislative History, *supra* note 160, at 6917 (emphasis supplied); *see also supra* note 6.

'routine uses'[173] compatible with the purposes for which the records were collected."[174] Subsequent broad interpretations of this clause have undercut the very privacy protections embodied in the Act.[175]

The legislative and subsequent history of the Privacy Act of 1974 also make it clear that an enforcement mechanism must be included with the protective measures in order to adequately protect personal data. Although the Senate Report on the Privacy Act of 1974 indicated that a Privacy Protection Commission would be created to enforce the Act,[176] by the time of its passage, the compromised bill did not provide for a Commission. As a result, the Privacy Act,

> in comparison to data protection legislation in other countries . . . is relatively meaningless . . . . The reason is there is nobody in charge of the Privacy Act. There is a small group of people in the Office of Information and Regulatory Affairs at OMB who are supposed to do something to make the Privacy Act meaningful. . . . [T]hey can't even generate annual reports on implementation of the Privacy Act, never mind go about auditing or encouraging compliance or receiving complaints from individuals.[177]

At the 1983 Subcommittee hearings on the Privacy Act of 1974, the testimony by nongovernment witnesses was highly critical of the implementation of the Privacy Act by federal agencies.[178] Ronald Plesser, former general counsel to the Privacy Protection Study Commission,[179] noted that the Act " 'is overly complex, over bureaucratic, and contains really no effective enforcement mechanism. It has become almost totally unavailable to most citizens because of the cumbersome and frustrating nature of its enforcement remedies.' "[180]

Although the Privacy Act of 1974 does provide for civil remedies whenever any government agency fails to comply with the

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173. 5 U.S.C. § 552a(b)(3).

174. Video Privacy Protection Act Legislative History, *supra* note 173, at 4342-2.

175. *Id.*

176. Privacy Act Legislative History, *supra* note 160, at 6918.

177. *Hearing Record*, *supra* note 1, at 79 (testimony of David H. Flaherty, Professor of History and Law, University of Western Ontario, author of PROTECTING PRIVACY IN SURVEILLANCE SOCIETIES (1989)).

178. *Hearing Record*, *supra* note 1, at 24.

179. The Study Commission was created by the Privacy Act of 1974 to make a "study of the data banks, automated data processing programs, and information systems of governmental, regional, and private organizations, in order to determine the standards and procedures in force for the protection of personal information . . . ." Pub. L. No. 93-579, § 5, 88 Stat. 1896, 1906 (1974).

180. *Hearing Record*, *supra* note 1, at 24.

Act,[181] without a body like the Privacy Protection Commission or Data Protection Board charged with enforcing the regulations and without agency management prioritizing the issue, federal agencies express little concern for the privacy interests of those who need protection. As Professor Flaherty described:

> The busy individuals in administrative agencies are already overworked. Moreover, those persons working on welfare issues, for example, remain more concerned about achieving surveillance of target populations than protecting anyone's privacy. Although there are coordinators for the Privacy Act in each federal agency, their role has been very limited.[182]

As Representative Wise has proposed the DPB, it will not be authorized to investigate private sector violations, nor may it regulate the private sector. Rather, the DPB may:

> investigate compliance with [the Privacy Act of 1974], and report on any violation of any provision thereof . . . to an agency, the President, the Attorney General, and the Congress.[183]

The problem with this enforcement provision is that the Privacy Act of 1974 applies only to personal data within the control of federal agencies. It does not apply to private companies which store personal information.

Furthermore, Rep. Wise intends the DPB to be "a resource, a consultant, a watchdog, and a facilitator . . . [, but not a] regulator."[184] His reasoning stems from concern over heavily bureaucratic European registration requirements for databases containing personal data.[185] For example, the European Commission's proposed Directive to protect personal data[186] requires Member States to provide for a public register of public sector files[187] and private sector files[188] where the personal data are likely to be circulated between the Member States. In the early years of the British Data Protection Act of 1984, "the data protection registrar had 292 bags of unopened mail which were simply registrations . . . they happen to have 100 staff to open the mail bags."[189]

However, fears of an unwieldy database registration scheme in

181. 5 U.S.C. § 552a(g) (1988).
182. *Hearing Record, supra* note 1, at 23-24.
183. H.R. 685, 102d Cong., 1st Sess., § 2(c)(2)(B) (1991).
184. Rep. Wise's Introductory Remarks, *supra* note 10, at H756.
185. *Id.*
186. *Draft Directive, supra* note 41.
187. *Id.* at 6.
188. *Id.* at 7.
189. *Hearing Record, supra* note 1, at 8.

the U.S. are unfounded. The draft Directive will not require the U.S. to register databases. Consistent with the purpose behind the Privacy Act of 1974,[190] draft Directive principles require that data not be processed without the consent of the individual, except in specific circumstances.[191] Although Member States will be required to provide for database registration, "third countries"[192] like the U.S. will not be held to such rigid standards. Rather, a third country will be required to "ensure an adequate level of protection," demonstrable by "the international commitments it has entered into or . . . its domestic law."[193] Such a domestic law would likely be acceptable if it is consistent with the principle of acquiring the individual's consent to process personal data.

At present, though, the U.S. has no private sector analog to the Privacy Act of 1974. Without a comprehensive private sector privacy law to enforce, or the ability to regulate the private sector, the DPB's ability to "serve the interests of consumers, of government, and of business"[194] will be extremely limited. In addition, the absence of such private sector regulations will not satisfy the reciprocity requirements of the draft EC Directive.

Similarly, courts cannot be expected to enable consumers to protect themselves without legislation defining the unauthorized disclosure of personal data as a privacy invasion. Although Congress has recognized that "[t]he disclosure of . . . personal information can be damaging to the individual,"[195] courts have not reached similar conclusions. The Ohio Court of Appeals, for example, holds

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190. *See supra* note 173.

191. *Draft Directive, supra* note 41, at 7. Article 8 provides that:

> 1. The Member States shall provide in their law that, without the consent of the data subject, the recording in a file and any other processing of personal data shall be lawful only if it is effected in accordance with this Directive and if:
>
> (a) the processing is carried out under a contract, or in the context of a quasi-contractual relationship of trust, with the data subject and is necessary for its discharge; or
>
> (b) the data come from sources generally accessible to the public and their processing is intended solely for correspondence purposes; or
>
> (c) the controller of the file is pursuing a legitimate interest, on condition that the interest of the data subject does not prevail.

Id.

192. The draft Directive distinguishes between Member States (of which there are twelve in the European Economic Community (EC): Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, and the United Kingdom) and third countries. *See Draft Directive, supra* note 41, at 6, 10.

193. *Id.* at 10.

194. *Hearing Record, supra* note 1, at 3.

195. Privacy Act Legislative History, *supra* note 160, at 6946.

that "[w]hen a magazine publisher sells subscription lists to direct mail advertisers without the consent of the individual subscribers he does not violate the subscribers' rights of privacy."[196]

Furthermore, courts are a forum for compensating perceived damage. The mailing list business, which comprises only one segment of industry which uses personal data, "exists largely without the knowledge of the people who are providing the profit, the people whose names and personal data keep this wheel turning."[197] In addressing individual grievances, courts are not equipped to address industry-wide violations of privacy rights. Whereas a data protection agency, specifically focused on investigating privacy abuses, advising government and private organizations, and enforcing privacy legislation, can protect the individual without her needing to be aware of the virtually invisible violation of her privacy rights.

Industry spokespeople argue that broad legislation protecting personal data is unnecessary because industrial self-regulatory practices are sufficient to protect consumers.[198] This is simply untrue. As described by Richard A. Barton, the Direct Marketing Association's (DMA) Senior Vice President for Government Affairs, the Association's "flagship program" is the Mail Preference Service, which consists of a list of people who have requested that they not receive direct marketing solicitations (aka junk mail).[199] In DMA parlance, the people on this list have executed their "negative option."[200] But even Congress recognizes that "only some people know about this service, and the distribution of information through lists is so widespread that people who do manage to get off lists through such a service, have no way of controlling what all the other companies do."[201] Furthermore, the very focus of the Association, which is to "give the public every opportunity [to] get off mailing lists,"[202] is self-serving. The focus of consumer privacy protection should be that of the Privacy Act of 1974: "information obtained for one purpose may not be used for a different purpose without the individual's consent."[203] Consumers are not merely

196. Shibley v. Time, 341 N.E.2d 337, 338 (Ohio Ct. App. 1975).

197. Privacy Act Legislative History, *supra* note 160, at 6947 (statement of Senator Hatfield).

198. *See Hearing Record*, *supra* note 1, at 44.

199. *Id.*

200. Nicholas di Talamo, *Private Secrets; European Community Proposals for Data Protection*, DIRECT MARKETING MAG., Vol. 53, April 1991, at 42, 43.

201. Privacy Act Legislative History, *supra* note 160, at 6947.

202. *Hearing Record*, *supra* note 1, at 44 (statement of Richard A. Barton, Senior Vice President, Government Affairs, Direct Marketing Association)

203. Video Privacy Protection Act Legislative History, *supra* note 173, at 4342-2.

concerned with removing names from mailing lists, or receiving less junk mail. The concern is that people should be able to control how and where their personal information is used.

It should not be the consumer's responsibility to remove her name from a list, but rather, it should be industry's obligation to ask the consumer's permission to use her name. The consumer should not be required to execute a "negative option" to stop unwanted mailings, or other use of personal data. Rather the business should be required to acquire a "positive option" from the consumer permitting access to and profit from that individual's name, address, consumer habits, and an infinite variety of other collectable personal information.[204] Unless the individual explicitly provided her name and address for inclusion on a mailing list and her consent for its sale, disclosure of her information would constitute a breach of the implicit contract she agreed to when providing the data for its initial purpose.

Another important function that private sector privacy legislation would serve, then, is to codify the kind of principles and policies which need to be observed to protect privacy and ensure that business standards are clear. An example of these principles and policies is the "Code of Fair Information Practice." A report done by the Secretary's Advisory Committee on Automated Personal Data Systems to the U.S. Department of Health, Education and Welfare recommended the enactment of a Federal Code such as this for all automated personal data systems.[205] The Code involves five principles:

1. There must be no personal data record-keeping whose very existence is secret.
2. There must be a way for a person to find out what information about him is in a record and how it is being used.
3. There must be a way for a person to prevent information about himself that was obtained for one purpose from being used or made available for other purposes without his consent.
4. There must be a way for a person to correct or amend a record of identifiable information about himself.
5. Any organization creating, maintaining, using, or disseminating records of identifiable personal data must assure the reliability of the data for their intended use and must take precautions to prevent misuses of the data.[206]

204. *See* di Talamo, *supra* note 201, at 43.
205. Privacy Act Legislative History, *supra* note 160, at 6923.
206. *Id.* at 6924.

Another industrial self-regulatory practice, one which does seek to integrate the above principles, is termed the "consensual database."[207] As defined by Equifax, "[t]his is a list of people who have expressed consent to be listed and who also offer information that will be used to target them for different categories of mail."[208] Although Equifax's recently instituted consensual program (called Buyer's Market) satisfies privacy concerns that data not be used for purposes other than for which it was provided, it is marketed to consumers as a for-profit service.[209] While Equifax is clearly seeking to comply with pro-privacy legislation and address the consumer hostility evidenced by the protests over its Marketplace venture with Lotus,[210] it "will profit handsomely if it can charge a premium for its mailing list," and benefits further by charging consumers a $15 fee to participate in Buyer's Market.[211]

Thus Equifax is able to charge consumers for their right to privacy due to the lack of legislative consumer protections.[212] Consensual databases appear to satisfy privacy concerns, but they must be compulsory across the private sector and must guarantee the right to privacy principles to protect against damaging business practices.[213]

B. *To Serve Business Interests*

Broad private sector privacy legislation would protect businesses from financial loss and legal liability by providing guidance in developing policies and procedures for handling personal data. The destruction of Equifax's joint production plans (and associated financial loss) for the Marketplace product[214] is only the most recent example of what can happen when companies are not put on notice of the privacy standards to which they must conform.

The Marketplace disaster is instructive because it demonstrates an intensifying climate of hostility toward marketers who violate

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207. Mark D. Uehling, *Here Comes the Perfect Mailing List*, AM. DEMOGRAPHICS, Aug. 1991, at 10.

208. *Id.*

209. *Id.*

210. Sullum, *supra* note 20, at 29.

211. Uehling, *supra* note 208, at 10.

212. Similarly, Representative Wise notes that it costs more to have an unlisted phone number, thereby causing the consumer to pay for privacy. *Hearing Record*, *supra* note 1, at 161.

213. Congress noted the importance of such "negative options" in statements relative to the Video Privacy Protection Act. *See* 134 CONG. REC. H10411 (daily ed. Oct. 19, 1988) (statement of Mr. Moorehead).

214. Sullum, *supra* note 20, at 29.

consumer privacy. According to a survey sponsored by Equifax, seventy-six percent of the public feel that the sale of information about income, home ownership and credit history to direct-mail companies is "unacceptable."[215] Rising criticism from Congress, state attorneys general and from consumer and privacy advocates has motivated TRW to offer free credit reports as a "salve for consumers' fears."[216] This growing sense of violation by consumers, also recognized by Representative Wise in his remarks introducing the DPB bill,[217] suggests a potential for consumer legal action against companies perceived to be violating privacy rights. Such liability can be protected against if the private sector moves to protect consumer data from unauthorized disclosure. Legislation which compels such protection would thereby also protect businesses from liability.

Another cost-saving, and liability-avoiding benefit of establishing standard privacy protections is to ensure that businesses can invest with the security and knowledge that they are complying with legal requirements. A broad privacy law would release the private sector from carrying the cost of conforming to patch-work legislation and varying judicial standards of privacy. In the absence of such a standard, technologies appear to be changing the traditional legal definitions of trespass, property, and privacy faster than the government's ability to keep pace. When basic definitional ground rules shift, this threatens the stability on which sound business decisions are based.

The current rapid evolution of technology makes it inevitable that new threats to privacy will continue to arise. Therefore, a broad standard of privacy protection is essential to ensure individual rights, as well as those of business. Justice Brennan noted that:

> [the] [d]evelopment of . . . computers and other sophisticated instruments have accelerated the ability of government to intrude into areas which a person normally chooses to exclude from prying eyes and inquisitive minds. Consequently judicial interpreta-

215. Uehling, *supra* note 208, at 12.

216. Peter Kerr, *Big Credit Bureau to Let Consumers see Reports Free*, N.Y. TIMES, Oct. 15, 1991, A1. The article notes that "critics have charged that [TRW, the Trans Union Corporation and Equifax Inc.] maintain credit histories riddled with mistakes, sell private data to companies that send out 'junk mail' and make it easy for practically anyone to pull up confidential reports." *Id.*

217. Rep. Wise's Introductory Remarks, *supra* note 10, at H755. ("Americans are greatly concerned about threats to their personal privacy resulting from the increased use of computers to collect, maintain, and manipulate personal information. Seven of ten Americans agree that consumers have lost control over how personal information about them is circulated and used by companies.")

> tions of the reach of the constitutional protection of individual privacy must keep pace with the perils created by these new devices.[218]

Similarly, legislative clarification of the privacy parameters to which businesses must adhere will not only protect the consumer, but also the businesses which will be on notice of the rights which government will protect.

Marketing industry lobbyists are predictably opposed to the idea of personal data protection. Critics of the European Commission's proposed Data Protection Directives claim that if imposed, the legislation could "leave Europe's electronic sales and marketing machines crippled by legislative arthritis."[219]

But data protection needn't mean governmental registration.[220] It is, however, undeniable that data protection would require businesses to make significant modifications in their information-handling practices.[221] The costs for such modifications are difficult to determine. Although Equifax will spend $10 million to create a consensual database including roughly a quarter of the 80 million people in its files,[222] costs can also be saved when direct marketers target their efforts (via consensual databases, for example) directly to receptive consumers. By polling their listees regularly, marketers can purge uninterested people from their computers, and save mail production and postage costs.[223]

Therein is the rationale for enforcement by the DPB of private sector privacy legislation. The degree of behavior change required to be made by businesses to protect individual liberties and personal privacy is not likely unless compelled by legislation and administrative oversight. Despite the arguments of industry spokespeople like Citicorp's Jerry Saltzgaber that it is in marketers' self-interest to protect consumer privacy,[224] companies have an obligation to stockholders to make money. Protecting privacy is expensive and that cost deters innovation.

C. *To Serve the United States' Interests*

U.S. businesses will benefit from U.S. privacy legislation which

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218. U.S. v. Miller, 425 U.S. 435, 451-452 (1976) (Brennan, J., dissenting).

219. Louella Miles, *Feeling the Draft; European Community's Data Protection Directive Data Protection*, MARKETING, May 30, 1991, at 16.

220. *See supra* notes 193-94 and accompanying text.

221. *See Hearing Record, supra* note 1, at 35 (testimony of Professor David H. Flaherty).

222. Uehling, *supra* note 208, at 10.

223. *Id.*

224. *Hearing Record, supra* note 1, at 88.

ensures freedom to do business after 1992 throughout the single European market. The reciprocal legislation requirements of the EC's proposed Directive will effectively lock U.S. industries out of business opportunities if adequate U.S. legislation is not in place. Particularly in dealing with international concerns, a data protection board ought to have jurisdiction over private sector information practices. Private companies transfer an enormous amount of personal data across international borders every day.[225] The U.S. economy can ill afford to have that pipeline constricted.

Such U.S. data protection legislation, enacted in tandem with a provision for a privacy enforcement body, will also protect the interests of U.S. businesses by providing for representation in international forums where the international impact of privacy issues are discussed. Although large U.S. corporations can represent their own interests abroad, the concerns of smaller companies and individuals are currently not expressed in international privacy forums. While other countries have set up independent government agencies to represent domestic privacy,[226] the U.S. has no such governmental body. The DPB would serve the purpose of fostering all U.S. privacy interests, including those of all businesses, all citizens and the U.S. Government.[227]

IV. PROPOSED LEGISLATION

The European Commission's proposed Directive[228] provides, *inter alia*, comprehensive provisions for private sector protection of personal data. The following proposed legislative text is a modification of pertinent sections of the Directive. Adoption of legislation modeled on the Directive's principles would not only protect personal and business interests, but would also satisfy the Directive's Article 24 requirement for "adequate" reciprocal legislation.

A. *SHORT TITLE*

This Act may be cited as the "Private Sector Privacy Act" (hereinafter the "Act").

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225. Taking data relating to air travel as an example, some 27,000 messages are involved in the passenger reservation process for a single 747 flight. Similarly, American Express processes authorizations of a quarter million credit card transactions and for over $10 billion in banking transactions daily. Christopher Millard, *Data Protection and Privacy Considerations in Transnational Distribution: A European Perspective*, THE COMPUTER LAW ASS'N BULL., Vol. 6, No. 1, 1991, at 17 n.1.

226. *See Hearing Record*, *supra* note 1, at 2.

227. *Hearing Record*, *supra* note 1, at 76.

228. *Draft Directive*, *supra* note 41.

B. *DEFINITIONS*

For the purposes of this Act:

1. "Individual" means a citizen of the United States or an alien lawfully admitted for permanent residence;
2. "Personal Data" means any information relating to an identified or identifiable individual;
3. "Data Subject" means the individual(s) described by or relating to personal data;
4. "Personal Data File" (file) means any set of personal data, whether centralized or geographically dispersed, undergoing automated processing or which, although not undergoing processing, are structured and accessible in an organized collection according to specific criteria in such a way as to facilitate their use or combination;
5. "Processing" means the following operations, whether or not performed by automated means: the recording, storage, collection or combination of data, and its alteration, use or communication, including transmission, dissemination, retrieval, blocking and erasure;
6. "Private Sector Personal Data Processor" (PDP) means any natural or legal person or association, including non-profit and for-profit companies, corporations, organizations and entities in so far as they carry on an industrial, commercial, social, civic, political, philosophical, religious, cultural, trade union, sporting or leisure activity who engages in processing of personal data;
7. "Data Protection Board" (DPB) means the independent public authority proposed in HR 685 and further empowered as follows:
   a. The DPB shall monitor the application of the national measures taken pursuant to this Act and perform all the functions that are entrusted to it by this Act.
   b. The DPB shall have investigative powers and effective powers of intervention against the creation and exploitation of files which do not conform with this Act. To that end, it shall have, *inter alia* the power to gather all the information necessary for the performance of its supervisory duties.
   c. Complaints in connection with the protection of individuals in relation to personal data may be lodged with the DPB by any individual.

C. *NON-DISCLOSURE PRINCIPLES*

1. Without the consent of the data subject, the recording in a file and any other private sector processing of personal data

shall be lawful only if it is effected in accordance with this Act and if:

a. the processing is carried out under a contract, or in the context of a quasi-contractual relationship of trust, with the data subject and is necessary for its discharge; or
b. the data comes from sources generally accessible to the public and their processing is intended solely for correspondence purposes.

2. No PDP shall disclose any personal information which is contained in a file by any means of communication to any person, or private or public entity, except pursuant to a written request by, or with the prior written consent of the data subject, unless disclosure of the file would be required for reasons relating to:
   a. national security; or
   b. public safety.

D. *INFORMED CONSENT*

1. Any giving of consent by a data subject to the processing of personal data relating to that data subject within the meaning of this Act shall be valid only if:
   a. the data subject is supplied with the following information:
      i. the purposes of the file and the types of data stored;
      ii. the type of use and the recipients of the personal data contained in the file; and
      iii. the name and address of the PDP;
   b. it is specific and express and specifies the types of data, forms of processing and potential recipients covered by it; and
   c. it may be withdrawn by the data subject at any time without retroactive effect.

E. *RIGHTS OF DATA SUBJECTS*

1. Data subjects shall be granted the following rights:
   a. To oppose, and, for legitimate reasons, cause the cessation of the processing of personal data relating to the data subjects.
   b. To know of the existence of a file and to know its purposes and the identity and place of business of all PDP's with access to that file.
   c. To obtain at reasonable intervals, and without excessive delay or expense, confirmation of whether personal data relating to data subjects are stored in a file, and communication to him of such data in an intelligible form.
   d. To obtain correction, or erasure, of such data, or blocking of access to particular PDPs of such data.

e. To bring a civil action against the PDP if the rights guaranteed in this Act are infringed. Any individual whose personal data has been stored in a file and who suffers damage as a result of processing or of any act incompatible with this Act shall be entitled to compensation from the PDP.

F. *RESPONSIBILITIES OF PDP's*

1. Every PDP must assure the reliability of the personal data held in its files by periodic disclosure to and approval of the data by the data subjects.
2. Every PDP shall take appropriate technical and organizational measures to protect personal data stored in a file or communicated in any way against accidental or unauthorized or unconsented to destruction, or accidental loss and against unauthorized access, modification or other processing.

V. CONCLUSION

In certain hands, personal information can prevent an individual from securing employment or health insurance or from protecting herself from a murderer. Perhaps the greatest danger we face by failing to protect informational privacy is the unreversable weakening of that privacy. By the time the majority recognizes how far technology and commercial interests have intruded on the individual, it may be too late to reclaim her privacy. To prevent such a threat, there is only one viable choice for government to make. Congress must regulate the behavior of data collectors, and thereby prevent discrimination against the subjects of personal data files.

The alternate, dangerous choices for dealing with the personal data issue are either to maintain the status quo, that is to allow those with the resources to collect and store data to profit from and intrude on the privacy of people, or to ban the collection of potentially threatening data altogether. This article has sought to illuminate why regulation of private sector use of personal data is essential to protect against damage to people, and the national economy.

LEGISLATIVE UPDATE— LEGAL ASPECTS OF SOFTWARE PROTECTION IN CHINA: THE COMPUTER SOFTWARE PROTECTION REGULATIONS

Henry Hong Liu†

This article examines the background and major contents of the Chinese Regulations on Computer Software Protection, as well as software administration in China.[1]

I. BACKGROUND

In the early 1980's, issues regarding whether and how computer software should be protected were vigorously debated in China. These discussions arose from the Chinese government's indecision regarding whether to provide this protection through the patent or copyright laws, or whether to enact separate regulations.

Patent protection was deemed inadequate, as computer software was not specifically protected under the Patent Law of 1984,[2] nor the amended Patent Law of 1991. Indeed, the text of the Patent Law implies that computer software is denied protection under the Patent Law as "rules and methods of mental activities."[3]

As patent protection appeared to exclude software, the Chinese

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1. The Regulations on Computer Software Protection of 1991 promulgated by the State Council (hereinafter Regulations) were promulgated on June 4, 1991 and took effect on October 1, 1991. These Regulations contain 40 articles. *See* Appendix for English text of articles.

The Ministry of Machine-building and Electronics Industry (hereinafter, Ministry of M & E or Ministry) is responsible for the registration and administration of software copyright nationwide. The Ministry formulated and published the specific procedures for software registration; the Software Registration Center was established to fulfill this obligation.

2. Patent Law of the People's Republic of China (1984). For an English translation, *see* Hong Liu & Jun Wei, *Technology Transfer to China: The Patent System*, 5 SANTA CLARA COMPUTER & HIGH TECH. L.J. 363, 386-98 (1989) (hereinafter PRC Patent Law).

3. PRC Patent Law, *supra* note 2, at 390.

government attempted to include protection for computer software through the Copyright Law. This effort was abandoned primarily due to the belief that the protection would be less effective and more impractical than originally thought.[4] Ultimately, the Chinese government's decision to enact separate regulations to protect software lead to the enactment of the Computer Software Protection Regulations in 1991. Until this time, computer software was protected in China only through contractual non-disclosure provisions.[5]

China is not alone in providing special treatment for computer software in its intellectual property law. The Model Provisions on the Protection of Computer Software proposed by WIPO in 1978 advocate the formulation of new, independent laws and regulations midway between patent and copyright law to protect computer software.[6] Some countries have enacted completely separate legislation, while others have created special sections in their copyright law.

For example, Korea[7] and Brazil[8] formulated separate regulations on software, outside of the mode of protection provided by their copyright laws.

In France, the French Author's Right Law of 1985,[9] places computer software in a class by itself located after "Neighboring Rights" and far away from literary and artistic works in general. Protection for this special class is limited to a term of 25 years and may not be extended. Although France has long been known for its protection of authors' rights, the law provides that the initial owner of rights in a work under this special class need not be the author, but may be the author's employer.

The Spanish Intellectual Property Law of 1987[10] follows the

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4. The Chinese were persuaded by arguments similar to those set forth in the U.S. decision in Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222 (3d Cir. 1986), *cert. denied* 107 S. Ct. 877 (1987), which suggested that, unlike patents, copyright law does not protect the novelty and content of a work, but rather the manner in which the work is expressed.

5. Liu & Wei, *supra* note 3.

6. The Model Provisions suggest a three-point definition of computer software: computer program, program description and supporting material. The exclusive rights include the right to keep secret, the right to copy and the right to use.

7. South Korea Computer Program Law, Law No. 3920 (1986).

8. Brazil Law No. 7646 (1987). *See Brazil*, INTERNATIONAL COPYRIGHT LAW PRACTICE, § 2[d][iii] (Nimmer & Geller eds., 1992) (hereinafter INTERNATIONAL COPYRIGHT LAW).

9. France Law No. 85-660, 1985 J.O. 7495.

10. Ley de Propiedad Intelectual (1987). *See Spain*, 2 INTERNATIONAL COPYRIGHT LAW, *supra* note 7. Computer Software Protection is found in Title VII of Part 1 of the Act from articles 96-100.

French practice by isolating software from works in general. Protection for software is included within a separate section. In this section, the previously abolished registration systems are restored. It also provides that the principle of "fair dealing," applicable to works in general, is applicable to software. However, the provision regarding reproduction for personal use is not applicable to software.

The 1988 Copyright Act of the United Kingdom,[11] though listing computer programs side by side with works in general, provides different definitions applicable only to programs. Also, in the provisions which deal with moral rights, authors of works such as computer programs are not provided the same rights enjoyed by authors of literary and artistic works in general.

Under the Copyright Law of Japan (as revised after 1985),[12] article 47, section 2 is a special, separately inserted provision applicable to computer programs. Like many countries, Japan also provides optional registration for computer programs.

When the United States listed computer programs among the objects of copyright in 1980, section 117[13] was specifically added to provide limitations on rights applicable only to computer programs.

The European Community Directive of May 14, 1991[14] on computer software protection, provides that as of January 1993 all computer software within the boundaries of the European Community will enjoy the same copyright protection as that enjoyed by literary works, the term of protection being 50 years.

Thus, enactment of the Computer Software Protection Regulations (Regulations) places China in a position which is very similar to that of other countries with respect to recognition of the need for legislation to protect software. Importantly, the Regulations are supplementary to the Copyright Law, as article 53 of the Copyright Law stipulates that "[r]egulations for the protection of computer software shall be formulated separately by the State Council."[15]

II. SOFTWARE PROTECTION AS A SUPPLEMENT TO COPYRIGHT LAW

Software is expressly included under Chinese Copyright Law, which protects "works of literature, art, natural science, social sci-

11. Copyright, Designs and Patents Act, 1988, § 3(1) (Eng.).
12. Copyright Law of Japan, *reprinted in* 2 Japan Bus. L. (CCH Int'l) ¶ 60-120 (1993).
13. 17 U.S.C. § 117.
14. Council Directive 91/250/EEC, 1991 O.J. (L122).
15. Copyright Law of 1990, art. 53.

ence, engineering and technology, etc., which are expressed in the following forms: . . . Computer Software."[16]

Because of the many similarities between traditional copyrights and software protection, there are several important reasons for incorporating software within the protection provided by copyright.

A. *Similarities Between Copyright Protection and Software Protection.*

First, software is similar to a written work. A piece of computer software is a coded sequence of logical procedures which may be expressed by numerals, words and/or symbols. In a manner analogous to traditional written works, the mode of software expression (i.e., the coded representation) may be fixed on such physical carriers as paper, magnetic disks and magnetic tapes.

The mode of expression of a program fixed on a carrier may be easily copied. As with literary works, this copying of the program's mode of expression is precisely the principal means of infringing the interests of the owner of the rights to the program. Therefore, it is reasonable to list computer software as a class of works within the protection of Copyright Law.

Second, the principles of copyright law give protection to the reasonable rights and interests of the authors, so that they are encouraged to publish their works, thereby allowing society to benefit from them. To this end, the work already created should be protected for a certain period of time against reproduction, plagiarism, alteration, dissemination, and distribution of reproductions of such works without the copyright owner's authorization.

On the other hand, the scope of the protection should be confined to the expression of a work, not the ideas and concepts contained within the work. Thus, copyright law should not restrain anyone from giving play to the intelligence and wisdom which results in newer, more complete expressions of the idea, concept or theme of the work of another person. Because progress and innovation are encouraged through the cumulative efforts of many, society is benefitted by these new expressions.

The Regulations follow these principles. As with copyright, originality is important. The Regulations provide that "software being protected under these regulations must be developed independently by the developers and borne by physical objects."[17] The sub-

16. *Id.* art. 3.

17. Regulations, *supra* note 1, art. 5.

ject matter of software is also limited to certain types of protectable expression. In a manner somewhat similar to the provisions of U.S. laws regarding software protection, under the Regulations, protection "cannot be extended to cover the ideas, concepts, discoveries, theories, algorithms, processing and operating methods used in software development."[18]

Article 10 provides that under ordinary circumstances, the copyright of a piece of software is owned by the software developer.[19] Article 9 of the Regulations enumerates the rights enjoyed by software copyright owners, including: (1) the right of making public; (2) the right of the developer's authorship; (3) the right of exploiting the software (e.g., by copying, display, distribution, revision, translation, and annotation); (4) the right to authorize use of the software by others and receive renumeration therefor; and (5) the right of assigning these rights.[20]

B. *Differences Between Copyright Protection and Software Protection.*

Although there are many similarities, there are also several important differences between copyright protection and software protection. First, computer software has a series of features which are not shared with literary works. The most fundamental of these characteristics is that a piece of computer software, unlike a literary work, is also expressed as an electric impulse sequence capable of driving computer hardware to accomplish a certain task. Software is a practical tool at the user's disposal which may be put directly to functional use. We may say that its capability for direct, functional uses is precisely the reason for its being. Literary works, on the other hand, can only present ideas, viewpoints, methods, or knowledge to those who then may use these ideas, viewpoints, methods or knowledge presented. But, unlike software, these literary works cannot themselves be put to direct, functional use.

Also, software development is often an industrial production activity which is conducted by an organized, cooperative group of people operating in accord with certain technical standards. Therefore, software is a type of industrial product. Although the reproduction process of literary works may be an industrial production activity engaged in by a collective (e.g., the printing and publishing

18. *Id.* art. 7.
19. *Id.* art. 10.
20. *Id.* art. 9.

of books), the creative process of literary works involves personal activity and certainly is not an "industrial production activity."

Prior to the software development and production, these unique features had not been encountered in issues surrounding protection of traditional works grounded in copyright. In adopting copyright law to protect computer software, various aspects, such as the provisions for the objects of protection, the contents and subjects of rights, etc., must necessarily involve resolution of these incompatibilities. Essential adjustments must be made in certain traditional clauses within the copyright law in order to meet the needs of software copyright protection.

The Regulations take into consideration the differences between software and works traditionally protected by copyright. For example, in the protection of objects, the Regulations stipulate that computer programs include source programs and object programs. Under the Regulations, the source text and object text of the same program are deemed to be one and the same copyrighted piece. The recognition of software as a type of industrial product is reflected in the rights pertaining to the assignability of software.

In light of the needs of users who have lawfully obtained the software for functional use, article 31 of the Regulations imposes a number of limitations on the rights of the software copyright owner, which include allowing a lawful user to input a program into the internal storage of a computer, make necessary revisions, or make back-up copies, according to the user's needs.[21] It may be seen from a comparison between article 22 of the Copyright Law and articles 21 and 31 of the Regulations that the limitations on economic rights differ in respect to software copyright and copyright of works in general.

With regard to the subjects of the rights, article 3 of the Regulations stipulates that software copyright owners may be either citizens, legal persons or "non-legal person" entities. There are corresponding conditions attached to these designations. For example, articles 11-14 of the Regulations explicitly distinguish between the ownership of copyright in software developed through cooperation, on commission, in fulfillment of a task assigned by a higher entity, and software developed in the line of duty.

As software is a type of industrial wealth, the question of attribution of rights is even more sensitive as compared with traditional works. In order to lend assistance to the determination of the attri-

21. *Id.* art. 31.

bution of rights, chapter 3 of the Regulations provides for a copyright registration system established in respect to software. The organ for registration and administration (i.e., the Center for Software Registration) has been given the mandate to develop and publish procedures for software registration and administration.

III. EXAMINATION OF THE COMPUTER SOFTWARE PROTECTION REGULATIONS OF 1991

Under the Regulations, protection for software refers to "the enjoyment by a copyright owner of a piece of software or his assignee of the various rights under software copyright prescribed by these regulations."[22]

A. *Definitions.*

In the Regulations, "computer software" refers to "computer programs" and their relevant "documentation."[23] A computer program refers to "a coded instruction sequence which may be executed by devices with information processing capabilities such as computers, or a symbolic instruction sequence or symbolic statement sequence which may be automatically converted into a coded instruction sequence for the purpose of obtaining certain expected results."[24] As indicated previously, computer programs include "source programs" and "object programs;" the source text and object text of the same program are deemed to be one and the same copyrighted piece.[25]

"Documentation" refers to "literal descriptions and charts compiled and written in natural language or formal languages and used to describe the content, structure, design, functional performance, historical development, test results and usage, such as program design instructions, flowcharts, and users' manuals."[26]

Under the Regulations, "software being protected under these Regulations must be developed independently by the developers and borne by physical objects."[27] This principle is basically the same as that for works protected under the Copyright Law.[28] The Regulations also require that protected software possess "originality."[29] In

22. Regulations, *supra* note 1, art. 4.
23. *Id.* art. 2.
24. *Id.* art. 3(1).
25. *Id.* art. 3(1).
26. *Id.* art. 3(2).
27. Regulations, *supra* note 1, art. 5.
28. Copyright Law of 1990, art. 3.
29. Regulations, *supra* note 1, art. 5.

addition, the software must be borne by "physical objects." Although a "physical object" could be interpreted as a hard copy,[30] it is unclear whether "hard copy" also refers to magnetic disks.

Under the Regulations, persons eligible to receive protection for their software include entities, citizens, and foreigners.[31] The term "software copyright owners" refers to "entities and citizens enjoying the copyright of software in accordance with the provisions of these Regulations."[32] "Entities" refers to "legal persons or non-legal person entities" (hereinafter referred to as entities) actually organizing and carrying out development work, providing working facilities for accomplishing software development, and assuming responsibility for the software. The term "citizens" refers to those "accomplishing software development by relying on their own facilities and assuming responsibility for the pieces of software." "Software developers" encompasses entities and citizens.[33]

With respect to software developed by a Chinese citizen or an entity, "regardless of whether or where the said software has been made public, he or it shall enjoy the copyright."[34] In contrast, the Computer Protection Regulations provide that foreigners may enjoy copyright protection in China in two situations. The first is where a piece of software "developed by a foreigner is first made public in China." In this case, the foreigner may enjoy the copyright in accordance with the Regulations.[35] Secondly, copyrighted software owned by a foreigner "made public outside China" may be protected under the Regulations "in accordance with agreements concluded between his country and China or with international conventions acceded to by his country and China."[36]

This is generally in accord with the principles of national territorial treatment and reciprocity in copyright laws of other countries. However, it should be noted that unlike Chinese entities or citizens, foreigners must "make their software public" before being eligible for copyright protection in China. The exact translation of "make public" in the Chinese text of the Regulations is "publish."[37]

30. *Id.* art. 3(5). "Copying refers to acts of transferring software onto physical objects."
31. *Id.* arts. 3(3), 3(4), 6.
32. *Id.* art. 3(4).
33. *Id.* art. 3(3).
34. Regulations, *supra* note 1, art. 6. The territorial requirement is not limited to China proper.
35. *Id.* art. 6.
36. *Id.* art. 6.
37. "The right of making public" refers to making the software available to the public. *Id.* art. 9(1).

However, it is unclear what exactly constitutes "make public" or "publish." In later promulgated Computer Software Registration Procedures, "make public" is defined as "the act of making software available to the public, including the issue of the software to the public through sales or by other means of providing copies or through public demonstration of the software undertaken with a view to further distributing copies."[38]

With respect to software developed by two or more entities or citizens in cooperation, the copyright of the software is jointly owned by the developers who cooperated to produce the software.[39] In the case where a written agreement is made in advance, the software copyright is owned by the cooperating developers according to that agreement. In cases where there is no written agreement, but the software developed in cooperation may be partitioned and used, the developers may separately enjoy the copyright to the respective portions they developed. However, the exercise of this copyright may not be extended to the copyright of the jointly developed software as a whole.

If the software developed in cooperation cannot be partitioned and used, the copyright is to be exercised by the cooperating developers, upon reaching unanimity through consultation. If unanimity cannot be reached through consultation, none of the parties may prevent the other party or parties from exercising the rights other than the right of assignment. The proceeds are reasonably distributed to all cooperating developers.[40]

The copyright of software developed on commission is governed by written agreement between the commissioning and commissioned parties. Where there is either no written agreement, nor an explicit stipulation made in the agreement, copyright ownership is attributed to the commissioned party.[41]

There are two situations under which the ownership of software developed by a citizen while working for an entity becomes an issue.[42] In the first situation, the software is developed in accordance with a development objective explicitly assigned in the line of an employee's duty, or is a foreseen or natural result of his carrying out activities in the line of duty. In this case, the software copyright is attributed to the entity. In the second situation, where a

38. Measures for Computer Software Copyright Registration, 2 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 11-706(3) (1992) (hereinafter Registration Procedures).

39. Regulations, *supra* note 1, art. 11.

40. *Id.* art. 11.

41. *Id.* art. 12.

42. *Id.* art. 14.

piece of software developed by a citizen is not a result of performing his or her duty, and is not directly related to the content of the work engaged in by the developer in the entity, nor has the developer utilized the material and technical facilities of the entity, the software copyright is attributed to the developer. In reality, the criteria for making these distinctions regarding the line of duty remain to be determined.

Under article 13, the rights to copyrighted software developed in fulfillment of a task assigned by a higher entity or government department, the rights are normally stipulated within a letter of work assignment or contract. Where no explicit stipulation is made in the letter of work assignment or contract, the copyright of the piece of software is attributed to the entity which accepts assignment.[43]

B. *Characteristics of Software Copyrights.*

A computer software copyright owner enjoys both personal rights and property rights. The personal rights are inherent rights which are not limited by the duration of the protection. The two major types of personal rights, the "right of making public" and the "right of authorship," refer to the protection of the honor and reputation of the computer software developer.

The right of making public refers to the right to decide whether to make the software available to the public.[44] This means that the software developer enjoys the right to decide whether, where, when and in what form, to publish or make public of his or her software.

The right of authorship refers to the right of the developer to make his identity known and to have his name indicated on the software.[45] The duration of the protection for the right of "authorship" is "unlimited."[46]

The other bundle of rights, the "property rights," refer to the exclusive rights of the software copyright owner to exploit his software and to obtain renumeration. Unlike the personal rights, these property rights are limited.

The "right of exploitation" refers to the right of the software copyright owner to exploit his or her software in such a manner as copying, displaying, distribution, revision, translation, and annota-

43. *Id.* art. 13.
44. Regulations, *supra* note 1, art. 9(1).
45. *Id.* art. 9(2).
46. *Id.* art. 15.

tion, on the premise that the public interest is not damaged.[47]

The "right to authorize use" and the "right to renumeration" refer to the right to authorize others to use or exploit the software and to receive renumeration therefor.[48]

The "right of assignment" refers to the right to assign to others the right of exploitation and the right of authorization for use.[49] In addition, software copyrights are inheritable, as the Regulations provide that within the duration of protection for the copyright of a piece of software, the successor to the software copyright is entitled to the rights of exploitation, authorization for use, and renumeration, according to the law of succession.[50] However, there is no provision regarding the inheritance of the right of assignment.

Article 9 provides the basis for the right of assignment of software copyright. Within the duration of protection for the copyrighted software, the copyright owner (or the assignee) has the right to authorize others to exercise the right of exploitation.[51] As part of this authorization agreement, the copyright owner or his assignee may charge royalty fees.[52] The period of validity of a licensing contract must not exceed ten years. However, a contract may be renewed on expiration.

To ensure the validity of these agreements, licensing agreements pertaining to these software rights should be executed in a written contract in accordance with the relevant laws and regulations of the People's Republic of China. The licensee should exercise the right of exploitation by adhering to the manner, conditions, scope and duration stipulated in the contract.[53] Where the licensed rights pertaining to the software are not explicitly stipulated in the contract as exclusive, they are deemed to be non-exclusive.[54] Importantly, these licenses do not change the ownership of the copyrighted software.

In the case where the software copyright owner is an entity, if the entity's ownership changes within the duration of the copyright of the software, the various rights pertaining to that piece of software are owned by the lawful succeeding owner to the entity. In this situation, the duration of protection for the rights pertaining to

47. *Id.* art. 9(3).
48. *Id.* art. 9(4).
49. Regulations, *supra* note 1, art. 9(5).
50. *Id.* art. 16.
51. *Id.* art. 18.
52. *Id.* art. 18.
53. *Id.* art. 18.
54. Regulations, *supra* note 1, art. 18.

the software do not change.[55]

When a Chinese software copyright owner licenses or transfers the rights of a piece of software developed in China to a foreigner, the copyright owner must report the transaction to the relevant governmental department under the State Council for approval, and to the Software Registration Center for software registration and administration.[56]

C. *Duration of Protection.*

The duration of protection for the copyright on a piece of software is twenty-five years, ending on the 31st day of December of the twenty-fifth year after the software is first made public. Before the expiration of the duration of protection, the software copyright owner may apply to the organ for software registration and administration (i.e., the Software Registration Center) for an extension of twenty-five years. The maximum duration of protection is fifty years.[57]

Under article 20, after expiration of copyright protection, the rights, other than the right pertaining to the developer's authorship, are terminated.[58] The duration of protection for the right of the developer's authorship of the software is unlimited.[59]

As indicated above, where there is a change in copyright ownership, or there is an assignment, the duration of protection for the rights pertaining to the software do not change.[60]

Other than the rights of the developer's authorship, the various rights pertaining to a piece of software enter the public domain before the expiration of the duration of protection when either (1) the entity owning the copyright of the software has been dissolved and there is no lawful successor, or (2) the citizen owning the software copyright dies and there is no lawful successor.[61]

D. *Limitations on Protection.*

Within the Regulations, there are several limitations on the protection provided to owners of copyrighted software. First, a piece of software may be copied "in small quantities to serve such

55. *Id.* art. 17.
56. *Id.* art. 28.
57. Regulations, *supra* note 1, art. 15.
58. *Id.* art. 20.
59. *Id.* art. 15.
60. *Id.* art. 17, 19.
61. *Id.* art. 20.

non-commercial purposes as education, scientific research, or government business without the consent of or renumeration to, the copyright owner of the software or his or her lawful assignee."[62] Since many business enterprises in China are state-owned companies, a phrase such as "government business" is very vague and includes a majority of the businesses within China.

Second, uses in which it is necessary to implement "the relevant policies, laws, regulations and rules of the state," to implement "the technical standards of the state," or where there is "a limited number of available options in the forms of presentation," do not infringe the software copyright holder's property rights. These extremely broad provisions may result in liberal interpretations of "free use," which could present potential problems for software developers. If a large number of companies which would otherwise be infringers fit within this exception, the software developers risk losing a large proportion of their investment.

In addition, with respect to software which is developed by "entities under ownership of the whole people" within their respective sectors or under their jurisdiction, if such a software is of great significance to national interests and public interests, the "relevant departments" under the State Council and "the People's Government of the various provinces, autonomous regions and municipalities" have the right to decide whether to allow such a software to be exploited by "designated entities." The exploiting entities then pay exploitation fees to the developing entities in accordance with the relevant laws of the State.[63]

E. *Infringement.*

If any acts defined within the term "infringement" occur, according to the circumstances, the infringer must stop infringing, eliminate the adverse effects, make a public apology, and compensate the copyright owner for any damages incurred due to the infringement. In addition, the State administrative authorities for software copyright protection may impose administrative sanctions on the infringer, including confiscation of the unlawful income and imposition of a fine.[64] Article 32 defines the following acts as "infringing:"[65]

62. Regulations, *supra* note 1, art. 22.
63. *Id.* art. 13.
64. Regulations, *supra* note 1, art. 30.
65. *Id.* art. 32.

(1) making a piece of software public without the consent of the copyright owner;

(2) making public as one's own work a piece of software developed by others;

(3) making public as a work completed on one's own, a piece of software developed in cooperation with others without the consent of the collaborators;

(4) having one's own name indicated on a piece of software developed by others or obliterating the name indicated on a piece of software developed by others;

(5) altering, translating or annotating a piece of software without the consent of the copyright owner or the lawful assignee;

(6) copying in whole or in part, a piece of software without the consent of the copyright owner or the lawful assignee;

(7) distributing or disclosing to the public a copy of a piece of software without the consent of the copyright owner or the lawful assignee;

(8) conducting business concerning licensing or transfer of a piece of software to any third party without the consent of the copyright owner or the lawful assignee;[66]

(9) supplying an infringing piece of software to others, while fully knowing that the software infringes another's copyright.

There are many acts which do not constitute infringement. For example, entities or citizens who lawfully hold copies of software enjoy the following rights, without the requirement of consent of the software copyright owner:

(1) installation and storage of software on a computer according to the user's need and for the purpose of using it;

(2) making backup copies for filing;[67] and

(3) making necessary revisions to the software in order to implement it in an actual environment of computer application, or to improve its function and performance.[68]

As stated above, software may be copied in small quantities to serve such non-commercial purposes as education, scientific research, or government business without the consent of, or remuner-

66. *Id.* art. 30.

67. Backup copies must not be supplied in any way for use by others. Once the holders lose the right to hold the software lawfully, all backup copies must be destroyed.

68. Except as otherwise agreed, the holder must not supply the revised version to any third party without the consent of the software copyright owner or the lawful assignee. Regulations, *supra* note 1, art. 21.

ation to, the copyright owner of the software or his lawful assignee. However, in exploiting the software in such a manner, the title and developer of the piece of software are to be made known, and the various other rights enjoyed by the copyright owner or his lawful assignee in accordance with the Regulations must not be infringed. In addition, the copies should be properly stored, returned or destroyed after use, and must not be used for other purposes, nor supplied to others.[69]

Similarity between a piece of software developed by one person and an existing piece of software may not constitute copyright infringement of the existing software. For example, where a particular piece of software is necessary to implement the relevant policies, laws, regulations and rules of the State or it is necessary to implement the technical standards of the State, or where there is a limited number of available options in the forms of presentation, there is no infringement.[70]

Where the holder of a piece of software has no knowledge of, or has no reasonable basis for having knowledge of, the piece of software as infringing, liability for infringement is borne entirely by the supplier of the infringing piece of software. The term "supplier of an infringing piece of software" covers those who supply an infringing piece of software to others in the full knowledge that it infringes.[71] Where the rights and interests of the copyright owner of the software would not be sufficiently protected without the destruction of the software held by the holder, the holder is obligated to destroy the software. However, the holder may demand compensation from the supplier of the infringing piece of software for the losses suffered by the holder.

Due to recognition that disputes involving contract issues (e.g., failure to perform contracts) and infringement may arise during the term of copyright protection, the Regulations include provisions regarding disputes which arise from transactions involving software.[72]

As discussed previously, administrative sanctions may be imposed in infringement cases.[73] However, if the software is registered and the software rights are assigned, the assignee must report the transaction to the organ for software registration and administration for the record within three months of the official signing of the

69. *Id.* art. 22.
70. *Id.* art. 31.
71. *Id.* art. 32.
72. *See* Regulations, *supra* note 1, art. 33-35.
73. *Id.* art. 30.

assignment contract in order to protect their rights. For example, unless the transaction is reported within the required time period, the assignee will not be able to counter the infringing activities of a third party.[74]

Where a party is not satisfied with the administrative sanction imposed by the administrative authority of the State for software copyright affairs, it may institute proceedings in the People's Court within three months from the date of receipt of the relevant notification. Where the party neither executes the fulfills the requirements of a sanction decision, nor institutes proceedings in the People's Court within the time limit, the appropriate administrative authority may apply to the People's Court for compulsory execution.[75]

An infringement dispute over software copyright may be settled through mediation. Where mediation fails or where one of the parties changes its mind after an agreement has been concluded through mediation, proceedings may be instituted in the People's Court. Proceedings may also be instituted directly in the People's Court if the parties do not wish to settle the dispute through mediation.[76]

Contract disputes over software copyrights may also be settled through mediation. Or, the parties may apply for arbitration by the software copyright arbitration organ of the State. These arbitration proceedings are conducted in accordance with the arbitration clause in the contract or a written arbitration agreement subsequently concluded.

Parties to the arbitration may bring their case to a court under three circumstances. First, if one party fails to execute the arbitral award, the other party may apply to the People's Court for execution. Second, if the People's Court finds the arbitral award illegal, it has the right to prevent execution of the award. In this circumstance, the party may institute proceedings in the People's Court regarding the contractual dispute. Third, when the parties do not have an arbitration clause in the contract, nor is there a subsequently concluded a written agreement, either party may directly initiate proceedings in the People's Court.[77]

In cases where an interested party fails to perform their contractual obligations, or fails to perform the obligations in a contract in conformity with the conditions stipulated, it may result in civil

74. *Id.* art. 27.
75. *Id.* art. 36.
76. *Id.* art. 34.
77. Regulations, *supra* note 1, art. 35.

liability in accord with the relevant provisions of the General Principles of the Civil Law.[78] Thus, in addition to the situations discussed above, civil litigation is sometimes an option.

F. *Summary of Copyright Protection for Software.*

Thus, while computer software protection in China has primarily been enacted through the Regulations, computer software may also be protected under other legal theories, with contracts playing a particularly important role.

IV. CONTRACT AND PATENT LAW APPLIED TO SOFTWARE

An important consideration in protection of software is that although contract law can provide protection by itself, the Patent Law and Copyright Law often cannot effectively protect software without some contribution from contract law.

A. *Contract Law.*

The Technical Contract Law of the People's Republic of China[79] recognizes that any technology capable of bringing some sort of benefit to the other party may be taken as the object of a contract.[80] For example, such contracts include those for individual and joint software development, sales of software and software data, and software testing and security. Moreover, the protection provided to computer software by contract law is very flexible. Through specific clauses within the contract, a software developer may fix his desired method and degree of protection in legalized form.

B. *Patent Law.*

The form of expression of computer software is as a work consisting of a group of sentences or instructions protectable under copyright law. However, software is also the crystallization of mathematics, information, control, and engineering (i.e., software engineering), the contents of which should also be patentable.

Due to the difficulties presented by problematic rules regarding mathematical algorithms and mental activity, the intellectual property circles in various countries initially excluded software from the

78. *Id.* art. 33.

79. Law of the People's Republic of China on Technology Contracts, 1 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 5-577 (1987).

80. *Id.* ¶ 5-577(3)-(4).

scope of patent law protection. However, in recognition during the 1980s of the needs for industry development, many countries reinterpreted the relevant legal provisions and revised their examination standards. These changes were based on guiding cases and led to provisions for software patent protection.

Most countries have displayed great flexibility in the matter. Since China began implementation of its patent law in 1985, its practice in this respect is consistent with the international trend. In accordance with the provision in article 25(2) of the Chinese Patent Law,[81] no patent right is granted for rules and methods of mental activities.[82] Also, computer software *per se* is not regarded as an object of protection by patent law.[83]

However, where an invention containing computer software has technical effects considered a complete technical solution, it may be granted patent rights, regardless of whether it is a computer program which involves the handling of a technological process by automation, or operation of a computer system in a new mode. This is true even if the inventive point lies in the computer program. Examples include (1) the encoding of Chinese characters as an input method of the processing of Chinese characters by a computer system, (2) a method of processing information in Chinese characters, and (3) installation of new software on a publicly known computer, to improve its performance. This has made it possible for such processes and products to receive the high degree of protection provided by patent law.[84]

V. ADMINISTRATION AND REGISTRATION OF COMPUTER SOFTWARE IN CHINA

The "organ for software registration and administration" mentioned in the Regulations is the Ministry. The grant of power regarding computer software administration and registration is contained within article 6 of the Computer Software Registration Procedures, which states: "With the authorization of the State Council, the Ministry of M & E is in charge of the registration and administration of the copyright of software nationwide." The Ministry entrusted the Software Registration Center of China with the routine work of registering computer software copyrights.[85]

81. PRC Patent Law, *supra* note 2, at 390.
82. *Id.*
83. *See* Liu & Wei, *supra* note 2.
84. *Id.*
85. Procedures, *supra* note 38, ¶ 11-706(6).

The Ministry of M & E is also charged with designating, according to need, appropriate agencies to assist the Software Registration Center in handling software registrations. The functions and responsibilities of these agencies is determined separately by the Ministry of M & E according to specific, publicly announced conditions.[86] As discussed below, this presumably includes the Software Registration Reexamination Board.

The Software Registration Center has various functions, including: (1) implementation of the provisions in the Regulations concerning registration and these procedures; (2) submitting proposals for improving or perfecting the registration process; (3) accepting and examining applications for software registration; (4) publication and distribution of the software registration announcements; (5) setting up, classifying and storing the software registration files; (6) providing the public with facilities for reading the registrations; (7) attending to public inquiries; and (8) completion of other tasks related to the registration work which are entrusted to the Center by the Ministry of M & E.[87]

Article 25 of the Regulations stipulates that "the specific administrative procedures and schedule of charges for software registration shall be published by the organ for software registration and administration."[88] The Ministry formulated and published Procedures for the Registration of Copyright in Computer Software on April 6, 1992. The Ministry of M & E and the Software Registration Center of China, as organs of the State Council are responsible for implementation of the Regulations and the Procedures for the Registration of Copyright in Software.[89]

The Regulations require that a registration application be filed with "the organ for software registration and administration" namely, the Software Registration Center. The Software Registration Center began accepting applications for registration on May 1, 1992. After the application for registration is approved, a registration certificate is granted and an announcement is made to the public by the organ for software registration and administration.[90] The Center is also required to seal the checklists for the source programs deposited for safekeeping.[91]

It may be seen from these provisions that applying for registra-

86. *Id.* art. 39.
87. *Id.* art. 38.
88. Regulations, *supra* note 1, art. 25.
89. *Id.* art. 39; Procedures, *supra* note 38, ¶ 11-706(49).
90. Regulations, *supra* note 1, art. 23.
91. *Id.* art. 14. Removal of this seal requires the applicant's consent or a court decision.

tion is a voluntary act on the part of software owner and not a prerequisite for obtaining a copyright. However, the software must be made public before or at the same time as it is registered. A piece of software not intended to be made public cannot be registered.

The owner of the software enjoys the copyright, whether or not the software is registered. The applicant may be the software copyright owner, successor to the original owner, or an assignee.[92] Where the assignment of the rights is to be put on record, an assignment contract authenticated according to law and the original certificate of registration should be submitted. Where the rights are assigned to a foreigner, the document of approval issued by the relevant responsible department of the State Council must be submitted.[93]

When registering a software for which one of the copyright owners is a foreigner, the application is to be handled in accordance with "the relevant provisions of international conventions acceded to by the country to which he belongs and by China or in bilateral agreements concluded between the country he belongs to and China." If the relevant provisions do not require a registration process, the formalities may be dispensed with. However, if an application for registration is filed voluntarily, these Procedures apply.[94]

In January 1992, China and the United States signed a memorandum of understanding on the mutual protection of each other's intellectual property including software copyright. In July 1992, China approved a proposal to accede to the Berne Convention for the Protection of Literary and Artistic Works and the Universal Copyright Convention in cooperation with other countries to provide copyright protection in member countries.

If certain provisions in the agreements are signed, or if international copyright conventions commonly acceded to by the Chinese and foreign governments differ from the provisions in the Regulations on Computer Software Copyright Protection of China, the compliance will be based on the provisions in the international agreements signed or conventions acceded. The only exception to this is where the Chinese government has stated its reservations.

In order to be eligible for registration, the software must have been "made public" after the promulgation of the Computer Software Regulations.[95] Software which has not entered the public

92. Procedures, *supra* note 38, ¶ 11-706(4).
93. *Id.* ¶ 11-706(18).
94. *Id.* ¶ 11-706(5).
95. *Id.* ¶ 11-706(2).

domain may be registered, as long as it registration is completed within one year after the Procedures take effect.[96]

Under the Regulations, to apply for registration, the software copyright owner should submit a completed software copyright registration form, and a "written appraisal."[97] Furthermore, an application for software copyright registration is limited to one piece of software which has been made public independently and is capable of independent operation.[98] The application will not be accepted if it does not comply with the application procedures and/or if there are missing application materials.[99]

When registering co-developed software, the co-owners may, through consultation, decide on one of the copyright owners as their representative.[100] If the various copyright owners fail to reach unanimity through consultation, each copyright owner has the right to apply for registration on the premise that the interests of the other copyright owners will not be damaged, and the names of the other copyright owners are to be listed in the registration documents.[101]

The Procedures include detailed requirements regarding the application.[102] The principal certifying documents that should be submitted for copyright registration include: (1) a legal personal certificate of identity; (2) a written agreement on the attribution of the copyright if applicable; (3) consent or authorization of the copyright owner or owners, in the case of revised or integrated software developed based on the software of others; and (4) a certifying document of the succession to or assignment of the rights, in the case where a successor or assignee of rights applies for registration.[103] A letter of consent or a power of attorney should be submitted as well. Where the rights are assigned to a foreigner, the document of approval issued by the relevant responsible department of the State Council should be submitted.[104]

The written appraisal should demonstrate that the software was independently developed, contain a program appraisal, and a

96. *Id.*
97. Regulations, *supra* note 1, art. 25.
98. Procedures, *supra* note 38, ¶ 11-706(7).
99. *Id.* ¶¶ 11-706(25)-(27).
100. *Id.* ¶ 11-706(8).
101. *Id.*
102. *Id.* ¶ 11-706(9).
103. Procedures, *supra* note 38, ¶ 11-706(10).
104. *Id.* ¶ 11-706(18).

program description for identification of the software.[105] The program description appraisal "should be the appraisal of at least one software description."[106]

A registration certificate granted by the "organ for software registration and administration" is the initial certification of the copyright validity for a piece of software, and may be the verification and proof of the facts stated in the application document for registration.[107] A registered software copyright may be cancelled when there is a final judicial judgment, or if the principal information provided in the application for registration is confirmed to be untrue.[108]

Under the Regulations, registration of the copyrighted software with the Software Registration Center is the basis for submission of a request for administrative intervention or instituting legal proceedings to resolve disputes. The Procedures further state that where software rights are transferred, the following parties should report the transfer to the Software Registration Center for recordation in order to permit the countering of infringing activities conducted by third parties:[109]

> (1) the successor to the rights referred to in Articles 16 and 17 of the Regulations;
>
> (2) the assignee of the rights referred to in Article 27 of the Regulations; and
>
> (3) the licensor or the transferring party of the right referred to in Article 28 of the Regulations.[110]

Any party may file an opposition with the Software Registration Center against software for which the principal information provided at registration was untrue and/or the software is not in conformity with the provisions of the Regulations and Procedures. The opponent should submit, in duplicate, a request for opposition and a relevant certifying document.[111] Where an opposition is held to be tenable after examination, the Ministry of M & E will cancel the registration, notify the opponent and the software registrant in writing, and make an announcement regarding the cancellation. If the opposition is found to be untenable, it is rejected.[112]

105. *Id.* ¶ 11-706(11).
106. *Id.* ¶ 11-706(13).
107. Regulations, *supra* note 1, art. 24.
108. *Id.* art. 26.
109. Procedures, *supra* note 38, ¶ 11-706(16).
110. *Id.*
111. *Id.* ¶ 11-706(28).
112. *Id.* ¶ 11-706(31).

In conformity with article 26,[113] the Ministry of M & E can cancel the registration on the basis of the "relevant documents" and request that the software registrant return the original registration certificate.[114] However, it is unclear what comprises the "relevant documents."

Where a party is opposed to the rejection of a registration application, or if the registration for a piece of software is cancelled because an opposition is found to be tenable, the aggrieved party may petition the Software Registration Reexamination Board. The Board was set up by the Ministry of M & E for the purpose of reexamining registration applications.[115] Thus, it is composed of personnel conversant with the law, or software technology. The petitioner should submit, in duplicate, a request for reexamination and all relevant certifying documents.[116] This request should be submitted within 60 days after receipt of the relevant notification regarding the rejection or cancellation of a registration application.

VI. SUMMARY

Although the level of development of China's software industry was taken into consideration in the formulation of the Computer Software Protection Regulations, China's software industry is still evolving. For a variety of reasons, there is little sophisticated commercial software currently produced in China, even though China has fairly good software scientists, technicians and programmers.

However, the sale of computers in China is rapidly growing with sales of computers greater than 100,000 computers/year. This will undoubtedly stimulate a parallel call for the rapid development of commercial software. The Regulations "must be capable of encouraging a larger number of pieces of software as commodities to be developed faster which will meet the needs of users, and normal channels of their circulation to be formed as soon as possible."[117] While the Chinese government desires to provide protection for computer software against copyright infringement, it does not want the protection to be a strict tool which will hurt the economic development of the country.

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113. Regulations, *supra* note 1, art. 26. The registration of the copyright of a piece of software may be cancelled based on a final judicial judgment or if the principal information provided in the registration application is confirmed to be untrue.

114. Procedures, *supra* note 38, ¶ 11-706(32).

115. *Id.* ¶ 11-706(33).

116. *Id.* ¶ 11-706(34).

117. Ying Ming, *China's Regulations on Computer Software Protection*, CHINA PATENTS & TRADEMARKS, No. 4, 1991, at 86.

Another indication of the legislative intent is represented by the prohibition against copying and plagarizing of the results of other people's software development, and provisions which safeguard the reasonable rights and interests of software developers. In addition to the breadth of protection provided to software, the depth of the protection should also be controlled appropriately. For example, it is inadvisable to impose excessive restrictions on the legitimate development and circulation of software, in order to prevent the situation where those working in the software industry continuously live in fear of being held liable for violating the Regulations on protection at every turn.[118]

In conclusion, China may not currently protect computer software as effectively as many industrial countries. Nonetheless, despite their shortcomings, the Regulations have helped to advance China's intellectual property law. It is likely that these Regulations will continue to play an significant role in the continued development of this important body of law.

118. *Id.*

APPENDIX

REGULATIONS ON COMPUTER SOFTWARE PROTECTION OF THE PEOPLE'S REPUBLIC OF CHINA

(Promulgated by the State Council, effective as of October 1, 1991)

Chapter I

General Provisions

ARTICLE 1 These Regulations are formulated in accordance with the provision of the Copyright Law of the People's Republic of China with a view to protecting the rights and interests of copyright owners of computer software, regulating the interests generated in the development, dissemination and use of computer software, encouraging the development and circulation of computer software and promoting the application of computers.

ARTICLE 2 Computer software (hereinafter referred to as software for short) as mentioned in these Regulations refers to computer programs and their relevant documentation.

ARTICLE 3 The meaning of the following terms in these Regulations are as follows:

(1) A computer program refers to a coded instruction sequence which may be executed by devices with information processing capabilities such as computers, or a symbolic instruction sequence or symbolic statement sequence which may be automatically converted into a coded instruction sequence for the purpose of obtaining certain expected results.

Computer programs include source programs and object programs. The source text and object text of the same program shall be deemed to be one and the same copyright piece.

(2) Documentation refers to literal descriptions and charts compiled and written in natural language or formal languages and used to describe the content, structure, design, functional performance, historical development, text results and usage, such as program design instructions, flowcharts, and users' manuals.

(3) Software developers refer to legal persons or non-legal person entities (hereinafter referred to as entities) actually organizing and carrying out development work, providing working facilities for accomplishing software development, and assuming responsibility for the software, and citizens accomplishing software development

by relying on their own facilities and assuming responsibility for the pieces of software.

(4) Software copyright owners refer to entities and citizens enjoying the copyright of software in accordance with the provision of these Regulations.

(5) Copying refers to acts of transferring software onto physical objects.

ARTICLE 4 Protection for software as mentioned in these Regulations refers to the enjoyment by a copyright owner a piece of software or his assignee of the various rights under software copyright prescribed by these Regulations.

ARTICLE 5 Software being protected under these Regulations must be developed independently by the developers and borne by physical objects.

ARTICLE 6 In respect of a piece of software developed by a Chinese citizen or entity, regardless of whether or where the said software has been made public, he or it shall enjoy the copyright in accordance with these Regulations.

Where a piece of software developed by a foreigner is first made public in China, he shall enjoy the copyright in accordance with these Regulations.

The copyright of the software of a foreigner made public outside China shall be protected by these Regulations in accordance with agreements concluded between his country and China or with international conventions acceded to by his country and China.

ARTICLE 7 The protection of software under these Regulations cannot be extended to cover the ideas, concepts, discoveries, theories, algorithms, processing and operating methods used in software development.

ARTICLE 8 The organ for software registration and administration authorized by the State Council shall be in charge of software registration throughout the country.

Chapter II

Copyright of Computer Software

ARTICLE 9 A software copyright owner shall enjoy the following rights:

(1) The right of making public, i.e., the right to decide whether to make the software available to the public;

(2) The right of the developer's authorship, i.e., the right to

make known his identity as developer and the right to have his name indicated on his piece of software;

(3) The right of exploitation, i.e., the right to exploit his software in such manners as copying, display, distribution, revision, translation, and annotation on the premise that the public interest is not damaged;

(4) The right of authorization for use and the right of being remunerated, i.e., the right to authorize others to use his piece of software in some or all of the manners stipulated in (3) of this article and to receive remuneration therefor;

(5) The right of assignment, i.e., the right to assign to others the right of exploitation and the right authorization for use as stipulated in (3) and (4) of this article.

ARTICLE 10 The copyright of a piece of software shall be owned by the software developer. Where there are special provisions in these Regulations, the provisions shall apply.

ARTICLE 11 In respect of a piece of software developed by two or more entities or citizens in cooperation, the copyright of the software shall be jointly owned by the developers who have cooperated in its development.

The software copyright owned by the cooperating developers shall be exercised according to a written agreement concluded in advance. Where there is no written agreement while the software developed in cooperation may be partitioned and used, the developers may separately enjoy the copyright to the respective portions developed by them, but the exercise of such copyright may not be extended to the copyright of the jointly developed software as a whole. Where the piece of software developed in cooperation cannot be partitioned and used, the copyright shall be exercised by the cooperating developers after reaching unanimity through consultation. Where unanimity cannot be reached through consultation, nor is there any justified reason, none of the parties shall prevent the other party or parties from exercising the rights other than the right of assignment, but the proceeds shall be distributed reasonably to all cooperating parties.

ARTICLE 12 The attribution of the copyright of a piece of software developed on commission shall be stipulated by the conclusion of a written agreement between the commissioning party and the commissioned party. Where there is no written agreement, nor is an explicit stipulation made in the agreement, the copyright shall be attributed to the commissioned party.

ARTICLE 13 The attribution of the copyright of a piece of

software developed in fulfilling a task assigned by a higher entity or government department shall be stipulated by a letter of work assignment or contract. Where no explicit stipulation is made in the letter of work assignment or contract, the copyright of the piece of software shall be attributed to the entity accepting the assignment.

The relevant departments under the State Council and the People's Government of the various provinces, autonomous regions and municipalities have the right to decide, in respect of software which is developed by entities under ownership of the whole people within their respective sectors or under their jurisdiction and which is of great significance to national interests and public interests, to allow such pieces of software to be exploited by designated entities, and the exploiting entities shall pay exploitation fees to the developing entities in accordance with the relevant enactments of the State.

ARTICLE 14 In respect of a piece of software developed by a citizen while working in an entity, where such a piece of software is a result of performing his assigned duty, i.e., where it is developed in accordance with a development objective explicitly assigned in the line of duty, or a foreseen result or natural result of his carrying out activities in the line of duty, the copyright of the software shall be attributed to the entity.

Where a piece of software developed by a citizen is not a result of performing his duty, and is not directly related to the content of the work engaged in by the developer in the entity, nor have the material and technical facilities of the entity been utilized, the copyright of the software shall be attributed to the entity.

ARTICLE 15 The duration of protection for the copyright of a piece of software shall be twenty-five years, ending on the 31st day of December of the twenty-fifth year after the software is first made public. Before the expiration of the duration of protection, the software copyright owner may apply to the organ for software registration and administration for an extension of twenty-five years, but the total duration of protection shall not exceed fifty years at the longest.

The duration of protection for the right of the developer's authorship of the software shall be unlimited.

ARTICLE 16 Within the duration for protection for the copyright of a piece of software, the successor to the software copyright shall be entitled to the rights stipulated in Items (3) and (4) of Article 9 of these Regulations in accordance with the relevant provisions of the Law of Succession of the People's Republic of China.

The occurrence of succession shall not change the duration of protection for the rights pertaining to the software.

ARTICLE 17 After the occurrence of a change of the entity owning the copyright of a piece of software within the duration of protection for the copyright of that piece of software, the various rights pertaining to that piece of software shall be owned by the lawful succeeding entity.

Where there is a change of the entity owning the copyright of a piece of software, the duration of protection for the rights pertaining to that piece of software shall not change.

ARTICLE 18 Within the duration of protection for the copyright of a piece of software, the copyright owner of the piece of software or his assignee has the right to authorize others to exercise the right of exploitation stipulated in Item (3) of Article 9 of these Regulation. In authorizing others to exercise the right of exploitation, the copyright owner or his assignee may charge fees according to an agreement.

The licensing of software rights should be conducted in the manner of concluding an executing a written contract in accordance with the relevant laws and regulation of the People's Republic of China. The license should exercise the right of exploitation by adhering to the manner, conditions, scope and duration stipulated in the contract.

The period of validity of a licensing contract shall not exceed ten years each time. A contract may be renewed on expiration.

Where the licensed rights pertaining to the software are not explicitly stipulated in the contract as exclusive, they should be deemed as non-exclusive.

The occurrence of the above-mentioned licensing activities shall not change the attribution of the copyright of the software.

ARTICLE 19 Within the duration of protection for a piece of software, the owner of the right of exploitation and the right of authorization for use stipulated in Items (3) and (4) of Article 9 of these Regulations may assign to others the right of exploitation and the right of authorization for use.

The assignment of rights pertaining to a piece of software should be conducted in the manner of concluding and executing a written contract according to the relevant laws and regulations of the People's Republic of China.

The occurrence of assignment activities shall not change the duration of protection for the copyright of the piece of software.

ARTICLE 20 After the duration of protection for the copy-

right of a piece of software expires, the rights, other than the right of the developer's authorship, pertaining to the software shall be terminated.

In one of the following events, the various rights, other than the rights of the developer's authorship, pertaining to a piece of software shall enter the public domain before the expiration of the duration of protection:

(1) the entity owning the copyright of the software having been dissolved and there having been no lawful successor;

(2) the citizen owning the copyright of the software being dead and there having been no lawful successor.

ARTICLE 21 Entities or citizens lawfully holding copies of a piece of software shall enjoy the following rights without the consent of the copyright owner of the software:

(1) to install and store the piece of software on a computer according to its/his need and for the purpose of using it.

(2) to make backup copies for filing. However, such backup copies shall not be supplied in any way to others for their use. Once the holders lose the right to hold the software lawfully, all the said backup copies must be destroyed.

(3) to make necessary revision in the piece of software in order to implement it in an actual environment of computer application, or to improve its function and performance. However, except otherwise agreed, the holder shall not supply the revised version to any third party without the consent of the copyright owner of the software or his lawful assignee.

ARTICLE 22 A piece of software may be copied in small quantities to serve such non-commercial purposes as education, scientific research, or government business without the consent of, or remuneration to, the copyright owner of the software or his lawful assignee. However, in exploiting the software in such a manner, the title and developer of the piece of software should be made known, and the various other rights enjoyed by the copyright owner or his lawful assignee in accordance with these Regulations must not be infringed. The copies should be properly stored, redeemed or destroyed after use and must not be used for other purposes or supplied to others.

Chapter III

The Registration and Administration of Computer Software

ARTICLE 23 In respect of a piece of software being made

public after the issuance of these Regulations, an application for its registration may be filed with the organ for software registration and administration. After the application for registration is approved, a registration certificate shall be granted and an announcement shall be made to the public by the organ for software registration and administration.

ARTICLE 24 The registration of the copyright of a piece of software with the organ for software registration and administration is the premise to submitting a request for the administrative intervention in, or to instituting legal proceedings for, a software dispute. A registration certificate granted by the organ for software registration and administration is the initial certification of the validity of the copyright of a piece of software or of the verification and proof of the facts stated in the application document for registration.

ARTICLE 25 In applying for registration, the copyright owner of the piece of software should submit:

(1) a software copyright registration form to be filed in as prescribed;

(2) a written appraisal of the piece of software conforming to the prescribed rules;

The copyright owner of the software should also pay a registration fee as prescribed.

The specific administrative procedures and schedule of charges for software registration shall be published by the organ for software registration and administration.

ARTICLE 26 The registration of the copyright of a piece of software may be cancelled in one of the following events:

(1) in accordance with a final judicial judgement;

(2) the principal information provided in the application for registration having been confirmed to be untrue.

ARTICLE 27 In respect of a piece of software already registered, where the software rights are assigned, the assignee should report the transaction to the organ for software registration and administration for the record within three months of the official signing of the assignment contract, other wise the assignee will not be able to counter the infringing activities of a third party.

ARTICLE 28 Where a Chinese software copyright owner licenses or transfers to a foreigner the rights of a piece of software developed in China, the copyright owner shall report the transaction to the relevant department under the State Council for ap-

proval, and to the organ for software registration and administration for the record.

ARTICLE 29 Personnel engaging in software registration and those who have worked in this capacity shall not make use of or divulge to others, within the duration of protection for the copyright of the software, the filed material and related information that applicants submit on registration except for the purpose of performing the duties of registration and administration.

Chapter IV

Legal Liabilities

ARTICLE 30 Where any of the following acts of infringement occurs, the infringer should, according to circumstances, bear such civil liabilities as stopping the infringement, eliminating the adverse effects, making a public apology and compensating for the damages, and the administrative authorities of the State for software copyright may inflict administrative sanctions on the infringer such as confiscating the unlawful income and imposing a fine:

(1) to make a piece of software public without the consent of the copyright owner of the software;

(2) to make public as one's own work a piece of software developed by others;

(3) to make public as a work completed on one's own, a piece of software developed in cooperation with others without the consent of the cooperators;

(4) to have one's own name indicated on a piece of software developed by others or to obliterate the name indicated on a piece of software developed by others;

(5) to alter, translate or annotate a piece of software without the consent of the copyright owner of the software or its lawful assignee;

(6) to copy, or copy in part, a piece of software without the consent of the copyright owner of the software or its lawful assignee;

(7) to distribute or disclose to the public a copy of a piece of software without the consent of the copyright owner of the software or its lawful assignee;

(8) to conduct business concerning the licensing or transfer of a piece of software to any third party without the consent of the copyright owner of the software or its lawful assignee.

ARTICLE 31 Similarity between a piece of software developed

by oneself and an existing piece of software caused by one of the following events shall not constitute infringement on the copyright of the existing piece of software:

(1) where it is necessary to implement the relevant policies, laws, regulations and rules of the State;

(2) where it is necessary to implement the technical standards of the State;

(3) where there is a limited number of available options in the forms of presentation.

ARTICLE 32 Where the holder of a piece of software has no knowledge of, or has no reasonable basis for having knowledge of, the piece of software being an infringing object, the liability for infringement shall be borne by the supplier of the infringing piece of software. However, where the rights and interests of the copyright owner of the software will not be sufficiently protected without that piece of software held by the holder being destroyed, the holder has the obligation to destroy the piece of software it holds, and the holder may demand compensation from the supplier of the infringing piece of software for the losses the holder suffers in this connection.

The term "supplier of an infringing piece of software" mentioned in the preceding section covers one who supplies an infringing piece of software to others fully knowing that it is an infringing piece of software.

ARTICLE 33 Where an interested party fails to perform the obligations in a contract or fails to perform the obligations in a contract in conformity with the conditions stipulated, it should be civil liabilities according to the relevant provisions of the General Principles of the Civil Law.

ARTICLE 34 An infringement dispute over software copyright may be settled through mediation. Where mediation fails or where one of the parties changes its mind after an agreement has been concluded through mediation, proceedings may be instituted in the People's Court. Proceedings may also be instituted directly in the People's Court where the parties do not wish to settle the dispute through mediation.

ARTICLE 35 A contract dispute over software copyright may be settled through mediation, or the parties may apply to the software copyright arbitration organ of the State for arbitration in accordance with the arbitration clause in the contract or a written arbitration agreement subsequently concluded.

The parties should execute the arbitral award. Where one

party fails to execute the arbitral award, the other party may apply to the People's Court for execution.

Where the People's Court which is applied to finds the arbitral award illegal, it has the right not to execute the award. Where the award is not executed by the People's Court, a party may institute proceedings in the People's Court in respect of the contractual dispute.

Where the parties have not inserted an arbitration clause in the contract, nor have they concluded subsequently a written agreement, either of the parties may directly institute proceedings in the People's Court.

ARTICLE 36 Where a party is not satisfied with the administrative sanction imposed by the administrative authority of the State for software copyright affairs, it may institute proceedings in the People's Court within three months from the date of receipt of the relevant notification. Where the said party neither executes the decision on sanction nor institutes proceedings in the People's Court within the time limit, the administrative authority of the State for software copyright may apply to the People's Court for compulsory execution.

ARTICLE 37 Where a staff member of the organ for software registration and administration contravenes the provision of Article 29 of these Regulations, administrative sanctions shall be imposed on him by the organ for software registration and administration or a superior department in charge; where the circumstances are so serious as to constitute an offence, he shall be prosecuted for his criminal liability by the judicial organs according to law.

Chapter V

Supplementary Provisions

ARTICLE 38 Acts of infringement which occur before these Regulations come into effect shall be dealt with in accordance with the relevant enactments in effect when the said acts of infringement occur.

ARTICLE 39 The administrative authority in charge of software copyright affairs as well as software registration and administration under the State Council shall be responsible for interpreting these Regulations.

ARTICLE 40 These Regulations shall come into effect as of October 1, 1991.

PATENTING COMPUTER PROGRAMS: PRAGMATIC ASPECTS

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I. INTRODUCTION

In 1992, the Patent and Trademark Office (PTO) granted a total of 487 patents which contained the terms "software" or "computer program" in either the patent title or the patent abstract.[1] While a computer program (program) is clearly an important subject for patents, there remain uncertainties regarding the patentability criteria of claims involving programs. This article illustrates the statutory subject matter requirements for PTO allowance of a claim implementing a program.

A patent may be obtained for "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof . . . . " [2] Subject matter not meeting this definition is nonstatutory and thus not eligible for patent protection.[3] Since a program is not a process, machine or manufacture in the conventional patent sense, it is not always clear under which conditions a program meets the statutory subject matter requirement. Judicial decisions during the past twenty years have resolved many of the issues, particularly those involving mathematical algorithms,[4] methods of doing business[5] and the mental steps doctrine.[6] However, there remains uncertainty, as illustrated by the 1989 reversal by the Federal Circuit of a PTO rejection of a claim including

1. The results of the author's keyword search using the PTO's computerized patent search system is described *infra*, Part V, at B.

2. 35 U.S.C. § 101 (1988).

3. *See* Diamond v. Diehr, 450 U.S. 175, 182 (1981).

4. A mathematical algorithm per se is not patentable because it is nonstatutory subject matter. *In re* Grams, 888 F.2d 835, 837 (Fed. Cir. 1989).

5. A method of doing business per se is nonstatutory subject matter, while "a method of operation on a computer to effectuate a business activity" is statutory subject matter. Paine, Webber, Jackson & Curtis, Inc. v. Merrill Lynch, Pierce, Fenner & Smith, Inc., 564 F. Supp. 1358, 1369 (D. Del. 1989).

6. Mental steps requiring computer implementation are statutory subject matter. *In re* Bernhardt, 417 F.2d 1395, 1401 (C.C.P.A. 1969).

a mathematical algorithm program.[7] The reversal has resulted in a split between the Federal Circuit and the PTO regarding the use of the specification to limit the scope of a "means-plus-function" claim involving a program.[8]

The emphasis in this article is on (1) understanding the PTO classification system as used for programs; (2) analyzing what makes a program claim allowable; (3) developing guidance to assist in drafting program claims; and (4) determining program patentability certainties and uncertainties.

II. PATENT PROTECTION

A. *Patents in General*

The U.S. Constitution provides for patent rights in Article I, section 8, clause 8: "The Congress shall have Power To . . . ; promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries."

In 1952, Congress enacted the Patent Act which is codified in title 35 of the U.S. Code. This Act grants the inventor "for the term of seventeen years, . . . the right to exclude others from making, using, or selling the invention."[9] The Commissioner of Patents and Trademarks is charged with "all duties required by law respecting the granting and issuing of patents."[10] Patent regulations are contained in title 37, Part I of the Code of Federal Regulations. PTO procedures for the examination of patent applications are detailed in the Manual of Patent Examining Procedure (MPEP). In order to obtain patent protection, the applicant must submit a patent application which fully discloses and claims the invention.[11] To be patentable, the invention must meet the utility and subject matter requirements,[12] be novel,[13] and be non-obvious.[14]

B. *Patentability Problems Involving Programs*

The utility, novelty and non-obviousness requirements are all troublesome for patent applications relating to programs. The U.S.

7. *See infra* Part IV, at D.
8. *Id.*
9. 35 U.S.C. § 154 (1988).
10. 35 U.S.C. § 6(a) (1988).
11. 35 U.S.C. § 112 (1988).
12. 35 U.S.C. § 101 (1988).
13. 35 U.S.C. § 102 (1988).
14. 35 U.S.C. § 103 (1988).

Office of Technology Assessment has concluded that the lack of availability of prior art and the use of secrecy to protect commercially available computer programs make it difficult to determine if an application meets the novelty and non-obviousness standards.[15]

The most difficult issue for program patentability concerns the utility requirement under title 35, section 101 of the U.S. Code, in which subject matter may be patented only if it is one of the enumerated statutory classes of "process, machine, manufacture, or composition of matter."[16] Any claim which consists of nonstatutory subject matter is unpatentable. A program is eligible for patent protection under section 101 as a process.[17] However, the courts have found certain types of programs to be statutory while others have been nonstatutory. Some programs appear to be in the uncertain "gray area" between statutory and nonstatutory. The uncertainty continues to be a topic of study and debate.[18]

III. CLAIM REJECTION AND THE APPEALS PROCESS

A patent is granted only if the patent application is allowed by the examiner, or the examiner's rejection is reversed at one of the subsequent levels of appeal. Following a rejection, the applicant has the option to pursue appeals in the following sequence:[19]

(i) appeal to the PTO Board of Patent Appeals and Interferences (Board);[20]
(ii) request reconsideration by the Board;[21]
(iii) appeal to the Federal Circuit,[22] or file a civil action in the U.S. District Court for the District of Columbia,[23] followed by an appeal to the Federal Circuit;

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15. Mark F. Radcliffe, *The Future of Computer Law: Ten Challenges for the Next Decade*, The Computer Lawyer, Aug. 1991, at 5 (citing OFFICE OF TECHNOLOGY ASSESSMENT, COMPUTER SOFTWARE AND INTELLECTUAL PROPERTY BACKGROUND PAPER 17, at 19 (1990)).

16. Kewanee Oil Co. v. Bicron Corp., 416 U.S. 470, 483 (1974).

17. Diamond v. Diehr, 450 U.S. 175, 182 (1981); Gottschalk v. Benson, 409 U.S. 63, 64 (1972).

18. 1 RICHARD L. BERNACCHI, ET AL., BERNACCHI ON COMPUTER LAW §§ 3.7.1-.7.2 (Nov. 1992); 1 DONALD S. CHISUM, PATENTS § 1.03[6] (1993); 3 ERNEST B. LIPSCOMB III, WALKER ON PATENTS § 11:13 (2d ed. 1985 & Supp. Oct. 1992); Richard H. Stern, *Tales from the Algorithm War: Benson to Iwahashi*, 18 AIPLA Q.J. 371 (1991); Michael P. Fleming, *Patentability of Claims Involving Mathematical Algorithms and Computer Programs: An Examiner's Perspective* (Nov. 15, 1991) (unpublished manuscript, on file with the *Santa Clara Computer and High Technology Journal*).

19. 4 PATENT PRACTICE 15-48 (PRI 1989).

20. 37 CFR § 1.191(a) (1992).

21. 37 CFR § 1.197(b) (1992).

22. 35 U.S.C. § 141 (1988).

23. 35 U.S.C. § 145 (1988).

(iv) file a writ of certiorari;[24] and
(v) appear before the U.S. Supreme Court.

The prosecution histories of five important program patents which were allowed following appeals to the Federal Circuit or its predecessor court, the Court of Customs and Patent Appeals (C.C.P.A.), revealed that the appeals process causes a delay of several years in the issuance of a patent.[25] Currently, the delay due to appeals in cases involving computer program technology, following rejection by the examiner, is estimated at several years.[26] In fast changing technologies such as computer programs, the long delay makes the appeals route unattractive to many inventors and assignees. While the delay effectively adds time to the seventeen year term of patent protection, it has the serious disadvantage of adding uncertainty as to whether a patent will ultimately be granted and increasing the cost of obtaining a patent. It is thus vitally important to obtain patent allowance by the examiner. The split between the PTO and the Federal Circuit regarding the interpretation of claim scope in certain "means-plus-function" types of claims[27] also increases the desirability of obtaining patent allowance from the examiner rather than resorting to an appeal.

IV. PTO CRITERIA FOR ALLOWANCE OF PROGRAM CLAIMS

The PTO has published procedures, policies and guidelines concerning allowable computer program subject matter.[28] The guidelines are based on a detailed interpretation of all significant court decisions relating to the statutory subject matter of computer programs and algorithms, ending with *In re Iwahashi*.[29] A recent paper by a PTO Supervisory Patent Examiner is entirely consistent with the published PTO guidelines.[30]

A summary of the PTO guidelines follows.

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24. 28 U.S.C. § 2101 (1992).

25. *See* Appendix.

26. Letter from Ronald L. Yin, Patent Attorney, Limbach & Limbach, to Albert J. Dalhuisen (Apr. 29, 1992) (on file with the *Santa Clara Computer and High Technology Law Journal*).

27. *See infra* Part IV, at D.

28. PATENT AND TRADEMARK OFFICE, U.S. DEP'T OF COMMERCE, MANUAL OF PATENT EXAMINING PROCEDURE §§ 2106-2106.02 (5th ed. rev. Oct. 1989) [hereinafter MPEP]; James E. Denny, *Notice Interpreting In Re Iwahashi*, 1112 Off. Gaz. Pat. Office 16-17 (Mar. 13, 1990); Fred E. McKelvey, *Patentable Subject Matter*, 1106 Off. Gaz. Pat. Office 5-12 (Sept. 5, 1989).

29. 888 F.2d 1370 (Fed. Cir. 1989).

30. Fleming, *supra* note 18.

A. *Definitions*

- Computer programs, computer processes and software are equivalent, referring to "both the series of steps performed by a computer, and the software directing those steps."[31]
- A mathematical algorithm is distinguished from an algorithm. A mathematical algorithm is "a procedure for solving a given type of mathematical problem."[32] An algorithm is "a step-by-step procedure to arrive at a given result."[33]
- "No distinction is made between mathematical algorithms invented by man, and mathematical algorithms representing discoveries of scientific principles and laws of nature which reveal a relationship that has always existed."[34]

B. *Statutory Nature of Computer Programs*

The guidelines strongly infer that the PTO considers computer programs statutory subject matter unless they fall within a judicially determined exception (*e.g.*, mathematical algorithm programs). The PTO has made the following statements concerning programs:

- "[T]he Supreme Court has not ruled on the patentability of computer programs;"[35]
- "[the Court of Customs and Patent Appeals] has held that computer processes are statutory unless they fall within a judicially determined exception;"[36]
- "[t]he major (and perhaps only) exception in the area of computer processes is the mathematical algorithm;"[37]
- "[i]f a computer process claim does not contain a mathematical algorithm in the Benson sense, the second step of the *Freeman-Walter-Abele* test[38] is not reached and the claimed subject matter will usually be statutory;"[39]
- "[t]he C.C.P.A. [has] . . . held that a computer algorithm, as opposed to a mathematical algorithm, is patentable subject mat-

31. McKelvey, *supra* note 28, at 11-12 (citing Gottschalk v. Benson, 409 U.S. 63, 65 (1972)).

32. McKelvey, *supra* note 28, at 6 (citing Diamond v. Diehr, 450 U.S. 175, 186 (1981); Parker v. Flook, 437 U.S. 584, 585 n.1 (1978); and Gottschalk v. Benson, 409 U.S. 63, 65 (1972)).

33. McKelvey, *supra* note 28.

34. *Id.* at 6.

35. *Id.* at 11.

36. *Id.*

37. *Id.*

38. Also note explanation *infra* Part IV, section C.

39. McKelvey, *supra* note 28, at 11.

ter;"[40] and

- "laws of nature, physical phenomena and abstract ideas" are considered nonstatutory subject matter.[41] "Mathematical algorithms are nonstatutory because they have been determined not to fall within the section 101 statutory class of a process."[42] Also, " 'while a method of doing business' per se is non-statutory subject matter, 'a method of operation on a computer to effectuate a business activity' has been held to be statutory subject matter."[43]

C. *Mathematical Algorithms*

Even though a mathematical algorithm per se is unpatentable, it does not necessarily mean that any patent claim containing a mathematical algorithm is therefore unpatentable. Whether or not a claim is eligible for patent protection depends on a determination of the patentability of the claim as a whole.[44] A distinction is drawn between inventions claiming a mathematical algorithm per se, and inventions which claim an application of the algorithm. Claiming a mathematical algorithm is analogous to claiming the application of a law of nature,[45] and as such, is patentable subject matter under section 101.[46] The PTO and the courts use the two-part *Freeman-Walter-Abele* test to ascertain whether a claim containing a mathematical algorithm meets the section 101 requirement for statutory subject matter.[47] The first part of the test determines whether the claim directly or indirectly recites a mathematical algorithm.[48] If it does not, the program will usually be statutory. If it recites a mathematical algorithm, the PTO (and the courts) then employ the second part of the test. In the second part, the claim will pass muster under section 101 only if the mathematical algorithm is applied in any manner to physical elements or process steps.[49] Some examples of algorithm applications which are deemed insufficient to meet the section 101 requirements are: nonessential post solution activity of the program (e.g. printing the result), field of use limitations

40. *Id.*
41. *Id.* at 6 (citing Diamond v. Diehr, 450 U.S. 175, 185 (1981)).
42. *Id.* at 6 (citing Gottschalk v. Benson, 409 U.S. 63, 65 (1972)).
43. *Id.* at 11 (citing Paine, Webber v. Merrill Lynch, 564 F. Supp. 1358, 1369 (D. Del. 1983)).
44. Diamond v. Diehr, 450 U.S. 175, 188 (1981).
45. Parker v. Flook, 437 U.S. 584, 589-90 (1978).
46. *In re* Abele, 684 F.2d 902, 907 (C.C.P.A. 1982).
47. *In re* Abele, 684 F.2d at 905; McKelvey, *supra* note 28, at 6-10.
48. *In re* Abele, 684 F.2d at 905.
49. *Id.*

of the mathematical algorithm, data gathering steps interacting with the algorithm, and physical transformations which are mere manipulations of data. Court decisions provide guidance in judging whether the manner in which a mathematical algorithm is applied results in statutory subject matter.[50] However, predictability regarding allowance of claims reciting a mathematical algorithm remains uncertain because the criteria are not clearly defined.[51]

The first step in the two part test requires a determination as to whether the claim recites a mathematical algorithm. In *Ex parte Logan*,[52] the Board provided the following test for a mathematical algorithm:

> [W]e believe a claim should be considered as reciting a mathematical algorithm only if it essentially recites, directly or indirectly, *a method of computing one or more numbers from a different set of numbers by a series of mathematical equations.* Consequently, a claim which essentially recites another type of method does not recite a mathematical algorithm, even though it incidentally requires, either directly or indirectly, the performance of some mathematical computations.[53]

Logan passed muster under section 101 because the computations are "essentially directed to detecting the occurrence of events . . . by determining when a time-varying respiration signal crosses an adjustable trigger level," rather than "computations to [compute] one or more numbers from a different set of numbers."[54]

D. *Interpretation of* In re Iwahashi

In *In re Iwahashi*,[55] the Federal Circuit reversed the PTO's rejection of a claim reciting a mathematical algorithm. The PTO agreed with the court's decision finding it to be "consistent with precedent and PTO policy"[56] since a read-only memory (ROM) is used in implementing the algorithm.[57] The ROM satisfies the second test of the *Freeman-Walter-Abele* test.[58] As a result, the claim as a whole satisfies the section 101 requirement.[59] This case re-

50. Fleming, *supra* note 18, at AD 9-14.
51. *Id.* at AD 9.
52. 20 U.S.P.Q.2d 1465 (1991).
53. *Id.* at 1468 (emphasis added).
54. *Id.*
55. 888 F.2d 1370 (Fed. Cir. 1989).
56. Denny, *supra* note 28, at 16.
57. *Id.*
58. *Id.*
59. *Id.*

vealed an important split between the Federal Circuit and the PTO regarding claim scope interpretation. The *Iwahashi* court in dicta stated that a "means-plus-function" limitation can be read into the claim from the specification even if this is not recited in the claim.[60] It is the PTO's position that the scope of a claim for a section 101 determination should be interpreted as broadly as possible from the recitation in the claim without reference to the specification.[61] The disagreement between the Federal Circuit and the PTO is likely to add to the uncertainty in predicting whether a claim containing a mathematical algorithm will be allowed under section 101.

E. In re Iwahashi *and* In re Grams *Distinguished*

Both *In re Iwahashi* and *In re Grams*[62] involve a claim reciting a mathematical algorithm. The *Grams* claim was rejected by the Federal Circuit for failure to meet the statutory subject matter requirement.[63] One week later, the same court allowed the *Iwahashi* claim.[64] *Grams* is not mentioned in the PTO guidelines. The PTO position can be inferred from PTO Supervisory Patent Examiner Fleming's paper.[65] In that paper, *Grams* is used as an example of a claim in which the only limitation of the mathematical algorithm is in the data gathering steps.[66] Apart from the text of claim 1, Fleming cites only one sentence from the opinion: "The presence of a physical step in the claim to derive data for the algorithm will not render the claim statutory."[67] The PTO concludes that *Iwahashi* is allowable because the mathematical algorithm is applied to a physical element (the ROM) in the claim. In *Grams*, the physical element is used in the data gathering step to which the mathematical algorithm is applied.[68] Fleming's analysis suggests that the PTO would reject the *Grams* claim for failing to satisfy the second step of the *Freeman-Walter-Abele* test, since the physical element is used only in the data gathering step.

The author considers it significant that Fleming does not cite other important language from *Grams* (*i.e.*, "The specification does not bulge with disclosure on these tests. To the contrary it focuses

60. *In re* Iwahashi, 888 F.2d 1370, 1375 n.1 (Fed. Cir. 1989).
61. Denny, *supra* note 28, at 17.
62. 888 F.2d 835 (Fed. Cir. 1989).
63. *Id.* at 841.
64. *In re* Iwahashi, 888 F.2d at 1375.
65. Fleming, *supra* note 18.
66. *Id.* at AD 11-12 (quoting *Grams*, 888 F.2d at 836-37).
67. *Id.* at AD 12 (quoting *Grams*, 888 F.2d at 840).
68. *In re* Grams, 888 F.2d at 839.

on the algorithm itself, although it briefly refers to, without describing, the clinical tests that provide data."[69]). Since the applicant claimed that "the invention is applicable to any complex system," the court concluded that the mathematical algorithm itself was claimed.[70] The Federal Circuit appears to leave the door open to allow a *Grams* type of claim if the applicant provides copious test data and limits the use of the algorithm to a specific narrow application area, *e.g.*, clinical testing. The PTO, however, would probably not inquire into the adequacy of the data or the limited use, but would reject the claim because the physical element is present only in the data gathering step.

V. PTO CLASSIFICATION SYSTEM

A. *Classification System in General*

The primary purpose of the classification system is to provide for patentability searches by patent examiners.[71] Statutory authority for the classification system is provided in title 35, section 9 of the U.S. Code. Classification is the basic method used to describe a patent's subject matter. It provides one of the most important search tools for the PTO, the inventor and the patent practitioner. The classification system derives much of its utility from the PTO's extensive use of cross-reference classifications. This is particularly true for programs.

The PTO assigns each new patent an original classification and usually one or more cross-reference classifications. The patent's original classification identifies the claimed subject matter on the basis of its industry or use, function, effect or product, or structural features. Cross-reference classifications may identify the patent's other claimed subject matter and may be used to describe unclaimed art or technology which is disclosed but not claimed. Each of the more than three hundred classes is divided into subclasses to narrow the scope of the subject matter. The number of subclasses within a class ranges from a few to hundreds.

B. *Search Techniques*

As a first step in a search, the searcher can locate the main classes of interest through the alphabetical listings of common and technical terms in the *Index to the U.S. Patent Classification Sys-*

69. *Id.* at 840.
70. *Id.*
71. MPEP § 903.02 (rev. Nov. 14, 1992).

tem.[72] Next, the *Manual of Classification* is used to further define the search classes.[73] The manual lists all subclasses for each main class in an ordered arrangement of titles. Once the most likely class/subclasses are identified, the proper field of search is obtained by using the definitions of these classes. The PTO provides extensive information and documentation on the classification system and its use in searching.[74] The PTO Classification and Search Support Information System (CASSIS) is available on CD-ROM for use with a personal computer. CASSIS is essentially a computerized version of the various manual search techniques. It also provides for keyword searches. CASSIS can be used to: (i) define a field of search; (ii) search patents by words in their titles or abstracts; (iii) search and display definitions of all classes and subclasses; (iv) combine keyword searches with class searches; (v) find current classifications of recent patents; (vi) find patents assigned to a company; (vii) search patents by date, status, inventor's residence; (viii) find all patents issued to an inventor; and (ix) display individual chapters of the MPEP.

CASSIS provides options to search and print by patent number, title, classification, date, inventor, assignee and abstract. However, it is limited in the sense that the text of the specification and the claims cannot be searched. Nonetheless, it is a good preliminary screening tool for retrieving most of the relevant patents. One of the most straightforward CASSIS or manual search techniques is a search of the classifications of patents which the searcher knows are relevant to the particular field of search.

C. *Classification of Program Patents*

1. Search Techniques and Database

A patent search was conducted for patents issued from April 3, 1990 through May 27, 1991. The 131,234 patents granted during this period form the database for a keyword search of the abstracts and titles. The April 3, 1990 date was chosen because the PTO's most recent policy regarding patentability of program claims was published on March 13, 1990.[75] Various manual, microfilm and

72. U.S. DEP'T OF COMMERCE, INDEX TO THE U.S. PATENT CLASSIFICATION SYSTEM (Dec. 1992).

73. U.S. DEP'T OF COMMERCE, MANUAL OF CLASSIFICATION.

74. U.S. DEP'T OF COMMERCE, HANDBOOK ON THE USE OF THE U.S. PATENT CLASSIFICATION SYSTEM FOR PATENT DEPOSITORY LIBRARIES (Sept. 1988).

75. Denny, *supra* note 28.

computer-assisted search techniques were used, relying primarily on CASSIS.[76]

2. Keyword Search

Keyword searches of patent abstracts and titles were conducted in order to use the applicant's description of the patent, and to correlate this with the classification issued by the PTO. Classification searches were utilized to determine the examiner's characterization of the claimed invention. The CASSIS keyword search "SOFTWARE" OR "COMPUTER PROGRAM*"[77] produced the desired dragnet effect of identifying patents in a great variety of program contexts. The broad search of the sample period resulted in a total of 596 patents.[78] The results include patents in which the program is the main element of the claimed subject matter as well as those in which the program is not part of the actual invention (*e.g.*, a cardboard package designed for software storage[79]). This particular search is unsuitable for identifying patents in which a program is an element of a claim since the results are both over-inclusive as well as under-inclusive. It is over-inclusive because it includes many patents where a program is not an element of a claim. It is under-inclusive because it does not identify program patents which do not have the word "program" or "software" in either the abstract or the title. A keyword search of abstracts is much more effective when the keywords have a narrow meaning (*e.g.*, "ARTIFICIAL INTELLIGENCE PROGRAM*") or when the keyword search is executed within a specific classification. The PTO and patent practitioners use the terms "SOFTWARE" and "COMPUTER PROGRAMS" synonymously. However, a key-word search for the one term does not identify patents or classifications in which the other term is used. To retrieve all references relating to programs, both terms must be used connected with an "OR" operator. Truncation as "PROGRAM*" is essential to retrieve all references relating to "program," "programs," "programmable," "programmed," or "programming."

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76. The author conducted the research at the Sunnyvale Patent Information Clearinghouse, PTO Patent Depository Library, Sunnyvale, California.

77. The "*" represents a wildcard character.

78. Search of CASSIS, Sunnyvale Patent Information Clearinghouse, Sunnyvale, California (Apr. 2, 1993)(search of BIBLIOGRAPHIC INFORMATION file for records containing "SOFTWARE" or "COMPUTER PROGRAM*" in TITLE OR ABSTRACT field).

79. One-piece, self-locking computer software container, U.S. Patent No. 5,012,930, Hansen, inventor (May 7, 1991).

3. Classification Search

The "SOFTWARE" OR "COMPUTER PROGRAM*" keyword search resulted in patents classified under more than three hundred different class/subclass designations, indicating the use of programs in a wide variety of patented inventions. The great majority of program-related patents are classified under class numbers 364[80] or 395.[81] Class 364/300, which was specifically for "computer programs per se," was abolished in August 1990. Patents which were originally classified under 364/300 are now reclassified under a variety of 364 or 395 subclasses. The classification system is a dynamic system. New classes are formed and existing classes are re-defined to accommodate developments in technology. In recent years there have been several extensive revisions of classifications relating to programs.[82] A classification revision is followed by a reclassification of all patents which are affected by the change.[83] Searchers need to be alert to these changes because the text of a printed patent does not reflect reclassification. Conducting a search in reliance on the classification printed on the patent may lead to the wrong search results. Patent reclassifications are updated in CASSIS and the PTO's classification cross reference system on microfilm.

A computer program may be classified according to its function or its interaction with other components. Examples are as follows:

i. The function of the program: class/subclass No. 395/700[84] definition "system utilities: subject matter under the class definition relating to functions performed by an operating system (*i.e.*,

80. "Class 364, Electrical computers and data processing systems . . . This is the generic class for electrical apparatus and corresponding data processing operations, in which there is a significant change in the data or for performing calculation operations." Class 364, U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 364-1 (June 1992).

81. "Class 395, Information processing system organization . . . This is the generic class for digital processing systems and corresponding methods for performing information processing functions and methods for controlling operations of such processing systems." Class 395, U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 395-1 (Dec. 1991).

82. *E.g.*, class 395 was created from class 364 subclasses 200, 513, 513.8, 518-523 and 900. *Id.* at 395-2.

83. *E.g.*, U.S. Patent 4,924,408, Highland, inventor (May 8, 1990), issued under classification 364/513 and subsequently reclassified under 395/50. U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 395-22 (Dec. 1991).

84. *See, e.g.*, Customization of a system control program in response to initialization of a computer system, U.S. Patent No. 4,979,106, Schneider, inventor (Dec. 18, 1990).

software for controlling computer operation)."[85]

ii. The physical object or procedure with which the program interacts: class/subclass No. 360/60[86] definition "subject matter under subclass 55 including sensing or indicating the existence of an earlier recording on a record carrier and preventing erasure or double exposure of the carrier."[87]

The classification system is capable of identifying a specific type of program, or specific use of a program, if the searcher uses a four stage search:

1. Start with a keyword search of the classification definitions;
2. Conduct patent searches within the classifications which were identified through the definitions search;
3. Select patents which are relevant to the field of search;
4. Search the original classifications of the patents which are selected in the third stage.[88]

The primary focus was on program classifications where the program itself is claimed without interaction with other components in the system, since section 101 problems are most likely to arise in this context. These classifications were identified through a two-stage search. The first stage consisted of a keyword search of the classification definitions to identify all classes in which a program is part of the definition. These classifications were reviewed to select classifications which are most likely to include a program claim per se. That is a claim wherein the program itself is claimed as the embodiment of a particular computer process.[89] Patents issued under classifications defining a program per se were examined to determine which types of program claims are allowed.[90]

VI. ANALYSIS OF PROGRAM PATENTS

A. *Proposed Scheme for Analysis*

The author proposes an analytical technique for examining

85. Class 395, U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 395-22 (Dec. 1991).

86. *See, e.g.*, Software protection and identification system, U.S. Patent No. 4,980,782, Ginkel, inventor (Dec. 25, 1990).

87. Class 360, U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 360-11 (Dec. 1991).

88. Caveat: a search is likely to lead to incomplete or erroneous results if the searcher limits the search to only a few classifications when still in one of the early stages.

89. *E.g.*, the definition of subclass No. 395/600 "Database or file management system: Subject matter under the class definition relating to the addressing, retrieval or manipulation of information contained within the database of a digital processing system." Class 395, U.S. DEP'T OF COMMERCE, PATENT CLASSIFICATION DEFINITIONS, 395-21 - 395-22 (Dec. 1991).

90. *See infra* Part V, at C.

program claims to aid in understanding what is deemed allowable by the PTO. In addition, this technique might be useful for drafting program claims. The scheme is intended to clarify the distinctions between allowable and rejectable program claims under section 101. The following three categories are proposed to define program patents through an analysis of the claims: (i) program-related claim (narrow claim scope); (ii) de facto program claim (intermediate claim scope); and (iii) program per se claim (broad claim scope). An additional separate test is proposed to assess whether the program's subject matter meets the requirements of section 101. In this analysis the claim is considered as a whole, and its scope is defined by the language in the claim without reference to the specification.[91]

1. Program-related Claim

A claim is deemed program-related[92] where the program as claimed is applied in any manner to a nontrivial physical element or process step which itself constitutes statutory subject matter under section 101. The following elements or steps are trivial: (i) nonessential post solution activity; (ii) field of use limitations; (iii) data gathering steps; (iv) a physical step which is a mere manipulation of data; (v) merely labeling the data in the memory; and (vi) rewriting a nonstatutory method claim into apparatus format.[93]

2. De Facto Program Claim

A claim is deemed a de facto program claim[94] where the program as claimed is applied in any manner to a trivial[95] physical element or process step which itself constitutes statutory subject matter.

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91. Defining the scope solely by the language in the claim itself is consistent with PTO guidelines and avoids the conflict between the Federal Circuit and the PTO, *see supra* Part IV at D, while not affecting the Federal Circuit criteria for claim allowance expressed in *In re* Iwahashi, 888 F.2d 1370, 1375 n.1 (Fed. Cir. 1989).

92. Examples of program-related claims: U.S. Patent No. 4,344,142, Diehr, inventor (Aug. 10, 1982) in which the program controls and operates a rubber vulcanization press, and U.S. Patent No. 5,007,101, Iwahashi, et al., inventors (Apr. 9, 1991) in which a mathematical algorithm program is applied to a ROM.

93. As used in the "second step" of the *Freeman-Walter-Abele* test, *see supra* Part IV at D, and as interpreted by Fleming, *supra* note 18.

94. *See, e.g.*, U.S. Patent No. 4,398,249, Pardo, et al., inventors (Aug. 9, 1983) where the claimed program converts a source program into an object program. The trivial steps in the claims are the program's interaction with storage areas of the data processor, and the fact that program execution merely results in data.

95. As defined in "Program-Related Claim", *supra* Part VI, at A.1.

3. Program Per Se Claim

A claim is deemed a program per se claim[96] where the program is not applied to any physical element or process step, and program execution results merely in data or non-essential post solution activity.

4. Program Subject Matter Test

De facto or per se program claims must be analyzed for statutory subject matter. PTO policies and guidelines show that this type of patent claim is unpatentable if it consists of a mathematical algorithm because such a claim fails to meet the *Freeman-Walter-Abele* test. Analysis of the PTO guidelines in total leads to the conclusion that this type of claim is unpatentable if it consists of non-statutory subject matter, not just if it concerns a mathematical algorithm.[97] The following Computer Program Statutory Subject Matter test (CPSSM test), which is consistent with PTO guidelines, is proposed.

Using the CPSSM test, one first determines whether the claim is a program-related, de facto or per se program claim. If the claim is program-related, it is eligible for patent protection under section 101. If the claim is a de facto or per se program claim, it is statu-

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96. *E.g.*,

> A method of converting both a knowledge base and an inferencing technique into compilable program code forming a knowledge based system, said knowledge base including rules on data items, said rules being arranged in a network of nodes and links between such nodes, said nodes representing tests, logical operators, actions and data items, said network being in a form convenient for interpretive inferencing, said method comprising the steps of:
>
> (a) partitioning said network into a plurality of subnetworks;
>
> (b) labelling each node within each respective subnetwork with a unique identifier;
>
> (c) generating a segment of compilable, procedural, program code for inferencing which is equivalent to each respective sub-network when combined with said inferencing technique, said identifiers locating the respective code for each node within each respective sub-network, said inferencing code comprising a node sub-segment that implements the function of each node in said respective sub-network based on the rules specified in said knowledge base and that conditionally invokes other sub-segments using said identifiers, and a control sub-segment which provides access to each node sub-segment using said identifiers and provides for repeated execution of each node sub-segment as necessary; and
>
> (d) generating for each data item a segment of compilable procedural, program code for the distribution of such data item which invokes the appropriate program inferencing code by means of said identifiers when such data item is modified during execution of the knowledge based system.

U.S.Patent No. 4,924,408, Highland, inventor (May 8, 1990), claim no. 1.

97. *See supra* Part IV, at B.

tory subject matter under section 101, unless the claim falls within a judicially determined exception for statutory subject matter.

At present time, a mathematical algorithm and a method of doing business are the only judicially determined exceptions for program claims in connection with statutory subject matter. It is conceivable that future programs might consist of laws of nature, physical phenomena or abstract ideas which are not mathematical expressions. These types of programs would most likely be deemed unpatentable in de facto or per se claims because they consist of nonstatutory subject matter. The program in a program-related claim need not be examined for statutory subject matter since the claim as a whole is deemed statutory due to the physical element or process with which the program is interacting, by analogy with *Iwahashi*,[98] *Diehr*,[99] and PTO guidelines.[100]

B. *Analysis Results*

The most important test categories for the analysis are the de facto and per se program claims. Classifications which were most likely to contain patents with these claims were selected based on the class title and definition.[101] The patents obtained from the CASSIS search[102] were reviewed, and those in the original and cross-referenced classifications (*i.e.*, 364/274.1, 364/474.23, 364/927.82 and 395/700) were selected for further study. A total of 59 patents were selected. These patents were reviewed and subjected to the CPSSM Test. The test results are categorized as follows:

1. program-related claims: 52 patents (including mathematical algorithm patents);
2. de facto program claims: 6 patents;[103] and
3. program per se claims: one patent.[104]

The de facto and per se claims meet the proposed CPSSM Test. The claim in *Grams*,[105] which was rejected by the Federal Circuit and the PTO, is similarly deemed nonstatutory by the test. The

98. *In re* Iwahashi, 888 F.2d 1370 (Fed. Cir. 1989).

99. Diamond v. Diehr, 450 U.S. 175 (1981).

100. McKelvey, *supra* note 28.

101. *See supra* notes 76-86 and accompanying text.

102. *See supra* note 77 and accompanying text.

103. U.S. Patent Nos. 5,028,923, Seki, et al., inventors (July 2, 1991); 4,961,141, Hopkins, et al., inventors (Oct. 2, 1990); 4,939,635, Seki, et al., inventors (July 3, 1990); 4,931,935, Ohira, et al., inventors (June 5, 1990); 4,916,633, Tychonievich, et al., inventors (Apr. 10, 1990); and 4,914,590, Loatman, et al., inventors (Apr. 3, 1990).

104. U.S. Patent No. 4,924,408, Highland, inventor (May 8, 1990), claim no. 1. *See supra* note 96 for the text of claim no. 1 of this patent.

105. *In re* Grams, 888 F.2d 835, 836-37 (Fed. Cir. 1989).

results indicate that this test provides an effective method to determine claim allowance under section 101. The test was not applied to patents issued or rejections appealed prior to April 3, 1990. The proposed CPSSM test uses the same criteria as the *Freeman-Walter-Abele* test but applies them in a different manner. The first inquiry in the CPSSM test is to determine whether the claim is a program-related, de facto or per se program claim. A review of patents in this database showed that the great majority of patents are in the program-related category. There are relatively few cases where it is difficult to draw a distinction between a program-related and a de facto or a per se program claim. If the claim is program-related, it is deemed statutory subject material regardless of the type of computer program (*e.g.*, a mathematical algorithm). Only in a relatively few de facto or per se program claims is it necessary to determine if the program constitutes statutory subject matter. The first inquiry in the *Freeman-Walter-Abele* test is to ascertain whether the program is a mathematical algorithm. It is difficult to judge whether a program is an algorithm or a mathematical algorithm because the courts have not provided a clear distinction. With the CPSSM test, it is only necessary to differentiate between the two types of algorithms in relatively few instances, thus resulting in fewer doubts regarding statutory subject matter.

When used to aid in drafting claims, the CPSSM test assists in developing a claim strategy with an improved likelihood of drafting allowable claims because the three categories have a different claim scope. The claims in a patent can be drafted in accordance with the three categories. The program should be claimed as a per se program claim in the broadest claims in the patent. Claims of intermediate scope would constitute de facto program claims, while program-related claims have the narrowest claim scope by claiming an interaction between the mathematical algorithm and statutory subject matter. This strategy maximizes the possibility that at least the narrowest claims will pass muster under section 101. Overall, the CPSSM test is a more effective test than the *Freeman-Walter-Abele* test although both are based on the same criteria. The CPSSM test is applicable for use with programs which fall into any judicially determined exception for statutory subject matter while the *Freeman-Walter-Abele* test applies only to mathematical algorithms as judicially determined exceptions.

Another potential use of the analytical technique is the development of a "library" of allowed program claims. Information for this library can be developed by analyzing patents in many of the

classifications which use the terms "software" or "computer program" in the class definitions. Once the claims are categorized as program-related, de facto, or per se, they can be indexed by type of claim (product, process, means-for, *etc.*) and type of program. This can be used by the patent practitioner as an effective guide in program claim drafting, and as a basis for responding to section 101 rejections.

VII. CERTAINTIES AND UNCERTAINTIES

Court decisions, PTO policies and a review of recent program patents are summarized below.

A. *Certainties*

1. Computer programs per se are patentable subject matter unless they fall within a judicially determined exception.

2. Judicially determined exceptions for program patents are mathematical algorithms and methods of doing business. Judicially determined exceptions for patentable subject matter in general include ". . . laws of nature, natural phenomena, and abstract ideas"[106] as well as a mathematical formulae.[107]

3. Mathematical algorithm programs per se are nonstatutory subject matter and, thus, unpatentable.

B. *Uncertainties*

1. The Board has provided a test to determine whether a claim recites a mathematical algorithm, as applied in the *Freeman-Walter-Abele* test. It is not certain whether the courts will adopt the same test.

2. There is no clear dividing line between statutory and nonstatutory subject matter for mathematical algorithm program claims.

3. The protective strength of some mathematical algorithm program patents is questionable because others may be able to use the program without infringing the patent.[108]

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106. Diamond v. Diehr, 450 U.S. 175, 185 (1981).

107. *Id.* at 186.

108. Following is a hypothetical example similar to U.S. Patent No. 5,007,101, Iwahashi, et al., inventors (Apr. 9, 1991), to illustrate the vulnerability of some types of computer claims. The claim in a hypothetical patent recites the application of a mathematical algorithm to a ROM for implementing the squaring terms of the algorithm. A third party can use the algorithm without infringing by incorporating the ROM information in the program, thus eliminating the ROM. Removal of the ROM means that the new program is nonstatu-

4. The list of currently enumerated classes of nonstatutory subject matter is probably not all-inclusive. It is likely that this will be subject to further definition as programs find application in even more varied uses.

VIII. PATENTABILITY COMPARISONS BETWEEN PROGRAMS AND DNA

Both DNA and computer program technologies require new and highly specialized methods for describing and claiming the invention.[109] Although the technologies are very different, there is a similarity in patentability problems, particularly in regard to statutory subject matter issues.

A. *Statutory Subject Matter Concerns*

Both DNA in its natural state and a mathematical algorithm are per se unpatentable. Naturally occurring DNA is unpatentable because "manifestations of . . . nature"[110] are nonstatutory subject matter under section 101. A mathematical algorithm is nonstatutory subject matter since the algorithm "is like a law of nature."[111] DNA isolated from its natural state, or manipulated within a cell without isolating it, results in statutory subject matter.[112] DNA is thus statutory subject matter when it is subjected to significant human intervention. Similarly, a mathematical algorithm may meet the section 101 requirements once it is subjected to human invention through interaction between the algorithm and statutory subject matter, *i.e.*, a human-made object (*e.g.*, a ROM).

B. *Novelty and Non-obviousness Concerns*

There is no complete catalog of naturally occurring DNA sequences. As a result, it is impossible to determine with certainty nature's prior art. Furthermore, DNA mutates constantly, thus

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tory subject matter since it is a mathematical algorithm per se. Nonstatutory subject matter is unpatentable and as such incapable of infringing any patent. Program execution with a ROM is usually faster than a program which incorporates the information in the program itself. If high execution speed is essential, the use of a ROM may offer an important advantage (Telephone interview with Ronald L. Yin, Patent Attorney, Limbach & Limbach, San Jose, California (Apr. 22, 1992)). The subject of the Iwahashi patent is speech recognition which is a computer application where high speed is essential.

109. 37 C.F.R. §§ 1.96, 1.821 - 1.825 (1992); MPEP §§ 608.05, 706.03(a), 708.02 (VII), 2106, 2106.01-.02 (rev. Nov. 14, 1992).

110. Funk Bros. Seed Co. v. Kalo Inoculant Co., 333 U.S. 127, 130 (1948).

111. Diamond v. Diehr, 450 U.S. 175, 186 (1981).

112. Interview with Lauri Terlizzi, Patent Attorney, Skjerven, Morrill, MacPherson, Franklin & Friel, in San Jose, California (Jan. 13, 1992).

forming new natural DNA sequences.[113] DNA questions concerning sections 102 or 103 are thus difficult to answer. Secrecy and rapid development of programs have made it difficult to determine if a claimed program is novel and non-obvious.

IX. CONCLUSION

A computer program per se claim is patentable subject matter unless the claim falls within a judicially determined exception as shown by court decisions, patents issued by the PTO, and PTO classification definitions. A mathematical algorithm is a judicially determined exception, consequently a mathematical algorithm program per se is unpatentable because it fails to meet the statutory subject matter requirement of title 35, section 101 of the U.S. Code. However, application of a mathematical algorithm program to statutory subject matter may result in patentable subject matter depending on the type of interaction with the statutory subject matter. Court and PTO criteria used to determine whether a program claim is allowed under section 101 are uncertain due to lack of a clear distinction between an algorithm and a mathematical algorithm, and imprecise guidelines for ascertaining the conditions under which a mathematical algorithm claim constitutes statutory subject matter. Also, there is disagreement between the Federal Circuit and the PTO regarding the scope of a "means-plus-function" program claim. A new analytical scheme is proposed to more effectively predict whether a program claim is likely to meet the statutory subject matter condition. Use of the scheme will assist in drafting allowable program claims. The analytical method is not affected by the disagreement between the Federal Circuit and the PTO concerning claim scope.

113. *Id.*

APPENDIX

Prosecution Histories of Selected Program Patents

A. *Patent No. 5,007,101, Iwahashi, et al., inventors*

1. Application filed in Japan on 12/29/81.[114]
2. U.S. application (claiming the filing in Japan as the priority date) filed on 12/28/82.[115]
3. The examiner rejected the claim under 35 U.S.C. § 101.[116]
4. The applicant appealed to the PTO Board. The Board sustained the rejection on 5/24/88.[117]
5. The applicant then appealed to the Federal Circuit. The court reversed the Board's decision and allowed the claim on 11/7/89[118].
6. The patent issued on 4/9/91.[119]

B. *Patent No. 4,706,212, Toma, inventor*

1. Application filed on 8/31/71.[120]
2. The Board rejected a number of claims under 35 U.S.C. § 101.[121]
3. The applicant appealed to the C.C.P.A. The court reversed the Board's rejection and allowed the claims on 5/18/78.[122]
4. The patent issued on 11/10/87.[123]

C. *Patent No. 4,398,249, Pardo, et al., inventors*

1. Application filed on 8/12/70.[124]
2. The examiner allowed all claims on 7/28/72, but did not issue a notice of allowance.[125]
3. PTO reopened the prosecution following the *Gottshalk v. Benson*[126] decision and rejected the claims, under 35 U.S.C. § 101.[127]
4. The Board sustained the rejection.[128]

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114. U.S. Patent No. 5,007,101 at 1, Iwahashi, et al., inventors (Apr. 9, 1991).
115. *Id.*
116. *In re* Iwahashi, 888 F.2d 1370, 1371 (Fed. Cir. 1989).
117. *Id.*
118. *Id.* at 1375.
119. U.S. Patent No. 5,007,101 at 1, Iwahashi, et al., inventors (Apr. 9, 1991).
120. *In re* Toma, 575 F.2d 872, 873 n.1 (C.C.P.A. 1978).
121. *Id.* at 873-74.
122. *Id.* at 878.
123. U.S. Patent No. 4,706,212 at 1, Toma, inventor (Nov. 10, 1987).
124. *In re* Pardo, 684 F.2d 912, 914 (C.C.P.A. 1982).
125. *Id.*
126. 409 U.S. 63 (1972).
127. *In re* Pardo, 684 F.2d 912.
128. *Id.*

5. The applicant appealed to the C.C.P.A. which reversed the Board's rejection, the claims were allowed on 8/5/82.[129]
6. The patent issued on 8/9/83.[130]

D. *Patent No. 4,344,142, Diehr, et al., inventors*

1. Application filed on 8/6/75, as a continuation of an abandoned application filed 5/23/74, which was a continuation-in-part of an abandoned application dated 9/26/73.[131]
2. The claims were rejected by the examiner, pursuant to 35 U.S.C. § 101.[132]
3. The applicant appealed to the Board. The Board sustained the rejection.[133]
4. The applicant then appealed to the C.C.P.A. The court reversed the rejection and allowed the claims on 8/9/79.[134]
5. The PTO requested a rehearing by the C.C.P.A. which was denied on 10/19/79.[135]
6. The Commissioner of Patents and Trademarks appealed to the Supreme Court. The court affirmed the C.C.P.A. judgment and allowed the claims on 3/3/81.[136]
7. The patent issued on 8/10/82.[137]

E. *Patent No. 4,195,338, Freeman, inventor*

1. Application filed on 5/6/70.[138]
2. The examiner rejected the claims under 35 U.S.C. § 101.[139]
3. The Board affirmed the rejection.[140]
4. The applicant appealed to the C.C.P.A. The court reversed the board's judgment and allowed the claims on 3/30/78.[141]
5. The patent issued on 3/25/80.[142]

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129. *Id.* at 917.
130. U.S. Patent No. 4,398,249 at 1, Pardo, et al., inventors (Aug. 9, 1983).
131. Application of James R. Diehr, 602 F.2d 982, 983, n.1 (C.C.P.A. 1979).
132. *Id.* at 983.
133. *Id.*
134. *Id.* at 989.
135. *Id.* at 982.
136. Diamond v. Diehr, 450 U.S. 175, 193 (1981).
137. U.S. Patent No. 4,344,142 at 1, Diehr, et al., inventors (Aug. 10, 1982).
138. *In re* Freeman, 573 F.2d 1237, 1238 (1978).
139. *Id.*
140. *Id.*
141. *Id.* at 1247.
142. U.S. Patent No. 4,195,338 at 1, Freeman, inventor (Mar. 25, 1980).

COMMENTS

SOFTWARE REVERSE ENGINEERING AND CLEAN-ROOMING, WHEN IS IT INFRINGEMENT?

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I. INTRODUCTION

The computer software industry, like many other high-tech industries, is extremely competitive. Development costs of computer programs are far greater than the cost of their duplication.[1] As computers become more commonplace and their potential uses more numerous, the level of competition can only increase. To compete in this industry many software companies have resorted to analyzing their competitor's programs by reverse engineering, which leads to copying of portions of code and in some instances, whole programs.[2] Reverse engineering allows the second company to cut its development costs at the expense of the first company. Another method used by companies to capture a share in this competitive market is to copy only the most valuable aspects of a program, such as the interface between the program and the user.[3]

Understandably, software manufacturers who are developing programs wish to protect their investment and ingenuity. Copying of computer programs not only deprives the author of the chance to recover expenses and gain a reward for his hard work and creativity but also serves to detract from the value of such programs.[4] While copyright law will protect some aspects of computer programs, independent creation is still an affirmative defense to an infringement claim.[5] But there seems to be disagreement about just how far a company can go in the reverse engineering process and how much of the original program can legally be utilized in a subsequent program.

From the beginning, programmers have incorporated other peoples' ideas and adapted them for specific projects.[6] It is this interaction and free exchange of ideas that has allowed the American software industry to become the best in the world.[7] But, because

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1. NATIONAL COMMISSION ON NEW TECHNOLOGICAL USES OF COPYRIGHTED WORKS, FINAL REPORT AND RECOMMENDATIONS, 26 (1978).

2. Some examples which have resulted in litigation include: Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983); E.F. Johnson Co. v. Uniden Corp. of America, 623 F.Supp. 1485 (D.C. Minn. 1985); and Lotus Development Corp. v. Paperback Software International, 740 F.Supp. 37 (D. Mass. 1990).

3. In Lotus Dev. Corp. v. Paperback Software Int'l, 740 F.Supp. 37, 70 (D. Mass. 1990), Paperback developed a spreadsheet program very similar to Lotus' 1-2-3, and even went so far as to copy the user interface and commands from Lotus' program.

4. William W. Toole, *"Even If A Stranger Could Create Such A Work . . ." Software, Piracy, And Implications Of The Implied Covenant Of Good Faith: Has The SAS Court Gone Too Far?*, 9 COMPUTER LAW JOURNAL, 145 (1989).

5. 17 U.S.C. § 102 (1988).

6. Keith Hammonds, *Don't Bury Software's Promise In A Legal Bug*, BUSINESS WEEK, May 22, 1989, at 86.

7. Mitch Kapor, *Litigation vs. Innovation*, BYTE, Sept. 1990, at 520.

the industry has become very competitive, software companies are realizing that to survive, it is necessary to protect their investment and enforce their copyrights.[8]

Reverse engineering is a process in which a finished program is dissected, decompiled, or downloaded.[9] The code is then analyzed and flow charted to discover the method and technique that was utilized in the creation of that program. When a computer program is reverse engineered, it is taken from its finished state and analyzed until it is determined how the program was put together, and why it was done that way.[10] A company's reasons for reverse engineering include investigating new innovations used by competitors and the desire to achieve compatibility with a competitor's product. The clean-room is a technique used by a company to attempt to insulate itself from the legal liability that may follow from using portions of another's program.[11] A company employing this technique will have a first group of employees reverse engineer a program, in order to obtain the specifications and method of that program. These specifications and technique will then be given to a second group of employees who utilize those specifications to write a new program.

This comment addresses the legal concerns created by reverse

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8. Lotus Dev. Corp. v. Paperback Software Int'l, 740 F.Supp. 37 (D. Mass. 1990); *see infra* notes 79-85 and accompanying text for discussion of E.F. Johnson Co. v. Uniden Corp. of America, 623 F.Supp. 1485 (D.C. Minn. 1985).

9. One court has explained the reverse engineering of computer programs by the following:

> Computer programs are written in specialized alphanumeric languages, or "source code." In order to operate a computer, source code must be translated into computer readable form, or "object code." Object code uses only two symbols, 0 and 1, in combinations which represent the alphanumeric characters of the source code. A program written in source code is translated into object code using a computer program called an "assembler" or "compiler," and then imprinted onto a silicon chip for commercial distribution. Devices called "disassemblers" or "decompilers" can reverse this process by "reading" the electronic signals for "0" and "1" that are produced while the program is being run, storing the resulting object code in computer memory, and translating the object code into source code. Both assembly and disassembly devices are commercially available, and both types of devices are widely used within the software industry.

Sega Enterprises, Ltd. v. Accolade, Inc., 24 U.S.P.Q.2D 1561, 1563 n. 2 (9th Cir. 1992).

Another way to decompile a program is by "peeling" a silicon chip after the program is imprinted. The layers of the silicon chip are peeled back and analyzed under microscope, one at a time. From these peeled-back layers the object code is discovered, but each "1" and "0" must be deciphered one bit at a time. This type of decompilation was at issue in Atari Games Corp. v. Nintendo of America, Inc., 24 U.S.P.Q.2D 1016, 1017-1018 (CAFC 1992).

10. E.F. Johnson Co. v. Uniden Corp. of America, 623 F.Supp. 1485, 1490 (D.C. Minn. 1985).

11. NEC Corp. v. Intel Corp., 10 U.S.P.Q.2D 1177 (N.D. Cal. 1989).

engineering of software. Specifically addressed are the legal concerns and protections of companies which write original programs, and the methods useful in preventing reverse engineering. The aspects of a computer program that a company which has a reverse engineering policy can legally use from another's program are also addressed. Finally, given the vagueness of this area of copyright law, the author proposes that specific legislation should be enacted to deal with the complexity of issues involving the legal protection of computer programs.

II. BACKGROUND

The Constitution granted Congress the power to create copyright protection and confer a limited monopoly on the author's creation.[12] This protection is given in exchange for the author's disclosure of his work to the world, which in theory will ultimately benefit the public in general.

The goal of copyright law is the advancement of the public welfare by encouraging development and disclosure.[13] In exchange for this disclosure to the public, the author is given a monopoly over their work for their lifetime plus 50 years.[14] "Congress has granted copyright monopolies to serve the public welfare by encouraging authors to generate new ideas and disclose them to the public, being free to do so in any uniquely expressed way they may choose."[15] In regards to computer programs the monopoly should be given very carefully,

> Drawing the line too liberally in favor of copyright protection would bestow strong monopolies over specific applications upon the first to write programs performing those applications and would thereby inhibit other creators from developing improved products. Drawing the line too conservatively would allow programmer's efforts to be copied easily, thus discouraging the creation of all but modest incremental advances.[16]

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12. U.S. CONST., art. I, § 8, clause 8: "The Congress shall have the power to . . . promote the Progress of Science and useful Arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

13. *See* Feist Publications v. Rural Telephone Service Co., 111 S.Ct. 1282, 1290 (1991). "The primary objective of copyright is not to reward the labor of authors, but "to promote the Progress of Science and useful Arts."

14. 17 U.S.C. § 302 (1988).

15. Harper & Row, Publishers, Inc. v. Nation Enterprises, 471 U.S. 539, 546 (1985).

16. Peter S. Menell, *An Analysis Of The Scope of Copyright Protection for Application Programs*, 41 STANFORD LAW REVIEW, 1045, 1047 (1989).

However, as the Supreme Court has said,

> The economic philosophy behind the clause empowering Congress to grant patents and copyrights is the conviction that encouragement of individual effort by personal gain is the best way to advance the public welfare through the talents of authors and inventors in science and useful arts.[17]

In 1976 Congress revised the copyright law so that all original works are covered by federal law and state common law protection would be preempted.[18] Copyrightable subject matter is defined in 17 U.S.C. § 102 as "original works of authorship fixed in any tangible medium of expression." Section 102(b) serves to limit copyright protection to expressions, not ideas or processes.[19] The *Lotus*[20] court explained it in this way: "The interplay between sections 102(a) and 102(b), illumined by the related legislative history, manifests that the statute extends copyright protection to expressive elements of computer programs, but not to the ideas, processes, and methods embodied in computer programs."[21] Original works of authorship refer to works that have been independently created by an author, regardless of their literary or aesthetic merit, ingenuity, or qualitative value.[22]

A. *CONTU and the Addition of § 117*

In 1980, Congress following the advice of the National Commission on New Technological Uses of Copyrighted Works (CONTU), added section 117 to the Copyright Act.[23] Under copy-

17. Mazer v. Stein, 347 U.S. 201, 219 (1954).

18. 17 U.S.C. § 301(a) ". . .Thereafter, no person is entitled to any such right or equivalent right in any such work under the common law or statutes of any State."

19. 17 U.S.C. § 102(b) "In no case does copyright protection for an original work of authorship extend 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 such work."

20. Lotus Dev. Corp. v. Paperback Software Int'l, 740 F.Supp. 37 (D. Mass. 1990).

21. *Id.* at 53.

22. 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5664.

23. 17 U.S.C. § 117 reads as follows:

> Notwithstanding the provisions of section 106, it is not infringement for the owner 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.

right law, computer programs are presently included in the category of literary works[24] and are defined as "a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result."[25]

B. *Extension of Copyright Protection to Computer Programs*

As indicated above, copyright protection has been extended to computer programs, both object code[26] and source code,[27] and also to operating system programs.[28] In *Apple v. Franklin*[29] the court said, "The legislative history of § 102(b) was intended to make clear that the expression adopted by the programmer is the copyrightable element in a computer program, and that the actual processes or methods embodied in the program are not within the scope of the copyright law."[30]

Copyright law does not give protection to the idea of a computer program, just the expression of that idea in the program.[31] This doctrine, which was ultimately codified as § 102(b), originated in the case of *Baker v. Selden*.[32] In this famous case, the U.S. Supreme Court ruled that the plaintiff could copyright the expression of his accounting method which was embodied in his book, but copyright protection would not be extended to the actual accounting method itself.[33] "Congress chose to extend copyright protection to original expression embodied in computer programs, but not to any idea, method, or process described by the expression."[34] Thus, the underlying idea of a computer program will not be afforded

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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.

24. Literary works are defined in § 101 as:

> works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied. 17 U.S.C. § 101 (1988).

25. 17 U.S.C. § 101 (1988).

26. Object code uses only two symbols, 0 and 1, in combinations which represent alphanumeric characters. *See supra* note 9.

27. Computer programs are written in specialized alphanumeric languages, or "source code." *See supra* note 9.

28. Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983).

29. *Id.* at 1252.

30. *Id.* at 1253, quoting H.R. REP. No. 1476 at 57.

31. 17 U.S.C. § 102(b) (1988).

32. Baker v. Selden, 101 U.S. 99, 25 L. Ed. 841 (1879).

33. *Id.*

34. Lotus Dev. Corp. v. Paperback Software Int'l, 740 F.Supp. 37, 54 (D. Mass. 1990).

copyright protection, but the original expression of that idea will be.[35]

Copyright law will also not protect useful articles[36] or the utilitarian aspects of such articles. Computer programs could be considered useful articles because they do have an "intrinsic utilitarian function."[37] But "elements of expression, even if embodied in useful articles, are copyrightable if capable of identification and recognition independently of the functional ideas that make the article useful."[38] Furthermore "[i]f, however, the expression of an idea has elements that go beyond the obvious, and if there are numerous other ways of expressing the non-copyrightable idea, then those elements of expression, if original and substantial, are copyrightable."[39]

Copyright protection begins once a work is created.[40] To be granted copyright protection, a work must also be fixed in a tangible medium of expression.[41] While it is true that ownership and copyright protection vest in the owner once the work is fixed, the work must also be registered as a copyrightable work with the copyright office before an infringement action can be filed.[42]

Because computer programs are included in the category of literary works, when determining the applicable case law to apply, a court does not have to be confined to decisions in which there has been alleged copying of a computer program. Many non-technical decisions have issues which can be applied to computer programs. For example, in the very famous case of *Nichols v. Universal Pic-*

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35. Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222 (3d Cir. 1986). This case involved a computer program designed to aid in the business of a dental laboratory. The infringer had taken this program and adapted it so that it could be used on another computer. The court in this case decided that, "the idea is the efficient organization of a dental laboratory," anything else was considered to be expression, such as the structure of the program, and thus was protectible by copyright law. *Id.*

36. 17 U.S.C. § 101 defines useful articles as "an article having an intrinsic utilitarian function that is not merely to portray the appearance of the article or to convey information. An article that is normally a part of a useful article is considered a useful article."

37. *Id.*

38. *Lotus*, 740 F.Supp. at 58.

39. *Id.*

40. 17 U.S.C. § 302(a) "Copyright in a work created on or after January 1, 1978, subsists from its creation . . . ."

41. 17 U.S.C. § 101 "A work is 'fixed' in a tangible medium of expression 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."

42. 17 U.S.C. § 411(a) "no action for infringement of the copyright in any work shall be instituted until registration of the copyright claim has been made in accordance with this title."

tures Corp.,[43] Judge Learned Hand said, "Even if an infringer does not copy the words or dialogue of a book or play, or the score of a musical work, infringement may be found if there is copying of the work's expression of setting, characters, or plot with a resulting substantial similarity."[44] This same general idea can also be applied to infringement cases involving computer programs.

C. *Copyright Infringement*

To establish a prima facie case of copyright infringement a plaintiff must prove two elements: 1) ownership of a valid copyright, and 2) copying of constituent elements of the work that are original.[45] Ownership of a valid copyright in a computer program is proven by establishing the originality and copyrightability of the program, as well as compliance with statutory formalities,[46] including registering the work with the Copyright Office.[47] The issued certificate of registration will then the give the author a presumption of validity in an infringement action.[48]

To be eligible for copyright protection, a work must be "original" and "fixed in some tangible medium of expression."[49] A computer program is fixed once it is stored onto a disk or written down on a piece of paper.[50] A work is original according to the Supreme Court if "the work was independently created by the author, and it possesses at least some minimal degree of creativity."[51]

The second element of infringement, copying, is sometimes difficult to prove without an admission by the allegedly infringing party. Since direct copying is very difficult to prove, this element can be shown by circumstantial evidence of access to the copyrighted work and substantial similarity between that work and the allegedly infringing work.[52] In *Sid & Marty Krofft Television v. McDonald's Corp.*,[53] the court described two tests that can be used

43. Nichols v. Universal Pictures Corp., 45 F.2d 119 (2d Cir. 1930).

44. *Id.* at 121.

45. Harper & Row, Publishers, Inc. v. Nation Enterprises, 471 U.S. 539, 548 (1985).

46. Sid & Marty Krofft Television Productions Inc. v. McDonald's Corp., 562 F.2d 1157, 1162 (9th Cir. 1977).

47. 17 U.S.C. § 412 (1988).

48. 17 U.S.C. § 410(c) "[T]he certificate of a registration made before or within five years after first publication of the work shall constitute prima facie evidence of the validity of the copyright. . . ."

49. 17 U.S.C. § 102(a) (1988).

50. 17 U.S.C. § 101 (1988).

51. Feist Publications v. Rural Telephone Service Co., 111 S.Ct. 1282, 1287 (1991).

52. Sid & Marty Krofft Television Productions, Inc. v. McDonald's Corporation, 562 F.2d 1157, 1164 (9th Cir. 1977).

53. *Id.*

to prove substantial similarity. The first of these tests labeled "extrinsic," asks the question of whether or not there is a similarity of ideas between the two works at issue.[54] The second test, labeled "intrinsic," looks at whether there are substantial similarities between the forms of expression used in the competing works.[55] Both the intrinsic and the extrinsic test are to be determined by the trier of fact.[56] If the trier of fact first determines that there are substantial similarities in ideas, the trier of fact "must decide whether there is substantial similarity in the expression of the ideas so as to constitute infringement."[57]

Substantial similarity can be found between the actual programs; between the structure of the programs;[58] or as a similarity in the "look and feel" of the nonliteral expressions of the computer programs.[59] In *Whelan*[60] the court stated that the concern should be whether there are "overall similarities between the programs" and "whether the most significant steps of the programs are similar."[61] In this case, the court concentrated not on the quantity of copying but rather on the quality of the items that were copied.[62]

D. *Protection of Computer Programs By Patent*

Computer programs can also potentially be protected under the patent laws.[63] Patentable subject matter is defined as "any new and useful process, machine, manufacture, or composition of matter."[64] Usually, patented computer programs are deemed patentable subject matter as "processes." 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."[65]

A computer program will not be given patent protection if it is

54. *Id.* at 1164.
55. *Id.*
56. *Id.*
57. *Krofft*, at 1164.
58. Whelan Associates, Inc. v. Jaslow Dental Laboratory, Inc., 797 F.2d 1222 (3d Cir. 1986).
59. *Lotus*, 740 F.Supp. at 62.
60. *Whelan*, 797 F.2d at 1222.
61. *Id.* at 1246.
62. *Id.* at 1245. "Because we are concerned with the overall similarities between the programs, we must ask whether the most significant steps of the programs are similar."
63. Diamond v. Diehr, 450 U.S. 174, 187 (1981). "[A] claim drawn to subject matter otherwise statutory does not become nonstatutory simply because it uses a mathematical formula, computer program, or digital computer."
64. 35 U.S.C. § 101 (1988).
65. Gottschalk v. Benson, 409 U.S. 63, 70 (1972).

determined to be merely a mathematical algorithm.[66] A reason for this policy is that patent protection awards a monopoly for seventeen years,[67] and this protection should not be given to mathematical algorithms or formulas, otherwise the patentee could preclude others from using these formulas for the statutory time period. The Supreme Court stated the rule this way, "Phenomena of nature, though just discovered, mental processes, and abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work."[68]

In the case of *In re Iwahashi*,[69] the applicant had been denied a patent for his auto-correlation unit, a device used to obtain a necessary coefficient by taking the square of the sum of two factors in the equation instead of using multiplication which was more expensive. The court in this case overruled the examiner and awarded the applicant a patent stating, "It is no ground for holding a claim is directed to nonstatutory subject matter to say it includes or is directed to an algorithm. This is why the proscription against patenting has been limited to mathematical algorithms and abstract mathematical formulae which, like the laws of nature, are not patentable subject matter."[70]

If the program uses an algorithm in its method, it will be necessary to determine if the algorithm is merely a mathematical formula or scientific truth.[71] If the algorithm is not a mathematical formula or scientific truth, and it somehow transforms the subject matter to a different state or thing, it is patentable subject matter. The court in *Iwahashi*[72] used the "*Freeman-Walter* test" to determine if a claim defines nonstatutory subject matter. The court stated the test this way:

> Determination of whether a claim preempts nonstatutory subject matter as a whole, in the light of *Benson*, requires a two step analysis. First, it must be determined whether the claim directly or indirectly recites an "algorithm" in the Benson sense of that term, for a claim which fails even to recite an algorithm clearly cannot wholly preempt an algorithm. Second, the claim must be

66. Diamond v. Diehr, 450 U.S. 175, 201 (1981). "[N]ew mathematical procedures that can be conducted in old computers, like mental processes and abstract intellectual concepts, are not patentable processes within the meaning of § 101."

67. 35 U.S.C. § 154 (1988).

68. *Benson*, 409 U.S. at 67.

69. *In re* Iwahashi, 888 F.2d 1370 (Fed. Cir. 1989).

70. *Id.* at 1374.

71. *In re* Grams, 888 F.2d 835, 837 (Fed. Cir. 1989). "[M]athematical algorithms join the list of non-patentable subject matter not within the scope of section 101."

72. *Iwahashi*, 888 F.2d at 1374.

> further analyzed to ascertain whether in its entirety it wholly preempts that algorithm.[73]

Apart from algorithms, it is now also possible to obtain a patent on a graphical user interface. For example, a patent entitled "A System and Method for Managing Graphic Images" was recently issued to Hullot *et al.* and assigned to NeXT Computer, Inc.[74] The abstract of this patent reads:

> A graphic user interface for a computer is provided in which representations of application programs can be placed on the display in a specified area reserved for such a purpose in which area they could not be so readily obscured and forgotten, and which includes a facility for controlling the placement of such representations within the reserved area. The graphic images are guided into specific locations, or "docks" in the reserved area, and their removal from the docks is restricted to prevent accidental withdrawal.[75]

Because the validity of this type of patent has yet to be tested in court, companies which invest in this type of patent do so at their own risk and should realize such patents may be invalidated in infringement litigation.

Also, unless a computer program is somehow working in connection with some kind of hardware, then patent protection is not applicable. Because of this limitation, the majority of computer programs will find optimal protection from infringement in the copyright laws.

III. THE CLEAN ROOM

Companies use a "clean room" in order to make the proof of the copying element more difficult for plaintiffs to prove in infringement cases. The "clean room" serves to insulate the first group of employees who reverse engineer the competitor's program, from the second group of employees who then use the information acquired from the first group to write a similar program.

A step-by-step approach is useful to analyze exactly how a "clean room" situation works. This example involves a hypothetical situation where one company (Company A) desires to achieve compatibility with another company's (Company B) program. First, a group of employees from Company A analyzes Company B's program. Their task is to reverse engineer or take apart the

73. *Id.*
74. U.S. Patent No. 5,146,556 issued on Sept. 8, 1992.
75. *Id.*

program to learn the method, structure, and specifications of Company B's program. Once this is done, that information is turned over to a second group of Company A employees. The task of this second group is to take the information acquired by the first group and use it to write a new program that will be compatible with Company B's original program. Copying in this case is difficult to prove, because the second group of employees never actually had access to the original program, they only had access to the information that the first group of employees learned and recorded from Company B's program. So, when they wrote the new program, it was not copied from the original, but only utilized the specifications from that program.

There are some who think that the very act of decompiling a program could be considered unlawful. Section 117 of the Copyright Act allows the owner of a software program to make a copy so long as "such a new copy of adaptation is created as an essential step in the utilization of the computer program . . . or that such new copy or adaptation is for archival purposes only."[76] However, there is a split in the circuits regarding the meaning of the statutory language. At least one court has declared that it is legally permissible for a copy to be made in order to reverse engineer a program,[77] while another has stated that this type of copying is not permitted by Section 117.[78]

Most copyright cases do not stop at section 117. After copying is found it is also necessary to determine if the programs at issue are indeed substantially similar.[79] One court has extended copyright protection in computer programs "beyond the programs' literal code to their structure, sequence, and organization."[80] The question of substantially similarity is one of fact. The general test is whether an average lay observer would recognize the alleged copy

76. 17 U.S.C. § 117 (1988).

77. In Vault Corp. v. Quaid Ltd., 847 F.2d 255 (1988), the court stated that "[S]ection 117(1) contains no language to suggest that the copy it permits must be employed for a use intended by the copyright owner, and, absent clear congressional guidance to the contrary, we refuse to read such limiting language into this exception."

78. In Hubco Data Products Corp. v. Management Assistance Inc., 219 U.S.P.Q. 450, 456 (D. Idaho 1983), the court stated "this expanded definition makes clear that the input of a work into a computer results in the making of a copy, and hence that such unauthorized input infringes the copyright owner's reproduction right."

79. Because direct copying is difficult to prove, courts have allowed this element of the prima facie case of infringement to be proven by showing that the defendant had access to and there is substantial similarity between the competing works. *See* Sid & Marty Krofft Television Productions, Inc. v. McDonald's Corp., 562 F.2d 1157 (9th Cir. 1977).

80. Whelan Associates v. Jaslow Dental Laboratory, 797 F.2d 1222, 1248 (3d Cir. 1986).

as having been appropriated from the copyrighted work.[81]

IV. CASE DECISIONS INVOLVING REVERSE ENGINEERING

A. *E.F. Johnson Co. v. Uniden Corp. of America*

Reverse engineering of a program by employees of a company does not automatically mean that they have violated the copyright laws. It is what that company does with the code that determines if there has been copyright infringement. In *E.F. Johnson Co. v. Uniden Corp. of America*, the court stated it this way:

> The mere fact that defendant's engineers dumped, flow charted, and analyzed plaintiff's code does not, in and of itself, establish pirating. As both parties' witnesses admitted, dumping and analyzing competitor's codes is a standard practice in the industry. Had Uniden contented itself with surveying the general outline of the EFJ program, thereafter converting the scheme into detailed code through its own imagination, creativity, and independent thought, a claim of infringement would not have arisen.[82]

In this case, the plaintiff, Johnson, had developed a logic trunked radio system program of mobile radios.[83] In order to make a compatible radio, the defendant, Uniden, disassembled and copied the program to use with its radios, even going so far as copying the errors and unnecessary information in the program.[84] Direct evidence of copying was not available to the plaintiff but was inferred from proof of access and substantial similarity.[85] Johnson was aided in the proof of infringement by the fact that the same errors and unnecessary information appeared in both programs, "The existence of the identical unnecessary instructions in both codes is strong proof of substantial similarity."[86] The presence of identical errors in copyrighted and infringing computer programs has also been held to be evidence of copying in other cases as well.[87]

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81. E.F. Johnson Co. v. Uniden Corp. of America, 623 F.Supp. 1485, 1492 (D.C. Minn. 1985).

82. *Id.* at 1501 n.17.

83. *Id.* at 1488.

84. *Id.* at 1495.

85. *Id.* at 1492.

86. *Johnson*, 623 F.Supp. at 1496.

87. Williams Electronics, Inc. v. Arctic International, Inc., 685 F.2d 870, 876 (3d Cir. 1982).

B. *Hubco Data Products Corp. v. Management Assistance Incorporated*

In *Hubco Data Products Corp. v. Management Assistance Incorporated*,[88] Management Assistance Incorporated (MAI) designed and copyrighted an operating system program which allowed access to memory on its memory boards.[89] MAI would place governors on these memory boards to restrict access to the memory in some cases, in order to provide a less expensive system.[90] Hubco developed "The Nilsson Method II," which disassembled, located, and removed the governors on MAI's system, allowing the customer to upgrade.[91] The court in this case said that Hubco could have independently developed, manufactured, and sold its own object code and operating system legally, but that it was infringement for Hubco to copy MAI object codes and sell them in the form of operating systems to MAI computer owners.[92]

C. *Sega Enterprises, Ltd. v. Accolade, Inc.*

In this recent Ninth Circuit case the issues centered on compatibility between video games.[93] Accolade copied a Sega video game to obtain compatability with the Sega Genesis game system.[94] Accolade decompiled the machine-readable object code from a Sega game in order to achieve compatability with the Sega system for games that it wished to independently create and market.[95] Accolade then created a manual containing only the functional specifications of this decompiled code and not any of Sega's actual code.[96] Accolade next created its own games for the Sega Genesis system using only the functional specifications.[97] The first issue in the case was whether or not this intermediate copying by Accolade constituted copyright infringement or was it a fair use of the code.[98]

Another issue the court decided was whether a screen display of Sega's trademark by the Accolade games was a Lanham Trade-

88. Hubco Data Products Corp. v. Management Assistance Inc., 219 U.S.P.Q.. 450 (D. Idaho 1983).
89. *Id.* at 452.
90. *Id.*
91. *Id.*
92. *Id.* at 455.
93. Sega Enterprises, Ltd. v. Accolade, Inc., 24 U.S.P.Q.2D 1561 (9th Cir. 1992).
94. *Id.* at 1563.
95. *Id.*
96. *Id.*
97. *Id.*
98. *Sega*, 24 U.S.P.Q.2D at 1562.

mark Act violation.[99] Sega included a trademark security system which was required on the game cartridge in order for the system to recognize the particular game.[100] Accolade found this code during its reverse engineering of the Sega game and added it to their manual as a standard header to be included in all games.[101] Thus, when Accolade games are inserted into the Sega Genesis system, the console reads this trademark security system initialization and the Sega trademark is flashed up on the screen.[102] The district court ruled that this trademark security system code was not functional and Accolade could not use such a defense to the trademark infringement claim.[103] The district court also ruled in favor of Sega on the copyright claim and issued an injunction against Accolade, also requiring the recall of all of Accolade's infringing games.[104] The Ninth Circuit then stayed the injunction and recall order, and decided to hear the case.[105]

As to the trademark issue, the appeals court ruled in Accolade's favor stating that "when there is no other method of access to the computer that is known or readily available to rival cartridge manufacturers, the use of the initialization code by a rival does not violate the [Lanham] Act even though that use triggers a misleading trademark display."[106]

The appeals court also ruled in favor of Accolade on the copyright issue ruling that "when the person seeking the understanding has legitimate reason for doing so and when no other means of access to the unprotected elements exists, such disassembly is as a matter of law a fair use of the copyright work."[107] Accolade raised four arguments in its defense, but fair use was the only one accepted by the court.[108]

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99. *Id.*
100. *Id.* at 1564.
101. *Id.*
102. *Id.*
103. *Sega*, 24 U.S.P.Q.2D at 1565.
104. *Id.*
105. *Id.*
106. *Id.* at 1562.
107. *Id.*
108. *Sega*, 24 U.S.P.Q.2D at 1565-1566. 17 U.S.C. § 107 provides that:

> . . . .In determining whether the use made of a work in any particular case is a fair use the factors to be considered shall include-
>
> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
>
> (2) the nature of the copyrighted work;
>
> (3) the purpose and character of the use in relation to the copyrighted work as a whole; and

Analyzing the first fair use factor, "the purpose and character of the use," the appeals court observed that the fact that Accolade copied for a commercial use weighs against a finding of fair use.[109] But, because the copying by Accolade was only at an intermediate level the court decided that any "commercial 'exploitation' was indirect or derivative" and of "minimal significance. The court ruled that this first factor weighed in favor of Accolade.[110]

In its analysis of the second fair use factor, "the nature of the copyrighted work," the court notes that not all copyrighted works are entitled to the same degree of protection, and no protection extends to the functional or factual aspects of a work.[111] The court stated that "computer programs are, in essence, utilitarian articles . . . . they contain many logical, structural, and visual display elements that are dictated by the function to be performed, by considerations of efficiency, or by external factors such as compatibility requirements and industry demands."[112] The court further notes that if Accolade was to understand the functional requirements of the Sega system, then disassembly of the object code was necessary. Because the Sega video games contain functional aspects which are unprotected by copyright law and cannot be understood without copying, they are afforded a lower degree of protection than other traditional literary works.[113] The court then decided that the second factor also weighed in favor of Accolade.[114]

The court decided that the third fair use factor, the purpose and character of the use, weighed against Accolade because they copied and disassembled the entire game.[115] The fact that Accolade did copy and disassemble the entire game did not preclude an ultimate finding of fair use however, because the ultimate, as opposed to the direct, use by Accolade was limited and therefore the court put very little weight on this third factor.[116]

Finally, the court decided that the fourth fair use factor, the effect on the potential market for the copyrighted work, weighed in favor of Accolade because any loss Sega would suffer would be a

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(4) the effect of the use upon the potential market for or value of the copyrighted work.

109. *Sega*, 24 U.S.P.Q.2D at 1569.
110. *Id.* at 1569-1570.
111. *Id.* at 1571.
112. *Id.*
113. *Id.* at 1572-1573.
114. *Sega*, 24 U.S.P.Q.2D at 1573.
115. *Id.*
116. *Id.*

minor economic loss.[117] The court put great weight on the fact that if competitors like Accolade were not able to develop their own games and make them compatible, then Sega would enjoy a monopoly of the market and such a monopoly would "run counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine."[118]

The *Sega* court then put these four fair use factors together and decided that as a matter of law, Accolade was entitled to a fair use defense to its copying.[119] In its summary of this issue, the court stated that "[u]nder the Copyright Act, if a work is largely functional, it receives only weak protection. 'This result is neither unfair nor unfortunate. It is the means by which copyright advances the progress of science and art.' "[120]

V. APPLICATION OF THE LAW

For a company desiring compatibility with another company's hardware or software, the law is clear. The desire to achieve compatibility or standardization does not take precedence over the rights of the author's monopoly in dissemination of their work.[121] For example in *Apple v. Franklin*,[122] the defendant, Franklin, copied Apple's operating system in order to achieve compatibility with the Apple II system.[123] In this case the court said, "If other programs can be written or created which perform the same function as Apple's operating system program, then that program is an expression of the idea and hence copyrightable."[124] A company desiring to achieve compatibility can do this legally by anything but direct copying.[125]

A. *What can a company, which develops and manufactures software do to protect its programs from being copied?*

A company should first take steps outside of the legal realm to

117. *Id.* at 1570-1571.
118. *Id.* at 1571.
119. *Sega*, 24 U.S.P.Q.2D at 1574.
120. *Id.*, quoting Feist Publications, Inc. v. Rural Tel. Serv. Co., 111 S.Ct. 1282, 1290 (1991).
121. Lotus Dev. Corp. v. Paperback Software Int'l, 740 F.Supp. 37, 67 (D. Mass. 1990).
122. Apple Computer, Inc. v. Franklin Computer Corp., 714 F.2d 1240 (3d Cir. 1983).
123. *Id.* at 1243.
124. *Id.* at 1253.
125. "Franklin may wish to achieve total compatibility with independently developed application programs written for the Apple II." Apple v. Franklin, 714 F.2d at 1253.

prevent others from reverse engineering its programs. As many safeguards as possible should be implemented within the program in order to protect against the disassembly and copying of the program. But, "hackers" have become very creative and there are few programs that cannot be disassembled.[126]

Next, some legal action may be taken to deter would-be "copiers." First, a copyright notice should be placed on the disk that contains the program, on the package in which the disk is sold, in the software manual, and most importantly, copyright notice should be placed in the actual code of the program.[127] Extraneous and unneeded instructions and subroutines should be hidden in the code very carefully. The idea is to make them appear like useful instructions to the casual observer. If they show up in the alleged copy they will be *prima facie* evidence of copying,[128] because it is highly unlikely that two independently created programs would contain the same errors or unneeded instructions. This also makes the would-be copier's task more difficult if they try to search for unnecessary code or subroutines. If the would-be copier has to analyze every line of computer code and determine its function in the program, the process becomes very time consuming and expensive. Finally, a company should aggressively enforce its copyrights in court when it becomes evident that their work product has been directly copied by a competitor.

B. *What can a company which practices disassembly do to protect itself?*

A company which regularly disassembles programs may also protect itself from litigation. The key is to utilize and incorporate as much independent creation as possible into the new program. Anything that has been independently created, although it may be based on someone else's idea will not constitute infringement. It is important to separate the idea and function of a program from the expression of its code. Ideas and functions may be used to create a

126. *See* Vault Corp. v. Quaid Software Ltd., 847 F.2d 255 (5th Cir. 1988) "Vault had a disklock program which prevented unauthorized copying of that disk. Quaid invented a key to that program which unlocked the disk and allowed the user to copy it."

127. 17 U.S.C. § 401 "If a notice of copyright in the form and position specified by this section appears on the published copy or copies to which a defendant in a copyright infringement suit had access, then no weight shall be given to such a defendant's interposition of a defense based on innocent infringement in mitigation of actual or statutory damages. . . ."

128. Randall M. Whitmeyer, *A Plea For Due Process: Defining The Proper Scope Of Patent Protection For Computer Software*, 85 NORTHWESTERN UNIVERSITY LAW REVIEW, 1103, 1120 (1991).

new program and user interface, but in no case should actual code ever be copied from a competitor's program.

Companies which routinely analyze programs produced by others should do everything possible to separate its product from the original program. If for some reason a company desires to achieve compatibility with another's product, and this cannot be done by independent creation, then that company should seek a licensing agreement from the owner of the original program. In some cases this may be expensive, but avoidance of court costs alone might make these agreements more economically justifiable. This is particularly true in the situation where costs would be incurred in the development of a program that might be ruled a copy.

VI. SOLUTION AND PROPOSAL

At the present time, authors of computer programs may obtain legal protection for their work in the areas of patent, copyright, trade secret, trademark, unfair competition and arguably trade dress. While this may be acceptable to some, this author and others view such provisions as cumbersome and in need of replacement.[129] Often plaintiffs in infringement suits are forced to plead many different causes of action in order to ensure recovery for what is in essence, copying by the defendant. Also the 75 year duration of copyright protection[130] is too long for computer technology. The software industry has exploded in the last ten to fifteen years and many advances have been made which make old technologies useless. While the useful lifetime of a computer program is not known at this time, it is known that technology is changing so rapidly that a monopoly for 75 years is commercially an eternity.[131] Upgrades and new programs for old applications are introduced daily due to technological advances and the resultant improvement in software programs.

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129. *Id.* at 1103. "The unique characteristics of computer software — its ease of copying; its various aspects (algorithms, source code, object code, and user interface); and its simultaneously functional and literary nature — have made the application of traditional intellectual property principles to software difficult." *Id.*

130. For corporations, 17 U.S.C. § 302(c) provides: "In the case of . . . a work made for hire, the copyright endures for a term of seventy-five years from the year of its first publication, or a term of one hundred years from the year of its creation, whichever expires first." 17 U.S.C. § 302(c).

For an individual authors, protection is provided for life plus 50 years. 17 U.S.C. § 302.

131. "In the high technology area of computers . . . the economic life of an innovation may only be a few years." Andrew G. Rodau, *Protecting Computer Software: After Apple Computer, Inc. v. Franklin Computer Corp., Does Copyright Provide the Best Protection?*, 57 TEMPLE L.Q. 527, 532 (1984).

While the 17-year monopoly[132] provided by patent is still too long for computer software, the alternative of trade secret protection is virtually limitless, as long as the invention can be kept secret. Reliance on these traditional legal theories has detracted from the competitive interaction which made the software industry what it is today.[133]

Congress should establish a workable compromise by enacting new legislation which deals exclusively with computer software and the issues concerning protection and infringement of computer software. This legislation should extract elements from each of the areas mentioned in the above paragraphs as well as elements from other areas of the law including contracts and torts. The Semiconductor Chip Act[134] was enacted to protect mask works through basically the same mechanism, and could be used as a model.

The goals of this legislation should be to:

1. Foster and maintain the competitive edge that has been achieved by the U.S. Computer Software Industry.[135]
2. Reward computer software inventors for their time and financial investments.[136]
3. Promote the development of new software and improvements of old software.
4. Encourage the free dissemination of ideas embodied in popular and innovative software programs.[137]
5. Allow others to use elements of programs that have come to be standards in the industry.
6. Provide meaningful penalties for violation of this legislation.

As mentioned above, the U.S. software industry is viewed by many as the best in the world.[138] Any new legislation to protect property interests in computer programs should first serve to protect and enhance the position already achieved by American

132. 35 U.S.C. § 154 "Every patent shall contain a short title of the invention and a grant to the patentee, his heirs or assigns, for the term of seventeen years."

133. Vance Franklin Brown, *The Incompatibility Of Copyright and Computer Software: An Economic Evaluation And A Proposal For A Marketplace Solution*, 66 NORTH CAROLINA LAW REVIEW, at 97 (1988).

134. 17 U.S.C. §§ 901-914 (1988).

135. *See* Toole, *supra*, note 4.

136. Copyright does not extend protection for the actual work done by an inventor. In Feist Publications v. Rural Telephone Service Co., 111 S.Ct. 1282, 1295 (1991) the Court stated, "the 1976 revisions to the Copyright Act leave no doubt that originality, not "sweat of the brow," is the touchstone of copyright protection in directories and other fact-based works."

137. "New ideas must be disseminated throughout society so that further progress can be made without having to reinvent the wheel." Brown, *supra* note 133 at 978.

138. *See* Toole, *supra* note 4.

software companies. A reward or some kind of economic incentive is needed to encourage new development and innovation in computer software. Thus, the open exchange of ideas and techniques should be balanced with the need to reward inventors. There also should be encouragement for other companies to use elements of programs that have developed into industry standards.[139] Traditionally, American society has allowed the first market entrant to set the industry standard.[140] But, the manner by which some software companies are presently utilizing copyright protection allows the first market entrant to control the market. "The first developer of successful software who is able to set an industry standard may now use the copyright law as a shield against competitive market forces."[141]

Software companies are now choosing to actively enforce property interests in their programs through copyright law.[142] This enforcement could have an adverse effect on innovation as development of new products may decline and standardization could become impossible.[143] Society can only benefit from the dissemination of innovations developed by software developers, whether this is accomplished by reverse engineering or licensing agreements.[144] Any new legislation to protect property interests in computer software should promote standardization of computer programs as much as possible. "Standardization is particularly important for computer software, where compatibility is essential for the sharing of data between programs."[145]

The original developer should however, receive some benefit from another's use of his program. Any new legislation should include economic incentives to entice developers to continually create new innovations. This should be balanced with the open dissemination and teaching necessary to promote standardization and efficiency, thus minimizing duplication of effort. This author suggests a system modeled after the music industry's compulsory licenses.[146] Such protection serves to reward the first innovator who brings

139. An industry standard would be an element of a program that is accepted as such by the market. Examples include the user interfaces of certain programs.

140. Examples of this are the convention of having the brake pedal to the left of the gas pedal and the "figure-H" pattern of an automobile stick. Brown, *supra* note 133 at 977.

141. *Id.*

142. *See* Kapor, *supra* note 7.

143. Toole, *supra* note 4.

144. *Id.* at 147.

145. *Id.* at 150.

146. 17 U.S.C. § 115(a)(1) "When phonorecords of a nondramatic musical work have been distributed to the public in the United States under the authority of the copyright

something new to the market but also makes this technology readily available to others who wish to adapt it for use in their own programs. Exact copying would not be permitted unless authorized by the owner of the technology. But, a new method or interface could be used by others' programs, as long as a per unit license fee was paid to the developer of that method or interface. As within the music industry's compulsory license, the license fee could be set by statute. Or, a lesser fee could be negotiated between the user and the owner.[147] The original author of the software program could be given a shortened statutory period such as two years in which to exploit the exclusive right to use the parts of the program. After this two year period, the original author would still own the copyright in the program, but others would be free to use it upon payment of the compulsory license fee or negotiation of a direct license with the original author.

One potential problem with such legislation, is that some developments could be viewed as trivial, and therefore should not be governed by compulsory licenses. A way around this problem is to adopt a standard much like the patent statute's nonobvious standard[148] and require any potential licensor to first register any innovative method or interface before becoming eligible to collect fees from any company taking advantage of the compulsory license statute. This statute should also include an element which requires the original developer to disclose any innovative methods or interfaces for which she wishes to receive compulsory fees. This still allows the developer to protect the technology through trade secret if that would further the company's best interests. Of course, any technology protected by trade secret should lend itself to secrecy and meet the statutory guidelines for trade secrets.[149]

Under this proposed system, because one company should not be able to exclude all others, the computer software industry should become more efficient. Innovation will be encouraged and rewarded, but perhaps even more important is that improvement of

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owner, any other person may, by complying with the provisions of this section, obtain a compulsory license to make and distribute phonorecords of the work."

147. "The usual effect of the system is to make the statutory royalty rate a ceiling on the price copyright owners can charge for use of their songs under negotiated contracts: if the owner demands a higher price in voluntary negotiations, the manufacturer can turn to the statutory scheme, but if the owner is willing to accept less than the statutory rate, he is free to do so." Recording Industry Association of America v. Copyright Royalty Tribunal 662 F.2d 1 (D.C. Cir. 1981).

148. 35 U.S.C. § 103 (1988).

149. California Civil Code § 3426.1(d).

existing programs will be allowed and even encouraged.[150]

VII. CONCLUSION

Computer programs can now be protected under various theories of intellectual property law. As long as these traditional theories are in force, software developers should be aware that there are some activities which are prohibited when reverse engineering or analyzing another company's program. No actual code should ever be copied; all of the code for a new program which is based on another's program, should be written independently. Companies trying to protect their programs from reverse engineering should incorporate as many safeguards as possible into the programs. Such safeguards include devices which prevent copying, and the purposeful inclusion of unneeded code in the program which will assist the company in meeting its proof burden should it be necessary to prove instances of copying during infringement litigation.

New legislation should be enacted to better protect computer programs and the American software industry. One potential model is provided by the compulsory licenses now in use by the music industry. This method of protection would allow free dissemination of the ideas and methods used in innovative software development and should serve to enhance the overall efficiency of the software industry. While such change may initially be difficult to implement, it is long overdue and new legislation should be enacted before it is too late.

150. "But, it seems likely that more programmers will take advantage of opportunities to improve an existing application by making it faster, easier to use, or more functional." Whitmeyer, *supra* note 128 at p. 1120.

THE FUTURE OF CHINESE ARBITRATION IN DEALING WITH TECHNOLOGY TRANSFER INVESTMENTS IN CHINA

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I. INTRODUCTION

To outside investors, the People's Republic of China (PRC) often seems like a hungry tiger waiting to pounce on its next victim. Investors are wary because information regarding Chinese trade and investment policies is often scarce or contradictory.[1] Moreover, the mercurial nature of the PRC's economic development policy has frightened potential investors.[2] For example, the 1979-80 cancellation of a large number of contracts relating to the Baoshan Steel Plant created an atmosphere of caution and skepticism for companies entering into contracts with the PRC.[3] Skepticism is compounded by the widely-held perception that Chinese contracts lack legal enforceability despite the existing PRC judicial and arbitration bodies.[4]

This reputation for non-performance of contracts stems from the Vickers-Zimmer case and similar incidents in the late 1960s.[5] The Vickers-Zimmer dispute arose out of a contract to build a petrochemical plant in China.[6] In the original contract, Vickers-Zimmer and China agreed that in the event of a contractual dispute that both sides would submit to arbitration in Stockholm.[7] However, when Chinese soldiers prevented Vickers-Zimmer from building its plant, Vickers' request for arbitration was rejected and two of its employees were arrested as spies.[8] Furthermore, in a later proceeding from which Vickers-Zimmer was excluded, the company was found liable for "failure" to fulfill its contractual obligations.[9]

Throughout the 1970s, accounts of purported Chinese efforts to avoid arbitration and reject requests for dispute resolution permeated the international investment community, raising doubts

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1. "The majority of [PRC] legislation [is] frequently plagued by ambiguities and contradictions." Richard J. Goossen, *Non-judicial Dispute Resolution in the People's Republic of China*, BUS. L. REV. 331, 335 (1986); "The most striking thing to the newcomer to the Chinese business environment and legal environment is there's no ready proof that China has a legal system in the conventional Western sense." Nancy L. Ross, *Veteran China Hands Offer Some Advise to Businessmen*, WASH. POST, April 9, 1978, at K2 (quoting former Harvard Law School Associate Dean Jerome Cohen).

2. *See* Goossen, *supra* note 1.

3. Jerome Alan Cohen and Stuart J. Valentine, *Foreign Direct Investment in the People's Republic of China: Progress, Problems, and Proposals*, 1 J. CHINESE L. 161, 202 (1987).

4. *Id.*

5. *See* Jerome Alan Cohen, *The Role of Arbitration in Economic Co-operation with China*, *in* FOREIGN TRADE INVESTMENT AND THE LAW IN THE PEOPLE'S REPUBLIC OF CHINA 508-509 (Michael J. Moser ed., 1987).

6. *Id.*

7. *Id.*

8. *Id.*

9. *Id.*

about China's reliability as a business partner.[10]

This comment discusses the reliability of arbitration as a means of dispute resolution for foreign parties engaged in technology transfers with China. Part one describes the various types of technology transfers to the PRC, followed by a discussion of the problems and possible preventive measures for use in negotiations involving negotiating arbitration clauses in contracts dealing with Chinese businesses. Part two describes the Chinese arbitrational structure and process. The conclusion analyzes the viability of the Chinese arbitration system as a forum for resolving disputes in cases concerning foreign technology transfers to China.

II. BACKGROUND

One of the PRC's major concerns in the 1950s was to develop its technological and industrial base.[11] Unfortunately, China lacked expertise and equipment to design, build, and operate modern manufacturing plants.[12] As a result, China depended upon its "Big Brother," the Soviet Union, as its primary source of technology and aid.[13] By 1960, the Soviets had supplied the Chinese with enough expertise to build 130 industrial projects.[14] However, as a result of deteriorating Sino-Soviet relations in the late 1960s, the Soviets withdrew their technical support and China was unable to continue these projects.[15] Accordingly, the importance of technological advancement and self-reliance were reflected in China's political and economic policies.[16]

Between 1973 and 1978, the PRC began importing heavy machinery to support large technical projects from the most reputable corporations, including airplanes from McDonald Douglas, microcomputers from Wang computers, petrochemical plant construction, and joint ventures for production of locomotives.[17] In addition, China decentralized its highly structured and rigid foreign trade system by increasing the number Chinese entities permitted to

10. *See* Cohen, *supra* note 5.

11. *See* CRAIG DIETRICH, PEOPLE'S CHINA: A BRIEF HISTORY 84-85 (1986).

12. *Id.* at 85.

13. *Id.*

14. *Id.*

15. *Id* at 138-141.

16. China is "determined to be as self-sufficient as possible and trades only to make a political point or to acquire modern equipment it cannot easily make itself." Jay Mathews, *Chinese Are Expected to Increase Trade With Rest of World Slowly*, WASH. POST, January 9, 1977, at G7.

17. *Id.*

enter into technology transfer agreements with foreigners.[18] Unfortunately, while decentralization increased the speed of technology transfers, many of these transfers were either unnecessary or useless.[19]

In 1984, China established a single administrative authority, the Ministry of Foreign Economic Relations and Trade (MOFERT), to govern over foreign trade in China and to effectuate efforts to re-centralize.[20] Furthermore, the PRC developed a new industrial policy to meet China's needs in the 1990s. There are four primary goals which dominate this policy: 1) by the year 2000, to reach level of technological development comparable to that which Western industrialized nations had achieved in 1990; 2) disseminate technology into rural areas; 3) develop infrastructure and natural resources; and 4) promote high technology in the areas of computers, electronic, biotechnology, laser, robotics, and space and sea exploration.[21]

A. *Forms of Technology Transfers in the PRC*

1. Pure Licensing Agreements

Pure licensing agreements for technology or industrial property are the inexpensive alternative available to foreign investors interested in investments in China.[22] These contracts are relatively risk-free and involve a minimal level of continuing cooperation on the part of the transferor.[23] However, the benefits of licensing contracts are often negated by Chinese demands that the transferor guarantee the quality of the product manufactured by the transferred technology.[24] Furthermore, the transferor may be required to assume responsibility for any other machinery and equipment involved, whether or not the transferor manufactures it.[25]

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18. *Id.*

19. DIETRICH, *supra* note 11, at 257.

20. Interview with Professor Anna Han, Associate Professor, Santa Clara University School of Law (Apr. 8, 1992) (hereinafter Han Lecture).

21. *Id.*

22. Stanley B. Lubman & Gregory C. Wajnowski, *Technology Transfer to the People's Republic of China: Practice and Policy, in* DOING BUSINESS IN CHINA § 3.02[1] (William P. Streng & Allen D. Wilcox eds., 1992).

23. *Id.*

24. *Id.*

25. *Id.*

2. Compensation Trade/Countertrade Transactions

In a typical countertrade transaction,[26] the foreigner supplies equipment or licenses technology, in return for repayment by the PRC in product.[27] This type of transaction is often pursued by companies in need of raw materials or low cost labor.[28] Moreover, the Chinese strongly encourage investors to engage in countertrade because such transactions conserve China's foreign currency reserves.[29]

3. Contribution of Technology to a Joint Venture

Technology transfers are one of China's primary goals in encouraging joint ventures. In these agreements, the transferred technology is a significant portion of a foreign joint venture partner's total capital contribution. Equity joint ventures and Sino-contractual joint ventures (also referred to as "foreign cooperative enterprises") are two types of joint ventures used in Chinese business.[30]

a. Equity Joint Ventures

A equity joint venture is a limited liability company in which each investor's liability is limited to their original capital investment.[31] Each investor in an equity joint venture must contribute at least 25 percent and not more than 99 percent of the total investment[32] "in cash or kind." Thus, the investor's proportionate capital

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26. In China, countertrade may be conducted under various methods. Countertrade structures include barter, buy-back or direct compensation trade, counter purchase or indirect compensation, advance purchase, offset, government-to-government trade agreements, clearing agreements, and switch transactions. *See* S. Linn Williams & Clark D. Stith, *Countertrade, in* DOING BUSINESS IN CHINA § 10.04 (William P. Streng & Allen D. Wilcox eds., 1992).

27. Lubman and Wajnowski, *supra* note 22, at § 3.02[4].

28. Williams & Stith, *supra* note 26, § 10.01.

29. *See id* § 10.02[1].

30. *Compare* Law of the People's Republic of China on Sino-foreign Co-operative Enterprises, 1 China Bus. Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 6-100 (1988) [hereinafter Contractual Joint Ventures] *with* Law of the People's Republic of China on Sino-foreign Joint Equity Enterprises, 1 China Bus. Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 6-500 (1988) *and* Regulations for the Implementation of the Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investment, 1 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 6-550 (1983).

Another entity that promotes technology transfers in China is the wholly foreign-owned enterprises. These wholly foreign-owned enterprises are beyond the scope of this Comment. Interested readers are referred to the Law of the People's Republic of China Concerning Enterprises with Sole Foreign Investment, 2 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 13-506 (1986) [hereinafter, Foreign Investment].

31. Joint Venture Regulations, *supra* note 30, ¶ 6-550(19).

32. "In March 1987, Provisional Regulations of the State of Administration for Indus-

contribution may consist of foreign currency, technology and/or equipment.[33] All parties who wish to invest in China must comply with technology transfers in the form of equipment, "know-how"[34] or training of scientific management, technical and managerial personnel.[35] The normal duration of an equity joint venture is between ten and thirty years, but this term may be extended to fifty years with special approval.[36] At liquidation, the assets are distributed "among the parties to the joint venture according to the proportion of each party's investment unless otherwise provided by agreement, contract or the articles of association."[37]

b. Contractual Joint Ventures

These Sino-foreign co-operative joint ventures are governed by the "Law of the People's Republic of China on Sino-foreign Co-operative Enterprises."[38] The purpose of this regulation is to expand and facilitate cooperation and technological exchanges between foreign entities and China.[39] The structure of a cooperative joint venture provides greater flexibility to the contracting parties than equity joint ventures.[40] For example, foreign investors may invest as little or as much as the parties agree upon.[41] In contrast to equity joint ventures, contractual joint ventures permit partners to recoup their investment and depreciation expenses during the venture period.[42] In choosing whether to enter into a equity joint venture or a contractual joint venture, the foreign investor should

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try and Commerce Concerning the Proportion of Registered Capital to Total Investment of Sino-Foreign Joint Ventures were promulgated. These regulations establish registered capital requirements for equity ventures of different sizes." Michael W.T. Chan, *Business Ventures in the People's Republic of China, in* INTERNATIONAL TECHNOLOGY JOINT VENTURES IN THE COUNTRIES OF THE PACIFIC RIM 61, 64 (James A. Dobkins ed., 1988).

33. Joint Venture Regulations, *supra* note 30, ¶ 6-550(3).

34. "Know-how" is described as technical knowledge which has not been made public and is used for manufacturing, product design, quality control or management and technical process." Anna Han, *China's New Regulations for Technology Import Contracts: An Evolving Primer For Technology Transfers to China* 3 (April 1988) (unpublished manuscript, on file with Professor Anna Han, Santa Clara University, School of Law).

35. Joint Venture Regulations, *supra* note 30, ¶ 6-550(4).

36. *Id.* ¶ 6-550(100) (as amended in 1986).

37. *Id.*

38. Contractual Joint Ventures, *supra* note 30.

39. *Id.* ¶ 6-100(1).

40. The parties may choose not to create a legal "person" with limited liability and set forth all duties, rights and liabilities through contractual negotiation. Cohen & Valentine, *supra* note 3, at 180. However, "in some instances, the [contractual joint venture] is a legal entity with its own articles of association and board of directors, and occasionally even limited liability." *Id.*

41. *Id.*

42. *See* Contractual Joint Ventures, *supra* note 30, ¶ 6-100 (22).

consider tax implications and foreign exchange repatriation.[43]

B. *Rules and Regulations*

Prior to 1985, the PRC had no established legislative regulations governing the transfer of technology.[44] Thus, negotiations for technology transfer through capital contributions and other means occurred without the benefit of published legal guidelines or state approval.[45] Often these technology transfers were made by Chinese authorities on an *ad hoc* basis.[46] Consequently, foreign investors were subject to contradictory investment requirements and uncertain prospects for success.[47]

Due to the increased volume and complexity of technology transferred into the PRC, the Chinese legislature promulgated a number of regulations to handle technology transfers more effectively.[48] In 1985, "Regulations on Administration of Technology Import Contracts of the People's Republic of China" (Technology Regulations)[49] were promulgated, setting forth general guidelines for technology transfers. In 1987, "Detailed Rules for the Implementation of the Administrative Regulations of the People's Republic of China on the Control of Technology Import Contracts" (Implementing Regulations) were promulgated.[50] In contrast to the Technology Regulations, which basically provided for contracts dealing with patent know-how,[51] the Implementing Regulations have broadened the contract scope to include the transfer of proprietary technology and trade secrets.[52]

All contracts are subject to explicit requirements for technology import contracts. These contracts must include:

1. Name of the contract;

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43. *See* Cohen & Valentine, *supra* note 3, at 205. The problems of foreign exchange repatriation and the tax consequence associated with it will not be discussed in this comment.

44. Lubman & Wajnowski, *supra* note 22, at § 3.04.

45. *Id.*

46. *Id.*

47. *See id.* §§ 3.03[3]-3.04.

48. *Id.* § 3.04.

49. Regulations on the Administration of Technology Import Contracts of the People's Republic of China, 1 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 5-570 (1985) [hereinafter Technology Regulations].

50. Detailed Rules for the Implementation of the Administrative Regulations of the People's Republic of China on the Control of Technology Import Contracts, 1 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 5-573 (1987) [hereinafter Implementing Regulations].

51. Technology Regulations, *supra* note 49, ¶ 5-570(2).

52. Implementing Regulations, *supra* note 50, ¶ 5-573(2). This includes technical service contracts, whereby the licensor is authorized to use a specified technology to provide service or consultation. *Id.*

2. Description, scope and requirements of the technology to be imported;
3. Criteria, time limits and standards for assessing and examining the apportionment of liability for risk and measures to be adopted;
4. Obligation of confidentiality with regards to the imported technology, and the ownership and sharing of improvements to the technology;
5. Total price and enumeration, price of individual items and form of payment;
6. Method of computing the amount of damages for breach of a contract;
7. Methods for the resolutions of dispute; and
8. Definitions of technical terminology.[53]

The Technology Regulations also set forth guidelines limiting the types of technology that will be approved for import and implementation in China. For example, "technology to be imported must be advanced and appropriate" and is required to comply with at least one of the following goals:

1. Developing new products;
2. Improving product performance, reducing the cost of product performance, reducing the cost of products and conserving energy or raw material;
3. Favorable to maximizing the utilization of local resources;
4. Enhancing foreign exchange earnings;
5. Favorable to environmental protection;
6. Favorable to production safety;
7. Improving management; and
8. Upgrading scientific and technical standards.[54]

However, current administrative practices and policies provide little direction for foreign investors as to which of these eight factors will be given greatest emphasis by Chinese officials. Nonetheless, it seems likely that contracts that foster the basic policy objectives of the PRC would be more likely to again approval. Technology contracts such as those which promote the development of new products for export or increase foreign exchange earnings, are more likely to be approved, because these factors comport with the basic policy objectives of the PRC.

The requirement that the technology be advanced underlies the PRC's concern that the imported technology be current.[55] Such

53. *Id.* ¶ 5-573(7).
54. Technology Regulations, *supra* note 49, ¶ 5-570(3).
55. *See* Joint Venture Regulations, *supra* note 30, ¶¶ 6-550(3)-(4).

concerns demonstrate that Chinese authorities are very wary about being "stuck" with the West's outdated technology.[56] Consequently, determining whether a proposed transfer involves "state of the art" technology has become a major issue in the approval process.[57] The PRC has often preferred to license the most technologically advanced knowledge or product, despite the limited utility of such knowledge may have in China.[58] For example, new technology is often incompatible with existing manufacturing plants or computer systems within the PRC.[59]

The PRC's insistence on the imposition of warranty provisions upon foreign transferor has been incorporated into the Technology Regulations and the Implementing Regulations.[60] The transferor must guarantee lawful ownership and to compensate the PRC for any and all losses resulting from an intellectual property infringement claim.[61] Furthermore, the transferor must warrant that the technology or documents, and information provided are "complete, correct, valid and capable of accomplishing the technical targets prescribed in the contract."[62]

The Technology and Implementing Regulations both include provisions which invalidate all contracts which place unreasonably restrictive requirements upon the Chinese party.[63] The underlying purpose behind these restrictions is to protect the PRC from the exploitation by unscrupulous foreigners. For example, a transferor may not include any of the following clauses in a technology contract, without first obtaining special approval:

> 1. Include in the contract additional conditions which are relevant to the technology being imported, such as requiring the transferee to purchase unnecessary technology, technical services, raw material, equipment and products;
> 2. Restrict the transferee's freedom of choice to obtain raw materials, parts components or equipment from other sources.
> 3. Restricting the transferee's development and improvement of imported technology;
> 4. Restricting the transferee's acquisition of similar or competing technology from other sources;

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56. Han Lecture, *supra* note 20.
57. *Id.*
58. *Id.*
59. *Id.*
60. *Id.*
61. Implementing Regulations, *supra* note 50, ¶ 5-573(11).
62. *Id.* ¶ 5-573(9).
63. Technology Regulations, *supra* note 49, ¶ 5-570(9); Implementing Regulations, *supra* note 50, ¶ 5-573(18).

5. Imposing unequal terms of exchange upon the transferee of improvements of the imported technology.
6. Restrict the imported technologies quantity, variety and sales price of products to be manufactured by the transferee;
7. Restrict unreasonably the transferee's sales channels and export markets;
8. Forbid use by the transferee of the imported technology after the expiration of the contract; or
9. Require the transferee to pay for or to undertake obligations for patents which are unused or no longer effective.[64]

Every agreement or joint venture contract containing a technology transfer component must be approved by the Chinese government.[65] This is often a lengthy and frustrating process, due to the presence of various barriers which must be overcome.[66] The first barrier a transferor must address is determining which Chinese entity has approval authority. This is a difficult determination despite the intent of the Implementing Regulations to provide some clarity. However, as a general rule, joint venture contracts require approval by MOFERT or its local designee or bureau.[67]

Pursuant to Article 6 of the Implementing Regulations, if a local agency has approved the joint venture feasibility study, the local agency retains the power to examine and approve the final contract.[68] Accordingly, in order to determine who has approval authority, the transferee and the transferor must first determine the appropriate authority for reviewing the feasibility study.[69] This is a crucial determination because the feasibility study and project proposal must be approved by the proper Chinese authority, before the transferor and transferee can negotiate a technology transfer agreement.[70]

The key factors in this determination are the project's location and its total value.[71] For most projects involving a feasibility study less than $5,000,000 (U.S. dollars), approval may be obtained from the ministry under whose authority the project is being undertaken.[72] Projects between $5,000,000 and $50,000,000 (U.S. dollars) require approval by a ministry level entity or by MOFERT

64. Technology Regulations, *supra* note 49, ¶ 5-570(9).
65. Lubman & Wajnowski, *supra* note 22, at § 3.04[4].
66. *Id.*
67. *Id.*
68. *Id.*
69. *Id.*
70. Lubman & Wajnowski, *supra* note 22, at § 3.04[4].
71. *Id.*
72. *Id.*

(located in Beijing).[73] When a large project is involved and the total project value exceeds one hundred million dollars, approval by MOFERT and the State Council is imperative.[74]

The location of the project is also a factor in determining the appropriate approval authority. The PRC has granted independent approval authority for projects involving at least $30,000,000 U.S. dollars to the cities of Beijing, Shanghai, Dalian, Tianjin, and Guangzhou.[75] In addition, special economic zones (SEZ) have autonomous approval authority and a core of separate and distinct technology transfer regulations.[76]

Once negotiations are concluded, the contract will not be validated until it is scrutinized by the approving authority for compliance with the Implementing Regulations.[77] The Implementing Regulations require MOFERT or the appropriate authority to make a decision on the contract within fifty days, or it is deemed approved.[78] However, it is questionable whether the Chinese will honor a contract that has been approved by this default provision. Without the proper approval signatures and stamps, the necessary Chinese entities may be unwilling to cooperate. Authorization is required to implement any foreign project.[79] Often, the approval authority determines that the parties must make specific amendments to the contract within a specified period before their contract will be approved.[80]

Although joint venture enterprises engage in technology transfer, the PRC has expressly exempted equity, contractual and wholly owned enterprises from the scope of the Technology Implementing Regulations.[81] The governing law for technology transferred as capital contribution in a joint venture is the "Regulations for the Implementation of the Law of the People's Republic of China on Joint Ventures Using Chinese and Foreign Investment" (Joint Venture Regulations).[82] However, foreign parties can expect joint venture contracts involving technology transfers to be similarly

73. *Id.*
74. *Id.*
75. Lubman & Wajnowski, *supra* note 22, at § 3.04[4].
76. *See* Stanley B. Lubman & H. Zheng, *The Special Economic Zones and Coastal Cities, in* DOING BUSINESS IN CHINA § 20 (William P. Streng & Allen D. Wilcox eds., 1992).
77. *See* Jesse T.H. Chang & Elson Pow, *Technology Transfer to China*, EAST ASIAN EXECUTIVE REP., Jan. 15, 1986, at 8.
78. *Id.*
79. *Id.*
80. *Id.*
81. Han, *supra* note 34, at 3.
82. Joint Venture Regulations, *supra* note 30.

scrutinized as if the Implementing Regulations were applied. This is perhaps due to the fact that MOFERT and the provincial approval entities for joint venture contracts are the agencies most often involved in approving contracts that fall under the Technology Regulations and the Joint Venture Regulations. In fact, the provisions for the capital investment contributions of technology in joint venture contracts encompass many of the same clauses as the Technology Regulations.[83]

III. DISPUTE RESOLUTION CLAUSES FOR TECHNOLOGY CONTRACTS AND JOINT VENTURE CONTRACTS WITH TECHNOLOGY TRANSFER COMPONENTS

The "Foreign Economic Contract Law of the People's Republic of China (FECL)[84] has established standards for settling all contract disputes involving foreign investors. The regulation establishes basic resolution procedures for use in the event of a dispute. Under this regulation, "[a]ny disputes arising from the contract ought to be settled by the parties, if possible, through consultation or mediation of a third party."[85] However, if the dispute cannot be resolved by consultation or mediation, the dispute may be settled by arbitration, or by suit in the People's Court if "neither an arbitration clause is provided in the contract nor a written agreement [to arbitrate] is reached afterwards."[86]

Due to the loosely drafted joint venture regulations, many issues are left open to contract negotiation, including alternative means of dispute resolution. Consequently, international law and practice must fill the contractual and regulatory gaps. This allows the joint venture partners to decide issues not covered by Chinese law. Examples include the language used in the contract, the choice of venue for arbitration, and the amount of liquidated damages. This enables the parties to draw on international law to resolve disputes, should conflicts arise.[87] Further, FECL expressly permits contract provisions based on international treaties which the PRC has participated in or concluded to differ from PRC laws.[88]

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83. *Compare* Technology Regulations, *supra* note 49 *with* Joint Venture Regulations, *supra* note 30.

84. Foreign Economic Contract Law of the People's Republic of China, 1 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 5-550 (1985) [hereinafter FECL].

85. *Id.* ¶ 5-500(37).

86. *Id.* ¶ 5-550(38).

87. Goossen, *supra* note 1, at 332.

88. FECL, *supra* note 84, ¶ 5-550(6) (except treaty clauses to which the PRC has declared reservation).

A. *Problems and Solutions for Negotiation of Dispute Resolution Clauses*

Although the broad language of the joint venture laws and FECL implies that there is a tremendous amount of freedom for contracting in drafting their joint venture agreements, this is not necessarily true. Foreign investors have limited autonomy because China's approval process is "plagued by confusion, bureaucratic inconveniences, and excessively rigid policy."[89] This lack of autonomy is evident from MOFERT's model contract, which sets forth a form contract which includes China's position on issues regarding dispute resolution.[90] Consequently, if an arbitration clause is omitted from the contract, MOFERT may be reluctant to approve the joint venture. Moreover, even though the joint venture regulations provide for dispute resolution in the courts, none of the model clauses offers this alternative.[91] In addition, foreign treaties entered into by China make it clear that conciliation and arbitration are in fact favored methods of dispute resolution.[92] FECL allows parties to initiate a suit only in the absence of an agreement to arbitrate; a party may not go to court if there is such an arbitral agreement.[93]

The PRC has often claimed that a choice of forum is available to foreign investors, because Chinese law states that arbitration can take place in the defendant's domicile or where the dispute arose.[94] However, the PRC will always attempt to make the determination that the dispute arose in China.[95] Therefore, the arbitration will

89. Chan, *supra* note 32, at 62.

90. *See* Christan Saklbaing, *Dispute Settlement in China*, in DOING BUSINESS IN CHINA § 21.05(1) (William P. Streng & Allen D. Wilcox eds., 1992); the model contract is reprinted in English in COMMERCIAL, BUSINESS, & TRADE LAWS: THE PEOPLE'S REPUBLIC OF CHINA, booklet 27,28 (Owen D. Nee Jr., et al eds, 1983). This form contract was created as a starting point for joint venture negotiations and was in part drafted to protect the interests of the PRC. Salbaing, § 21.05[1]

91. The model clauses have been interpreted to involve the courts in only the enforcement of the resolution. Walter Sterling Survey, *Dispute Settlement in U.S. — China Trade — Another Look, in* LEGAL ASPECTS OF DOING BUSINESS IN CHINA 277 (1985).

92. "Article 8 of the Sino-Japanese Trade Agreement which was signed on 5 January 1974 provides for recourse to friendly consultation to resolve disputes, followed by arbitration if negotiation fails. Similarly, Article VIII of the US-China Trade Agreement emphasizes that the friendly negotiation and conciliation processes should be attempted before arbitration is adopted." ERIC LEE, COMMERCIAL DISPUTE SETTLEMENT IN CHINA 10 (1985). *See* Agreement on Trade Relations, July 7, 1979, U.S.-P.R.C., art. VIII, 31 U.S.T. 4651. The U.S and the P.R.C. agreed to settle any dispute arising from or in relation to their contracts through friendly consultation, conciliation, or mutually acceptable means, including international third party arbitration. Goossen, *supra* note 1, at 332.

93. FECL, *supra* note 84, ¶¶ 5-550(37)-(38).

94. *See* Goossen, *supra* note 1, at 334.

95. *See id.*

nearly always take place in China.[96] For example, the PRC always takes the position of defendant itself so that it can invoke the clause for permitting the arbitration to occur in the defendant's domicile. Alternatively, if the place of arbitration is decided on the basis of where the dispute arose, it is inevitable that the arbitration will take place in China.

As the model contracts do not offer a choice of forum in the arbitration clauses, an increasing number of Chinese recipients are asking that arbitration take place in Beijing under the auspices of the Foreign Economic Trade Arbitration Commission (FETAC) in China.[97] An investor who does not wish to arbitrate under FETAC should specify the place of arbitration at the outset of negotiations. When the contract is silent as to the location of the dispute forum and choice of law, the law of the country which has the "closest connection" with the contract will be applied as set forth by the FECL.[98] Consequently, almost all joint venture contracts in which technology is imported for use in China will be deemed as having the closest connection to China.[99]

Dispute resolution clauses are negotiable,[100] and MOFERT has approved contracts where the agreed location of arbitration is outside of China and governed by an arbitration organization other than FETAC.[101] Most sample contracts permit third country arbitration if consultation has failed to resolve the dispute.[102] In fact, MOFERT continually has approved third country arbitration in Sweden under the Stockholm Chamber of Commerce,[103] the United Nations Commission on International Trade Laws (UNCITRAL) rules,[104] in Zurich under Swiss arbitration,[105] in Hong Kong under

96. *See id.*

97. Han, *supra* note 34, at 8.

98. FECL, *supra* note 84, ¶ 5-550(5).

99. Han, *supra* note 34, at 8.

100. *Id.* at 8.

101. *See e.g.*, FECL, *supra* note 84, ¶ 5-550(35).

102. Anne Judith Farina, Comment, *"Talking Disputes into Harmony" China Approaches International Commercial Arbitration*, 4 AM. U.J. INT'L L. & POL'Y 137, 167 (1989).

103. "Any dispute 'shall be settled though friendly consultation between the parties;' but if settlement cannot be reached, the dispute shall be submitted for arbitration." Abitration is to take place in Stockholm, Sweden, under the auspices of the Arbitration Institute of the Stockholm Chamber of Commerce." CHARLES A. BROWER & LEE R. MARKS, INTERNATIONAL COMMERCIAL ARBITRATION 245 (1983) (providing an summary of a typical arbitration clause used between a U.S. party and a PRC governmental entity).

104. Han, *supra* note 34, at 8.

105. *Id.*

the Hong Kong Arbitration Center,[106] and most recently under the International Center for Settlement of Investment Disputes (ICSID).[107]

UNCITRAL has been the accepted arena for dispute resolution since 1979, when the United States and the PRC signed a trade agreement.[108] Article 8 of the Trade Agreement, which addresses dispute settlement, provides that:

> The Contracting Parties encourage the prompt and equitable settlement of disputes arising from or in relation to contracts between their respective firms, companies, corporations, and trade organizations through friendly consultations, conciliations, and other mutually acceptable means.[109]

If a dispute cannot be resolved promptly through consultation or conciliation, the treaty provides that the parties may submit to arbitration in the People's Republic of China, the United States or a third country.[110] The rules of procedure of the relevant arbitral institutions are either those of UNCITRAL or any other rules of procedure agreed upon by the two parties.[111]

Hong Kong has also been approved for third party arbitration through the Hong Kong Arbitration Center.[112] Use of this Center may be advantageous to a foreign investor for various reasons, including the great expertise of Hong Kong arbitrators in Chinese law and investment practices (these arbitrators have more experience in dealing with Chinese laws and practices than any other third country tribunal).[113] In addition, Chinese language translation and interpretation services are readily accessible in Hong Kong.[114]

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106. Goossen, *supra* note 1, at 335.

107. Convention on the Settlement of Investment Disputes between States and Nationals of Other States of 1966, *opened for signature* March 18, 1965, 17 U.S.T. 1270, 575 U.N.T.S. 159 [hereinafter ICSID]. The ICSID was established by convention, in 1966. It was intended to address settlement of disputes between states and nationals of other states under the sponsorship of the International Bank for Reconstruction and Development (World Bank). The convention provides short-cuts to resolution of disputes between host states and investors of other states. Although China has been a member of the World bank, it has not been until recently that China agreed to participate in ICSID.

108. *See* Agreement on Trade Relations between the U.S. and the P.R.C., executed July 7, 1979, 31 U.S.T. 4651, T.I.A.S. No. 9630.

109. *Id.*

110. Harold Sacks, *Arbitration of Disputes Between The People's Republic Of China and U.S. Corporations, in* ARBITRATION AND THE LICENSING PROCESS 5-83, 5-91 (Robert Goldscheider and Michel de Hass eds., 1984).

111. *Id.*

112. Goossen, *supra* note 1, at 335.

113. *Id.*

114. *Id.*

In China, contract conciliation and mediation proceedings must be held prior to the initiation of arbitration.[115] These proceedings involve the inherent risks that friendly conciliation may continue to the point at which the parties are denied an opportunity to conclude the dispute through a determination based on the merits of the case.[116] Thus, in order to ensure the speedy determination of a dispute, joint venture investors should specify a time limitation for conciliation proceedings before commencing arbitration.[117] For example, the parties may agree that, if after ninety days the conciliation process has proven ineffective, either party may initiate arbitration proceedings.[118] In most cases, if investors keep MOFERT informed on the progression of the negotiations, it is very likely that the foreign party will be able to negotiate a contract that is agreeable to both the Chinese party and MOFERT.[119] However, if the parties did not negotiate a contract for arbitration in a third country, foreign companies may look to the PRC arbitration system for resolution of disputes which arise during the course of the transaction.[120]

IV. ARBITRATION IN THE PEOPLE'S REPUBLIC OF CHINA

In the 1950s the China Council for the Promotion of International Trade (CCPIT) established two entities to handle arbitration proceedings between Chinese and foreign parties.[121] All maritime related disputes are resolved by the Maritime Arbitration Commission (MAC).[122] Arbitration arising out of unresolvable disputes over joint venture contracts, patents and related know-how, and trademarks fall under the auspices of FETAC.[123] FETAC's main office is located in Beijing, but disputes may also be heard in the branch offices located in Shanghai and Shenzhen.[124]

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115. FECL, *supra* note 84, ¶ 5-550(37).

116. *See* Thomas Peele & Marsha A. Cohen, *Dispute Resolution in China*, CHINA BUS. REV., Sept.-Oct. 1988, at 46, 48-49.

117. *Id.*

118. *Id.*

119. *See id.*

120. *See* FECL, *supra* note 84, ¶ 5-500(37).

121. LEE, *supra* note 92, at 15.

122. MAC was established by CCPIT in 1958 to handle maritime disputes involving foreign parties. *Id.* at 13. This comment will not discuss MAC.

123. The Foreign Trade Arbitration Commission (FTAC) renamed FETAC was established by the China Council for the Promotion of International Trade (CCPIT) in 1954 to handle arbitration between a Chinese party and a foreign party. *Id.* at 21.

124. Interview with Xu Sanqiao, Legal advisor to the China International Economic and Trade Arbitration Commission, Shenzhen Commission, in Shenzhen, PRC (August 5, 1991) [hereinafter Sanqiao Interview].

FETAC's procedural rules are administered during every arbitration session involving Chinese and foreign parties.[125] Moreover, because, FETAC is supervised by CCPIT, which is in turn supervised by MOFERT, the rules and procedures administered by FETAC are influenced by national policies.[126] These procedural rules are set forth in the revised Arbitration Provisions of the China International Economic and Trade Arbitration Commission (CIETAC).[127]

Although these procedures were enacted to promote foreign investment in China, investors are still skeptical about the reliability of the Chinese arbitration process.[128] This uneasiness is primarily a product of investor ignorance in the process and a history of failed business relations.[129] This apprehension stems from three main concerns: 1) whether the Chinese arbitration process is unbiased, so that foreign parties are ensured a fair resolution of the issue; 2) whether the process is capable of resolving the issues that may arise in a contracts dealing with technical complexities; and 3) whether the foreign party will be able to enforce a judgment award decree by the arbitrational tribunal.

A. *Can Foreign Parties Obtain Fair Resolution of Disputes?*

Recent revisions have greatly improved the position of a foreign investor in the arbitration process. For example, each party has now the right to select an arbitrator from the official list of arbitrators.[130] Before applying for formal arbitration, the plaintiff may select one arbitrator; after receiving the arbitration form, the defendant may nominate one arbitrator.[131] However, neither party may choose an arbitrator whose name does not appear on the official list of arbitrators list.[132] Upon request, either side may also defer selection of their arbitrator to FETAC.[133] A third arbitrator who acts as the presiding arbitrator, is appointed by the chairman

125. Goossen, *supra* note 1, at 331.

126. Farina, *supra* note 102, at 152-53.

127. These rules were adopted in September of 1988 by CCPIT and effective on January 1, 1989. Arbitration Provisions of the China International Economic and Trade Arbitration Commission, 2 China Laws for Foreign Bus. (CCH Austl. Ltd.) ¶ 10-505 (1988) [hereinafter Arbitration].

128. Sacks, *supra* note 110, at 5-86.

129. *Id.*

130. *See* Arbitration, *supra* note 127, ¶¶ 10-505(3)-(8). This list is comprised of arbitrators appointed by CCPIT, pursuant to the procedural rules of FETAC. *Id.* ¶ 10-505(4).

131. *Id.* ¶¶ 10-505(3)-(8).

132. *Id.*

133. *Id.*

of FETAC.[134]

FETAC's arbitrators list includes both Chinese and foreign persons with "professional knowledge and actual experience in international economics and trade, and science and technology."[135] Since the effective date of the new rules, the arbitrators list has been updated and is increasingly composed of foreign members.[136] The opportunity to select foreign, as well as Chinese arbitrators should lend balance to the arbitration tribunal.[137]

However, the arbitral voting process may be less fair than the selection process, because arbitration awards are based on a majority vote of the three-person arbitration tribunal.[138] While FETAC presiding arbitrator has a duty to be unbiased, as a member of CIETAC, he is also overseen by a superior authority and may be compelled to vote in accordance with its wishes.[139] Consequently, legal practitioners disfavor arbitration in China because they believe their interests will only be represented by a minority vote on the arbitration panel.[140] Nevertheless, the number of judgments favoring foreign parties has greatly increased since the reformation of the FETAC procedural rules.[141] The increase in the number of judgment awards for foreign parties, combined with China's current policies intended to encourage foreign investment and technical development, seems to indicate that the PRC is attempting to make FETAC a more attractive alternative to foreign investors.[142]

Arbitration hearings are conducted as conferences.[143] Consequently, a party will never have a case thrown out, or its claim dismissed, due to ignorance of FETAC procedures.[144] In fact, the disputing parties may confer with FETAC on matters relating to the arbitration proceedings in person or through an attorney.[145]

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134. *Id.* ¶ 10-505(14).

135. *Id.* ¶ 10-505(4).

136. Interview with Lu Kun, arbitrator for FETAC (Oct. 10, 1992) [hereinafter Kun Interview].

137. *Id.*

138. Arbitration, *supra* note 127, ¶ 10-505(33).

139. "Although the arbitration tribunals formed to conduct references are independent, they may nevertheless submit questions involving state principles and polices to [FETAC] for guidance. This is to ensure that the arbitration carried out will conform to the official policy on foreign trade." LEE, *supra* note 92, at 22.

140. Interview with Audrey Yu, attorney at Denton, Hall, Burgin & Warrens, in Hong Kong (Aug. 3, 1991).

141. *Id.*

142. *Id.*

143. Kun Interview, *supra* note 136.

144. Sacks, *supra* note 110, at 5-86.

145. *Id.*

FETAC's willingness to educate a foreign investor about Chinese arbitration procedures should help alleviate investor fears of being disadvantaged during the arbitration process.

While a case before the Chinese courts may only be litigated by an attorney who is a Chinese national,[146] FETAC rules allow the foreign party to choose as their advisor, an attorney or representative who is a Chinese citizen or a foreign citizen.[147] Furthermore, an attorney may act on behalf of the investor as long as he or she is granted power of attorney.[148]

B. *Can the Chinese Arbitral Body Competently Resolve Disputes Involving Technical Contracts?*

Unlike other international methods of arbitration, Chinese arbitration involves a combination of both conciliation and arbitration.[149] "Subject to consent of both parties, conciliation can be conducted at any time prior to or after the commencement of arbitration proceedings and before a final arbitral award is granted."[150] The Chinese prefer that the two parties negotiate a compromise through conciliations, as illustrated by a joint venture case involving a Hong Kong corporation and a Chinese corporation in Guangzhou.[151]

In this case, one of the two shareholder's of a Hong Kong corporation (shareholder A) signed an agreement with the Chinese corporation to set up a factory to produce a certain commodity.[152] The Hong Kong corporation was to contribute the equipment and technology, and the Chinese company agreed to provide all the raw materials, the factory building, and workers.[153] The contract also set forth conditions for the goods to be re-exported.[154] The joint venture was successful until the shareholder who did not sign the

146. Sanqiao Interview, *supra* note 124.

147. *Id.*

148. In the past, the arbitration proceedings were open session hearings in which embassy officials were able to observe the arbitration and evaluate whether the awards were fairly allocated. *Id.* However, under the new rules, article 25 of the Arbitration Provisions states that arbitration tribunals shall not hear cases in open session unless both parties request that an open session be held. Arbitration, *supra* note 130, ¶ 10-505(25).

149. Tang Houzhi, *Arbitration: A Method Used by China to Settle Foreign Trade and Economic Disputes*, 4 PACE L. REV.519, 521 (1984).

150. *Id.*

151. Interview with [name withheld by request], in Hong Kong (Aug. 3, 1991) [hereinafter Confidential Interview]. The interviewee consented to the interview on the condition that his identity and those of the parties remain unidentified.

152. *Id.*

153. *Id.*

154. *Id.*

agreement (shareholder B) informed the Chinese party that shareholder A had left the Hong Kong corporation.[155] Shareholder B then persuaded the Chinese corporation that it should sign another contract with him so that he could continue the joint venture.[156] However, when shareholder A discovered what had happened he returned to the Chinese party and asked that they comply with the original agreement.[157] When shareholder A and the Chinese party failed to resolve the dispute through mediation, they applied to FETAC for arbitration.[158] The arbitration panel's first step was to request that both parties attempt to resolve the problems on their own through conciliation.[159] This method proved successful in this case.[160] The head office of the Guangzhou corporation which was located in Beijing found another factory in Beijing with which the original agreement could be carried out.[161]

In another case, involving the sale of goods, conciliation took place during the arbitration proceedings.[162] In this case, a foreign firm signed a contract with a Chinese company for the shipment of a certain tonnage of goods to be delivered in separate shipments to a port designated by the foreign firm.[163] The agreement also contained a penalty clause for non-performance fixed at five percent of the non-performed amount of the contract.[164]

The Chinese party obtained the necessary export permit license and shipped the goods.[165] However, the goods were mistakenly sent to the wrong foreign firm.[166] When the Chinese party tried to obtain a second export license their request was denied.[167] Because the Chinese firm could not export the goods, it proposed that the contract be cancelled.[168] The foreign corporation did not agree to the proposed cancellation of the contract, and applied to FETAC for arbitration, claiming the amount stated in the penalty clause, damages for loss of profits, and expenses incurred.[169] The Chinese

155. *Id.*
156. Confidential Interview, *supra* note 151.
157. *Id.*
158. *Id.*
159. *Id.*
160. *Id.*
161. Confidential Interview, *supra* note 151.
162. *Id.*
163. *Id.*
164. *Id.*
165. *Id.*
166. Confidential Interview, *supra* note 151.
167. *Id.*
168. *Id.*
169. *Id.*

party argued that it should not be responsible because the failure to deliver the goods was due to the export permit not being granted, a circumstance beyond its control.[170] During arbitration, the tribunal, with the consent of both parties, went into a conciliation process.[171]

The only instruction the arbitration tribunal made was that since the Chinese corporation had an export license for the first lot of goods, the Chinese corporation should at least be responsible for its failure to deliver that particular lot.[172] The foreign firm was not allowed to claim both the penalty and damages for its lost profits.[173] Consequently, both parties settled on a reasonable compromise, in which the Chinese party would pay a specified amount as compensation and 60% of the arbitration costs, and the foreign party would bear the remaining 40%.[174]

In meeting the goals of arbitration to resolve problems through third party dispute resolution and compromise, the Chinese method has many positive aspects. It increases the probability that the disputing parties will continue to do business in the future. However, there are serious drawbacks to the Chinese arbitration process. For example, FETAC arbitration provisions have no discovery procedures for interrogatories or document production. Under Article 6 of the FETAC rules, the party requesting arbitration must attach documentation of the facts of the dispute to the arbitration application.[175] The party receiving the application must, in reply, submit any defenses and relevant documents within 45 days to the arbitration commission and the plaintiff.[176] However, neither party is obligated to submit documents or answer any questions posed by the opposing party.[177] During arbitration, both sides are required to produce facts supporting their complaints or defenses.[178]

This absence of a comprehensive discovery mechanism is a major weakness in the PRC arbitration, as exemplified by the serious disadvantage imposed upon the less informed party entering into the arbitration. In addition, parties can introduce new evidence at formal hearings without notice.[179] Consequently, a party might be

170. *Id.*
171. Confidential Interview, *supra* note 151.
172. *Id.*
173. *Id.*
174. *Id.*
175. Arbitration, *supra* note 127, ¶ 10-505(6).
176. *Id.* ¶ 10-505(8).
177. *See id.*, ¶¶ 10-505(6)-(13).
178. *Id.*, ¶¶ 10-505(6), 10-505(9).
179. Confidential Interview, *supra* note 151.

put in a position in which it cannot adequately protect itself, having no time to adequately review new evidence and raise defenses.

Although FETAC rules give the arbitrator and the arbitration committee power to conduct their own investigation, gather further evidence, and subpoena materials for the purpose of arbitration, the rules are silent with regard to the power to subpoena witnesses.[180] Since the power to subpoena a witness is not explicitly set forth in the procedural rule, the arbitration commission is not obligated to help parties obtain the witnesses. Therefore, a foreign party may find it impossible to compel an unwilling witness to testify.

Another concern for investors is that presiding arbitrators selected by the Chairman of the Arbitration Commission from the Arbitrational Commission's list of arbitrators, may not have the background knowledge to resolve disputes of a technical nature. This concern is mitigated by the ability of the arbitration tribunal to consult experts and/or appraisers in disputes involving sophisticated technical issues.[181] An expert may be a Chinese national or a foreign organization or citizen.[182] However, the rules provide no language to ensure that the selected expert or appraiser be a neutral and unbiased party.

C. *Enforcement of Awards*

FECL contains provisions allowing parties to appeal to Chinese courts for enforcement of arbitral awards.[183] In order to seek enforcement of arbitral awards in courts under foreign jurisdiction, FECL expressly allows foreign investors and technology suppliers to look to the United Nations Convention of the Recognition and Enforcement of Foreign Arbitral Awards (New York Convention)[184] for guidance. When China entered the New York Convention, it agreed that awards involving international commercial matters rendered in other contracting states would be enforced within the PRC. The convention states that:

> Each Contracting State shall recognize arbitral awards as binding and enforce them in accordance with the rules of procedure of the territory where the award is relied upon, under the conditions laid down in the following articles. There shall not be imposed substantially more onerous conditions or higher fees or

180. Arbitration, *supra* note 127, ¶ 10-505(26).
181. *Id.* ¶ 10-505(28).
182. *Id.*
183. *Id.* ¶ 10-505(38).
184. Convention on the Recognition of Foreign Arbitral Awards of New York of 1958, June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3 [hereinafter New York Convention].

> charges on the recognition or enforcement of arbitral awards to which this Convention applies than are imposed on recognition or enforcement of domestic arbitral awards.[185]

Consequently, under the New York Convention, joint ventures and other suppliers of technology are subject to the procedural rules of the territory where the enforcement of arbitral awards is to be made.[186] If an arbitration award is to be enforced in China, Article 195 of the PRC Civil Procedure Code,[187] which describes judicial enforcement of arbitration decisions, will be applied.[188]

However, the New York Convention contains defenses to the enforcement and recognition of arbitration awards.[189] For example, if the party against whom the award is invoked can show proof of a valid defense (e.g., incapacity of the parties, improper notification of arbitration proceedings, or invalidity of the arbitration proceeding as contrary to the contractual agreement),[190] the award will not be enforceable. In addition, parties may protest enforcement of the award in China on public policy grounds. The New York Convention states:

> Recognition and enforcement of an arbitral award may also be refused if the competent authority is in the country where recognition and enforcement is sought finds that:
>
> (a) The subject matter of the difference is not capable of settlement by arbitration under the laws of that country; or
>
> (b) The recognition or enforcement of the award would be contrary to *public policy* of that country.[191] (emphasis added).

As far as investors engaged in technology transfers through joint ventures are concerned, subpart (a) should not be a problem because FETAC via the CCIPT is capable of settling all foreign investment disputes. However, subpart (b) may pose an obstacle because the term "public policy" is vague and open-ended. Accordingly, the "public policy" exception is considered a notoriously flexible method of avoiding the requirements of Chinese law.[192]

Those countries which have treaties with China and have included provisions for the enforcement of awards are in a much bet-

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185. *Id.*, art. 111.

186. *Id.*

187. The Law of Civil Procedure of the People's Republic of China (adopted March 8, 1982) [hereinafter CPC].

188. *See* Sacks, *supra* note 110, at 5-525.

189. New York Convention, *supra* note 184, art. V.

190. *Id.*

191. *Id.*

192. Cohen, *supra* note 5, at 525.

ter position than other countries.[193] For example, bilateral and multilateral treaties significantly increase the effectiveness of the foreign awards, by limiting the grounds available for denial of recognition and enforcement.[194]

Although there is a strong likelihood that foreign arbitral awards will be enforced in China, there is still uncertainty regarding the enforcement of Chinese arbitrational awards. China's Civil procedure codes are too loosely drafted to adequately enforce an arbitral award made by FETAC. If the person against whom the award is made can present evidence, the court, after examination and verification, can rule to deny enforcement of the PRC arbitral award.[195]

In addition, public policy is grounds upon which enforcement of an arbitral award may be denied. According to Article 260, if the People's Court determines that execution of an award would be against public policy, the court shall deny execution.[196] This language leaves too much discretion in the Chinese courts, and too little security for the party seeking to enforce the award. For example, a public policy exception could be unpublished inter-departmental "neibu"[197] documents that are kept secret for security reasons, rules not yet drafted, ideology or judicial preference.[198]

Moreover, the Code fails to provide any procedural protection for parties seeking to enforce the award against the PRC. For example, there are no provisions in the Code for hearings at which the party enforcing the award may raise an objection to an Article 260 motion. Therefore, if the person against whom the award is being sought raises a 260 motion, the party awarded damages through arbitration has no recourse if the court decides that the award should not be enforced. In addition, there is no provision which allows FETAC to intervene or assist the party to the recipient of a decreed award. In effect, FETAC has no means of enforcing its

193. Additionally, modern treaties, statutes and judicial developments have greatly contributed to facilitation of enforcement of arbitral awards through recognition of transnational arbitral awards. Farina, *supra* note 105, at 170 n.215 (citing Delaume, *Court Intervention in Arbital Proceedings, in* RESOLVING TRANSNATIONAL DISPUTES (C. Carbonneau ed. 1986) at 222).

194. *Id.*

195. CPC, *supra* note 187, art. 260 (1991).

196. *Id.*

197. *Neibu* regulations are expressions of policy and politics that China does not wish to make public but that have the force of law. Anna Han, *The China Trade*, RECORDER, Dec. 18, 1991, at 8.

198. *See id.*

awards. Consequently, Article 260 leaves the enforcement of arbitration awards to the whim of Chinese judges.

Consider a recent joint venture case,[199] in which a foreign corporation (plaintiff) entered into a ten year contractual joint venture contract to produce a product with a Chinese corporation (defendant) in which the total registered capital was the sum of $300,000,000 Hong Kong dollars. The plaintiff contracted to contribute an investment of $180,000,000 Hong Kong dollars with $150,000,000 to apply to the purchase of necessary equipment (60% of the total registered capital).[200] The defendant's capital contribution totalled $140,000,000 Hong Kong dollars with $100,000,000 used for the purchase of necessary equipment and machinery.[201] The defendant was to receive 70% of the products; it was agreed that losses and profits would be split equally.[202] Both parties located a German corporation which agreed to sell its machinery to the joint venture.[203] The defendant sent his agent to the German corporation to negotiate the sale terms.[204] While in Germany, the defendant's agent sought the machinery for about $257,465 Hong Kong dollars, but had the German corporation request a credit transfer for almost $384,725 from the plaintiff, alleging it as the actual cost of the machinery.[205] The plaintiff sent the requested amount to the German Corporation, leaving the defendant with approximately $127,260 Hong Kong dollars profit.[206]

When the plaintiff discovered what the defendant had done, it applied to FETAC for arbitration proceedings.[207] Each party chose their respective arbitrators and FETAC selected the presiding arbitrator according to the FETAC arbitration rules.[208] However, on the date arbitration was scheduled to commence, the defendant failed to attend.[209] After the arbitration tribunal reviewed the facts and evidence, judgment was rendered in favor of the plaintiff.[210] The judgment award decreed that: 1) the defendant must pay its share of the capital contribution (40%) of the joint venture to the

199. Confidential Interview, *supra* note 151.
200. *Id.*
201. *Id.*
202. *Id.*
203. *Id.*
204. Confidential Interview, *supra* note 151.
205. *Id.*
206. *Id.*
207. *Id.*
208. *Id.*
209. Confidential Interview, *supra* note 151.
210. *Id.*

plaintiff within 30 days or the plaintiff could invoke the Guangzhou county laws; 2) the defendant must return the $127,260 Hong Kong dollars within 30 days, or an interest rate of 7% would be added; and 3) the defendant must compensate for all losses within 30 days or an interest rate of 7% would be added to the total sum due and unpaid.[211]

In this case, although the judgment award went to the plaintiff, the arbitration rules do not necessarily guarantee enforcement. Under the first provision, if the defendant fails to pay the plaintiff, the defendant may invoke the courts in Guangzhou county.[212] The question then becomes one of whether the Guangzhou county courts will enforce an arbitrational award against their local "comrade." Consequently, it is likely that many local courts may honor the local party's request not to have the award enforced. The plaintiff's success or failure will depend on which judge is presiding, which party has the most influence in the local community, and, perhaps, luck. Without an arbitrational procedure that can adequately enforce its own judgment awards, FETAC cannot be considered viable means on which parties can rely for dispute resolution.

V. PROPOSED MODIFICATIONS

Although China has developed and formalized its arbitration system, procedural and structural defects remain. The most obvious of these are the unfair rules, such as those that allow parties to introduce new evidence during arbitration without notice. Consequently, the primary goal of promoting friendly dispute resolution within the Chinese arbitration system may be severely undermined.

In order to make the system more fair, the Chinese legislative body should adopt a discovery mechanism which bars introduction of evidence into arbitration if such introduction will result in prejudice against a party. A modification of FECTAC rules to allow a party to subpoena witnesses is also necessary. Furthermore, if the Chinese want to encourage technology transfer investments through joint venture enterprises, as well as establish FECTAC as an internationally recognized and respected arbitral center, the entire Chinese system must cooperate in the enforcement of arbitral awards. This includes modifying the availability of the PRC Civil Procedure 260 motion. For example, an objection provision to a 260 motion

211. *Id.*

212. *See* Arbitration, *supra* note 127, ¶ 10-505(38).

should provide the party enforcing the arbitral award with the opportunity to state both the reasons against the granting of a 260 motion and the reasons supporting the enforcement of the arbitral award. In addition, FETAC should be able to intervene through written statements or oral presentations on behalf of the party enforcing the arbitral award. This intervention could be accomplished by a written statement of support by FETAC or via oral presentations on behalf of the party enforcing the arbitral award.

However, the prevalent problem of local courts favoring their local residents may still exist even if the Civil Procedure Code is amended to allow objections to a 260 motion. One remedy to alleviate or avoid local favoritism is to have a clause permitting a 260 motion objection to be transferred to a neutral court for review. In the alternative, a special court or entity to handle enforcement of arbitral awards could be established.

Regarding the provision which stipulates that issues are to be adjudicated according to public policy, the Chinese legislative drafters should establish some reliable guidelines. For instance, Chinese administrative bodies from the central government to local municipal levels[213] need to eliminate *neibu* regulations so that all parties, including foreigners, will be aware of the operative laws and requirements.

VI. CONCLUSION

Although China has taken significant steps towards realizing its goals of (1) reaching a 1990 level of technological development common to Western industrialized nations by the year 2000, (2) diffusing technology into rural areas, (3) developing an infrastructure and natural resources, and (4) promoting high technology in critical areas, it is far from reaching these goals. While the enactment of the Technology Regulations, Implementing Regulations, and other legislation advances China's interest in achieving its goals, the remaining flaws in the Chinese system are a major obstacle to maximizing foreign investment. Consequently, the rules must be modified to alleviate investor concerns. For example, the rules and regulations applicable to foreigner investors should contain detailed language and minimal bureaucratic ambiguity. In addition, the approval process should be simple and straightforward so that investors can develop both reliance and confidence in the PRC system.

213. *See generally* JAMES A. TOWNSEND, POLITICS IN CHINA 82-87 (2d ed. 1980) (discussion of the political organization of the PRC, including administrative entities at the state, provincial, county, and municipal level).

Because current laws and regulations are not sufficient to meet these needs, foreign investors should negotiate favorable terms that incorporate protections of the investor for neutral dispute resolution.

Furthermore, if China hopes to meet its development goals through foreign investment that encourages technology imports, it must offer foreign investors a fair, reliable and predictable environment in which to do business and resolve disputes. Unfortunately, for the investors and Chinese businesses, the present Chinese arbitration rules fail to meet these goals. In spite of the fact that the Chinese system is patterned after international arbitration organizations, the effectiveness of FETAC is undermined by problems such as the lack of judgment award enforcement procedures and/or laws. Thus, it is highly likely that until FETAC demonstrates that it is a fair tribunal, capable of issuing reliable and enforceable judgments, foreign investors will continue to be wary of investing in the PRC.

CASE NOTES

NINTH CIRCUIT HOLDS THAT INTERMEDIATE COPYING OF OBJECT CODE IS FAIR USE

Sega Enterprises v. Accolade, Inc., 24 U.S.P.Q.2D 1561 (9th Cir. 1992).

Ronald A. Peters†

INTRODUCTION

In a case of first impression, the Ninth Circuit concluded that reverse engineering is fair use if it is the only way to gain access to the unprotected functional elements of a program's object code and there is a reasonable purpose behind such access.

FACTS

Sega manufactures and sells video game systems, including the Genesis console and game cartridges. Accolade manufactures software game cartridges that are compatible with the Genesis console. In order to gain this compatibility Accolade "reverse engineered" Sega's programs. Accolade "disassembled" or "decompiled" Sega's object code, downloaded it to a PC and translated it to human readable source code. Other software manufacturers were also producing game cartridges compatible with Sega's Genesis Console, however they had entered into licensing agreements with Sega and were paying for the privilege. Sega sued Accolade. The district court ruled in favor of Sega, stating that Accolade could have gained access to the functional elements of compatibility by some other means,[1] and granted Sega's request for injunctive relief.[2]

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1. Sega Enterprises Ltd. v. Accolade, Inc., 785 F.Supp. 1392 (N.D. Cal. 1992).

2. The District Court enjoined Accolade from (1) disassembling Sega's copyrighted object code; (2) using or modifying Sega's copyrighted code; (3) developing, manufacturing, distributing or selling Genesis-compatible games that were created in whole or in part by means that included disassembly; and (4) manufacturing, distributing or selling any Genesis-compatible game that prompts the Sega Message. *Sega*, 24 U.S.P.Q.2D at 1565.

Accolade raised four arguments in support of its position.[3] First, Accolade argued that intermediate copying does not constitute infringement under section 106 of the Copyright Act unless the final copy is "substantially similar" to the work being copied.[4] Second, Accolade argued that decompiling or disassembling object code in order to gain access to the functional requirements for compatibility is lawful under section 102(b) of the Act, which does not extend copyright protection to such functional elements.[5] Third, Accolade argued that disassembly is authorized by section 117 of the Act, because it permits the lawful owner of the copy of a computer program to load (copy) the program into a computer's memory.[6] Lastly, Accolade argued that its copying of the object code in order to gain access to the functional elements contained in the code is a fair use which is privileged by section 107 of the Act.[7] The court was quick to point out that Accolade's first three arguments were without merit, stating that Accolade's act of copying of the object code was in fact infringement. However, as to Accolade's fourth argument, the court concluded:

> based on the policies underlying the Copyright Act that disassembly of copyrighted object code is, as a matter of law, a fair use of a copyrighted work if such disassembly provides the only means of access to those elements of the code that are not protected by copyright and the copier has a legitimate reason for seeking such access. Accordingly, we hold that Sega has failed to demonstrate a likelihood of success on the merits of its copyright claim. Because on the record before us the hardships do not tip sharply (or at all) in Sega's favor, the preliminary injunction issued in its favor must be dissolved, at least with respect to that claim.[8]

A. *Intermediate copying*[9]

In support of its ruling as to Accolade's first three arguments above, the court pointed to the ruling in *Walker v. University Books*, in which it held that the copyright act does not concern itself with what stage of the process the infringement took place.[10] Regarding

3. *Id.* at 1565.
4. *Id.*
5. *Id.*
6. *Id.* at 1565-1566.
7. *Sega*, 24 U.S.P.Q.2D at 1566.
8. *Id.* It seems apparent that the fact that Sega, along with Nintendo, dominates the video game industry played a significant role in the Court's decision.
9. *Id.*
10. *Id.* Citing Walker v. University Books, 602 F.2d 859, 864, 202 U.S.P.Q.2D 793 (9th

Accolade's citation of several cases which allowed some copying, the court pointed out that in all of those cases it was the "degree of similarity between the allegedly infringed work and the defendant's final product" that provided the basis of the court's decision.[11] In none of the cases was intermediate copying at issue.[12] The court therefore concluded that the issue of whether "intermediate copying of computer object code infringes the exclusive rights granted to the copyright owner in section 106 of the Copyright Act is a question of first impression."[13]

B. *The Idea/Expression Distinction*[14]

Accolade argued that its copying of the object code did not violate Section 102(b).[15] Accolade stated that because object code is not humanly readable "disassembly of a commercially available computer program into human-readable form should not be considered an infringement of the owner's copyright."[16] In response, the court pointed out that Accolade's argument ran contrary to settled law[17] and that further, by making such an argument, Accolade was stating essentially that object code should not be accorded the "full range of copyright protection."[18] The court, showing its familiarity with computer technology, stated:

> Nor does a refusal to recognize a *per se* right to disassemble object code lead to an absurd result. The ideas and functional concepts underlying many types of computer programs, including word processing programs, spreadsheets, and video game displays, are readily discernible without the need for disassembly,

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Cir. 1979), where the court stated: "[T]he fact that an allegedly infringing copy of a protected work may itself by only an inchoate representation of some final product to be marketed commercially does not in itself negate the possibility of infringement." *Id.* at 864.

11. *Sega*, 24 U.S.P.Q.2D at 1566. The only cases cited by Accolade which involved similar copying of object code were Computer Assoc. Int'l v. Altai, Inc., 23 U.S.P.Q.2D 1241 (2d Cir. 1992); NEC Corp. v. Intel Corp., 10 U.S.P.Q.2D 1177 (N.D. Cal. 1989); and E.F. Johnson Co. v. Uniden Corp., 623 F.Supp. 1485 (D. Minn. 1985). *Sega*, 24 U.S.P.Q.2D at 1566.

12. *Sega*, 24 U.S.P.Q.2D at 1566.

13. *Id.* at 1567.

14. *Id.*

15. *Id.*

16. *Id.*

17. *Sega*, 24 U.S.P.Q.2D at 1567.

18. *Id.* The Court went on to cite the National Commission on New Technological Uses of Copyrighted Works (CONTU) which recommended that the "1980 Amendments to the Copyright Act unambiguously extended copyright protection to computer programs, Pub. L. 96-517, sec. 10, 94 Stat. 3028 (1980) (codified at 17 U.S.C. Sections 101, 117); *see* National Commission on New Technological Uses of Copyrighted Works, Final Report 1 (1979)[CONTU Report]." *Id.*

> because the operation of such programs is visible on the computer screen. The need to disassemble object code arises, if at all, only in connection with operations systems, system interface procedures, and other programs that are not visible to the user when operating — and then only when no alternative means of gaining an understanding of those ideas and functional concepts exists. In our view, consideration of the unique nature of computer object code thus is more appropriate as part of the case-by-case, equitable "fair use" analysis authorized by section 107 of the Act.[19]

C. *Section 117*[20]

In response to Accolade's argument that the provision of Section 117 which allows for the copying of computer programs for the purpose of utilizing those computer programs[21] authorized such copying of Sega's object code, the court stated that Accolade's use of Sega's object code went far beyond that which was contemplated by section 117.[22]

D. *Fair Use*[23]

Accolade finally succeeded with its fourth argument regarding fair use. Accolade argued that its copying of the object code was a "necessary step in the examination of the unprotected ideas and functional concepts embodied in the code . . ."[24] and therefore was a "fair use that is privileged by section 107 of the Act."[25] The court agreed, stating:

> Where there is good reason for studying or examining the unprotected aspects of a copyrighted computer program, disassembly for purposes of such study or examination is a fair use.[26]

The court rejected Sega's argument that use of the fair use defense in cases involving disassembly of object code is precluded by section 117 of the Act stating:

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19. *Id.*
20. *Id.* at 1568.
21. *Id.*
22. *Sega*, 24 U.S.P.Q.2D at 1568, citing the CONTU Report at 13 which stated "[b]ecause the placement of any copyrighted work into a computer is the preparation of a copy [since the program is loaded into the computer's memory], 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." *Id.*
23. *Id.*
24. *Id.*
25. *Id.*
26. *Id.*

> That argument verges on the frivolous. Each of the exclusive rights created by section 106 of the Copyright Act is expressly made subject to all of the limitations contained in sections 107 through 120. 17 U.S.C. Section 106. Nothing in the language or the legislative history of section 117, or in the CONTU Report, suggests that section 117 was intended to preclude the assertion of a fair use defense with respect to uses of computer programs [that] are not covered by section 117, nor has section 107 been amended to exclude computer programs from its ambit.[27]

The court went on to say that in fact section 117 covered those uses that were "lawful per se"[28] and that section 107 was enacted for the purpose of establishing "a defense to an otherwise valid claim of copyright infringement."[29] The court concluded that because "Congress has not chosen to provide a *per se* exemption to section 106 for disassembly does not mean that particular instances of disassembly may not constitute fair use."[30]

Regarding Sega's second argument that the legislative history of Section 906 of the Semiconductor Chip Protector Act of 1984 indicated that Congress did not intend disassembly to be a fair use,[31] the court pointed out Congress's intent in passing Section 906 of the SCPA was to provide particular protection to semiconductor chips because their uniquely "utilitarian" nature[32] might exempt them from protection under the Copyright Act.[33] The court observes that the SCPA does not say anything about the lawfulness of disassembly.[34]

The court cited section 107's factors to be considered in determining whether a particular use is a fair one:

> (1) the purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes;
> (2) the nature of the copyrighted work;
> (3) the amount and substantiality of the portion used in relation to the copyrighted work as a whole; and
> (4) the effect of the use upon the potential market for or value

27. *Sega*, 24 U.S.P.Q.2D at 1568.
28. *Id.*, citing 17 U.S.C. Section 117.
29. *Sega*, 24 U.S.P.Q.2D at 1568.
30. *Id.*
31. *Id.* The Court noted that "Section 906 of the SCPA authorizes the copying of a 'mask work' on a silicon ship in the course of reverse engineering the chip. 17 U.S.C. Section 906." *Id.*
32. *Id.* at 1569.
33. *Id.*
34. *Sega*, 24 U.S.P.Q.2D at 1569.

of the copyrighted work.[35]

With regard to the district court's treatment of these factors and its application of the factors to this case, the court pointed out:

> In determining that Accolade's disassembly of Sega's object code did not constitute a fair use, the district court treated the first and fourth statutory factors as dispositive, and ignored the second factor entirely. Given the nature and characteristics of Accolade's direct use of the copied works, the ultimate use to which Accolade put the functional information it obtained, and the nature of the market for home video entertainment systems, we conclude that neither the first nor the fourth factor weighs in Sega's favor. In fact, we conclude that both factors support Accolade's fair use defense, as does the second factor, a factor which is important to the resolution of cases such as the one before us.[36]

Regarding the first factor, the court pointed out that the presumption against fair use when a commercial purpose is involved can be rebutted by examining the characteristic of the particular use.[37] The court stated that because Accolade copied the object code only to reveal the uncopyrighted ideas and functional elements of the program, the commercial nature of the copying was only "indirect or derivative."[38] Furthermore, the court stated:

> . . .we are free to consider the public benefit resulting from a particular use notwithstanding the fact that the alleged infringer may gain commercially. . . .[i]n the case before us Accolade's identification of the functional requirements for Genesis compatibility has led to an increase in the number independently designed video game programs offered for use with the Genesis console. It is precisely that growth in creative expression, based on the dissemination of other creative works and the unprotected ideas contained in those works, that the Copyright Act was intended to promote.[39]

Regarding the second statutory factor the court noted that not all forms of expression are entitled to the same protection under the Copyright Act:

> The protection established by the Copyright Act for original works of authorship does not extend to the ideas underlying a

35. *Id.* Citing 17 U.S.C. § 107.

36. *Sega*, 24 U.S.P.Q.2D at 1569.

37. *Id.*, citing Hustler Magazine, Inc. v. Moral Majority, Inc., 796 F.2d 1148, 1152 (9th Cir. 1986).

38. *Sega*, 24 U.S.P.Q.2D at 1569.

39. *Id.* at 1570.

> work or to the functional or factual aspects of the work. 17 U.S.C. section 102(b). To the extent that a work is functional or factual it may be copied, *Baker v. Selden*, 101 U.S. 99, 102-04 (1879), as may those expressive elements of the work that "must necessarily be used as incident to" expression of the underlying ideas, functional concepts or facts, *id.* at 104. . . . Works that are merely compilations of fact are copyrightable, but the copyright in such a work is "thin." *Feist Publications*, 111 S. Ct. at 1289.[40]

The court pointed out that although computer programs may contain some creative elements, they are essentially "utilitarian articles"[41] and that because of this "hybrid nature of computer programs"[42] there has developed no established standard for separating out protected and unprotected elements.[43]

The court rejects Sega's argument that the record does not establish that disassembly was the only means by which Accolade could gain access to the functional aspects of Sega's program and notes that the district court committed "clear error" in that the record clearly establishes that humans cannot read object code and that although it is possible to disassemble object code by hand instead of through the use of a "decompiler" it is clearly necessary to make a written or electronic copy of the object code in order to translate it into human readable form.[44] Furthermore, with respect to the district court's finding that Accolade could have utilized a process known as "peeling" to avoid copyright infringement as authorized by 17 U.S.C. section 906, the court stated this too was error because peeling reveals only a "physical diagram" of the object code and does not eliminate the necessity of translating the object code into source code.[45]

The court concluded as to the second factor that "because Sega's video game programs contain unprotected aspects that cannot be examined without copying, we afford them a lower degree of protection than more traditional literary works."[46]

As to the third factor, the court noted that because Accolade copied Sega's programs in their entirety, this factor weighed against

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40. *Id.* at 1571.

41. *Id.*

42. *Id.*

43. *Sega*, 24 U.S.P.Q.2D at 1571. The Court cites the Second Circuit's observation that the attempts to deal with this issue could be characterized as attempting " 'to fit the proverbial square peg in a round hole.' *CAI*, 23 U.S.P.Q.2d at 1257."

44. *Id.* at 1572.

45. *Id.* The Court also rejected the District Court's contention that Accolade could have avoided copyright infringement by programming a "clean room." *Id.*

46. *Id.* at 1573.

Accolade. However, the court also stated that the copying of the entire program "does not, however, preclude a finding of fair use *per se*."[47] The court concluded in fact that "where use is limited as it was here, the [third] factor is of very little weight. *Cf. Wright v. Warner Books Inc.*, 953 F.2d 731, 738 [20 U.S.P.Q.2d 1992] (2d Cir. 1991)."[48]

As for the fourth statutory factor, the court pointed out that while Accolade's use of Sega's program, if it became widespread, may have an adverse effect on Sega, Accolade did not seek to usurp Sega's games but created its own games which were now compatible and could be used on Sega's Genesis console.[49] Further, the court pointed out that devotees of video games could reasonably be expected to purchase both Sega's games as well as Accolade's.[50] As to the fourth factor, the court therefore concluded:

> In any event, an attempt to monopol[i]ze the market by making it impossible for others to compete runs counter to the statutory purpose of promoting creative expression and cannot constitute a strong equitable basis for resisting the invocation of the fair use doctrine. Thus we conclude that the fourth statutory factor weighs in Accolade's, not Sega's, favor notwithstanding the minor economic loss Sega may suffer.[51]

As to the interpretation of the four statutory factors, the court concluded by stating that the first, second and fourth statutory factors weighed in favor of Accolade,[52] and that only the third factor weighed slightly in favor of Sega.[53] Accordingly, as to the question of whether the Accolade's use was fair the court concluded:

> . . .where disassembly is the only way to gain access to the ideas and functional elements embodied in a copyrighted computer program and where there is a legitimate reason for seeking such access, disassembly is a fair use of the copyrighted work, as a matter of law. Our conclusion does not, of course, insulate Ac-

47. *Id.*, citing *Sony Corp.*, 464 U.S. at 449-50; *Hustler*, 795 F.2d at 1155.

48. *Sega*, 24 U.S.P.Q.2d at 1573.

49. *Id.* at 1570. The Court points to several cases which hold that a use would not be considered fair if 'it would adversely effect the potential market for the copyrighted work.' Sony Corp. v. Universal City Studios, 464 U.S. 417, 451 [220 U.S.P.Q. 665] (1984). *Id.*

50. *Id.* at 1571. The Court noted that video game buyers typically purchased more than one video game and that "There is no basis for assuming that Accolade's 'Ishido' has significantly affected the market for Sega's 'Altered Beast,' since a consumer might easily purchase both; nor does it seem unlikely that a consumer particularly interested in sports might purchase both Accolade's 'Mike Ditka Power Football', and Sega's 'Joe Montana Football', particularly if the games are, as Accolade contends, not substantially similar." *Id.*

51. *Id.*

52. *Id.* at 1573.

53. *Sega*, 24 U.S.P.Q.2D at 1573.

colade from a claim of copyright infringement with respect to its finished products. Sega has reserved the right to raise such a claim, and it may do so on remand.[54]

E. *Trademark Issues*[55]

Sega's trademark Security System (TMSS), initialization code not only allows game programs to operate on Sega's Genesis III console, but also generates an on-screen display of Sega's trademark.[56]

Having gained access to Sega's Genesis console through the initialization code, Accolade also, in using that code, triggered an on-screen display of Sega's trademark. Both parties agreed that this was an unauthorized and improper use of Sega's trademark.[57] However, the Court wrestled with the question of whether Accolade was the injured party because users of its games were lead to believe that the games were manufactured by Sega, or whether Sega was the injured party because its name was being used without its authorization. Both Sega and Accolade claimed that the other was in violation of statutes due to the use of the on-screen display.[58] Accolade claimed that Sega's use of the TMSS code to trigger the on screen dispay was a "false designation of origin under Lanham Act section 43(a), 15 U.S.C. section 1125(a)."[59] Sega, for its part, claimed that Accolade's use of its trademark was a violation of 32(1)(a) and 43(a) of the Lanham Act, 15 U.S.C. sections 1114(1)(a), 1125(a), respectively.[60]

The court concluded that because there was no other way to gain access to the Genesis III console and because Accolade clearly had no desire to appropriate Sega's trademark for its own use, it was in fact Sega who would be held primarily responsible for any resultant confusion created by the on-screen display of its trademark.

F. *Conclusion*

The Ninth Circuit held that disassembly of computer object code is fair use if such disassembly is the only way to gain access to

54. *Id.* at 1574.
55. *Id.*
56. *Id.*
57. *Id.*
58. *Sega*, 24 U.S.P.Q.2D at 1574.
59. *Id.*
60. *Id.*

the functional elements embodied in a copyrighted computer program, and if there is a legitimate reason for this access. The court further held that the confusion arising out of the on-screen display of Sega's trademark, was in fact attributable to plaintiff.[61] Despite the Court's ruling that intermediate copying of computer code constitutes infringement, it is possible to argue that it does not in fact constitute copyright infringement if the intermediate copying is done to create an original program which does not copy the protected expression of the copyrighted work.[62]

61. *Id.* at 1577.

62. *See e.g.*, NEC v. Intel, 10 U.S.P.Q.2d 1177 (N.D. Cal. 1989). That case involved the disassembly of microcode. The Court ruled that studying code that is not copied does not infringe, nor does copying that is "deleted or so disguised as to be unrecognizable."

"CORRESPONDENT LINK" BETWEEN A PROTEIN AND NUCLEIC ACID SEQUENCE DOES NOT RENDER THE GENE OBVIOUS

In Re Bell, 991 F.2d 781 (Fed. Cir. 1993)

Kamrin T. MacKnight†

On 20 April 1993, the United States Court of Appeals for the Federal Circuit reversed a decision by the Board of Patent Appeals & Interferences (Board), and granted a patent directed to genes which code for insulin-like human hormones to Chiron Corporation (Emeryville, CA).[1]

The decision written by Judge Lourie,[2] overturned the Examiner's final rejection of Bell's patent application Serial No. 065,673, entitled "Preproinsulin-like Growth Factors I and II," on the ground of obviousness under 35 U.S.C. § 103. The Federal Circuit ruled that the "Board erred in concluding that the claimed nucleic acid molecules would have been obvious in light of the cited prior art."[3]

BACKGROUND

The claims of the application in dispute are directed to nucleic acids (DNA and RNA)[4] which encode human insulin-like growth

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1. In re Bell, 991 F.2d 781 (Fed. Cir. 1993). The application was filed in the names of three inventors, Graeme I. Bell, Leslie B. Rall and James P. Merryweather. Hereinafter, the patent application and its components are referred to as "Bell." Chiron Corp. is the assignee.

2. The case was heard before Judges Rich, Lourie, and Schall.

3. *Bell*, 991 F.2d at 782.

4. The two major types of nucleic acid are deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). DNA is the "genetic blueprint" for the vast majority of organisms (including humans). DNA is a double helix, similar in shape to a spiral staircase. The four "bases"—adenine, thymine, guanine, and cytosine form the steps of the staircase; sugar and phosphate molecules comprise the handrails. RNA is similar to DNA in that it contains adenine, guanine, and cytosine. However, it contains uracil, rather than thymine. For a description of basic genetics and recombinant DNA technology, the reader is referred to such texts as BENJAMIN LEWIN, GENES (2d ed. 1985); BRUCE ALBERTS ET AL., MOLECULAR BIOLOGY OF THE CELL (1983); MAXINE SINGER AND PAUL BERG, GENES AND GENOMES (1991). In re O'Farrell, 853 F.2d 894, 895-899 (Fed. Cir. 1988), also contains a general discussion of the technology involved here.

factors I and II (IGF).[5] Claim 25 (conceded by the parties to be representative of the claims at issue) includes the following:

> A composition comprising nucleic acid molecules containing a human sequence encoding insulin-like growth factor (hIGF) substantially free of nucleic acid molecules not containing said (hIGF) sequence, wherein said hIGF sequence is selected from the group consisting of (a) . . . ; (b) . . . ; (c) nucleic acid sequences complementary to (a) or (b); and (d) fragments of (a), (b), or (c) that are at least 18 bases in length and which will selectively hybridize to human genomic DNA encoding hIGF.[6]

The relevant prior art consisted of two publications which disclose the amino acid sequences[7] of IGF I and II,[8] and U.S. Patent No. 4,394,443 issued to Weissman et al., entitled "Method for Cloning Genes." The Weissman patent describes a general method for the isolating genes for which at least a short amino acid sequence is known.[9] This method involves preparation of a nucleic acid probe[10] which corresponds to the known amino acid sequence and using this probe to isolate the gene of interest. Weissman teaches that it is advantageous to design and use a probe which is based on amino acids specified by unique codons.[11]

The Examiner rejected Bell's claims as obvious over the combined teachings of Rinderknecht and Weissman, after determining that it would have been obvious, "albeit tedious," to prepare probes according to Weissman, based on the Rinderknecht amino acid sequences.[12] The Examiner argued that an ordinary artisan would know how to determine the nucleic acid sequence which corresponds to a known amino acid sequence.[13] Based on this argument,

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5. These growth factors are single-chain serum proteins involved in the mediation of cell growth following the administration of growth hormones.

6. *Bell*, 991 F.2d at 782, n.3. The text omitted here discloses the nucleic acid sequences.

7. Amino acids are the "building blocks" of proteins.

8. Rinderknecht et al., *The Amino Acid Sequence of Human Insulin-Like Growth Factor I and Its Structural Homology with Proinsulin*, 253 J. BIOL. CHEM., 2769-76 (1978); and Rinderknecht et al., *Primary Structure of Human Insulin-like Growth Factor II*, 89 FEBS LETTER, 283-86 (May 1978).

9. Specifically, Weissman describes the isolation of a gene which encodes a human histocompatibility antigen, a protein unrelated to IGF.

10. A probe is a sequence of DNA or RNA which is used to identify a particular sequence of interest in DNA or RNA of unknown sequence.

11. A "codon" is a sequence of three nucleotides which codes for one of the twenty natural amino acids. Because there are twenty animo acids and sixty-four possible codons, most amino acids are coded for by more than one codon.

12. *See Bell*, 991 F.2d at 783.

13. *Id.*

the Examiner rejected the application because the claimed sequences and hosts[14] would have been readily determinable by and obvious to, those of ordinary skill in the art at the time the invention was made.[15]

The Board upheld the Examiner's rejection of Bell's claims, by holding that the Examiner had established a prima facie case of obviousness for the claimed sequences, despite the lack of conventional indicia of obviousness.[16] The Board's rationale was that although a protein and the DNA encoding it are not structurally similar, they are linked based on the DNA code. In view of Weissman, the Board determined that there was no evidence "that one skilled in the art, knowing the amino acid sequences of the desired proteins, would not have been able to predictably clone the desired DNA sequences without undue experimentation."[17]

Bell argued that the Patent and Trademark Office (PTO) failed to establish its prima facie case of obviousness, because it did not show how the prior art references, alone or in combination, taught or suggested their invention. Importantly for Bell, these arguments are in agreement with previous decisions which have held that the PTO bears the burden of establishing a prima facie case of obviousness.[18] Thus, despite the Board's support of the Examiner's rejection, the Court agreed with Bell.

DISCUSSION

The Federal Circuit reviews the Board's rejection of patent applications based on obviousness grounds *de novo*.[19] As previously stated, "[a] prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art."[20]

The Court indicated that the Examiner's rationale that a "correspondent link" between a gene and its protein via the genetic code renders the gene obvious if the amino acid sequence is known,[21] amounts to a rejection based on the two Rinderknecht publications

14. The "hosts" are the cells used to prepare the probes.

15. *Bell*, 991 F.2d at 783.

16. *Id.* This rejection was based on structural similarity between the DNA encoding for IGF-I and the amino acid sequence of the IGF-I polypeptide.

17. *Id.*

18. In re Fine, 837 F.2d 1071, 1074 (Fed. Cir. 1988).

19. In re Vaeck, 947 F.2d 488, 493 (Fed. Cir. 1991).

20. In re Rinehart, 531 F.2d 1048, 1151 (CCPA 1976).

21. *Bell*, 991 F.2d at 783.

alone.[22]

The Court realized that unlike chemical homologs, analogs and isomers, which may create a prima facie case of obviousness,[23] the established relationship between a gene and its correspondent protein does not make a gene prima facie obvious over its correspondent protein.[24] The Court recognized that while the knowledge of the protein structure and sequence may be used to hypothesize about the gene sequence, the degeneracy of the genetic code results in a vast number of potential nucleotide sequences which might code for a specific protein.[25]

However, the Court also stressed that when the amino acid sequence is known to be specified exclusively by unique codons, the gene may be rendered obvious.[26] In this case, Bell argued, without contradiction, that the Rinderknecht amino acids could be coded for by more than 10^{36} different nucleotide sequences, only a few of which are the human sequences claimed in the patent application.[27] The Court found that the nearly infinite number of possibilities suggested by the prior art, and the failure of the cited prior art to suggest which of these possibilities were the human sequences claimed, rendered Bell's sequences non-obvious.[28] Thus, because there was nothing in the prior art to suggest which of the 10^{36} Rinderknecht sequences correspond to the IGF gene, the Court found that the PTO did not meet its burden of establishing that the prior art would have suggested the claimed sequences.[29] The Court stressed that Bell did not claim all possible 10^{36} nucleic acids which potentially code for IGF, nor did he claim all nucleic acids coding for a protein with the biological activity of IGF.[30]

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22. *Id.*

23. *See* In re Dillon, 919 F.2d 688, 696 (Fed. Cir. 1990)(*en banc*), *cert. denied*, 111 S. Ct. 1682 (1991).

24. *Bell*, 991 F.2d at 784.

25. This degeneracy is based on the fact that there are sixty four possible codons, but only twenty natural amino acids. In addition to "degeneracy" in the genetic code, the tendency for similar amino acids to be represented by related codons is believed to minimize the effects of mutations. This helps to ensure that a single random base change has an increased probability (as compared with a completely random assignment of codons) of resulting in either no amino acid substitution or substitution by an amino acid of similar character. *Lewin, supra* note 4, at 96.

26. *Bell*, 991 F.2d at 784. In footnote 6, the Court indicated that it "express[ed] no opinion concerning the reverse proposition, that knowledge of the structure of a DNA, *e.g.*, a cDNA, might make a coded protein obvious." *Id.* Thus, the Court has left this avenue open for continuing debate.

27. *Bell*, 991 F.2d at 784.

28. *Id.*

29. *Id.*

30. *Id.*

The Court also reviewed obviousness determinations based on combinations of references. It reiterated the requirement that obviousness "cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination."[31] The Court also repeated the rule that the teachings of a reference and the determination of whether it teaches toward or away from the claimed invention are questions of fact.[32]

The Weissman patent suggests that it is generally advantageous to design probes based on amino acid sequences specified by unique codons.[33] The PTO argued that this suggestion would be "easily" applied to the isolation of genes for an array of proteins, including peptide hormones. The PTO further argued that, in view of Weissman, a gene is rendered obvious once the amino acid sequence of the corresponding protein is known. However, the Court refused to view Weissman in such a broad scope. The Court indicated that Weissman teaches away from the present invention because it is directed toward situations in which unique codons are known. In contrast, the present invention involves no unique codons (or only one).[34]

While reaffirming that "a reference must be considered not only for what it expressly teaches, but also for what it fairly suggests,"[35] the Court found that because Weissman does not suggest how to apply its teachings to amino acids sequences lacking unique codons, it could not say Weissman "fairly teaches" that its methods should be combined with the teachings of Rinderknecht.[36]

The Court also discussed the emphasis the PTO placed on the similarities in the methods used by Bell and Weissman to produce their respective isolated genes. As Bell claims compositions of matter, rather than a method, the PTO's focus was found to be misplaced. This is due to settled law that for composition of matter claims, the issue is the obviousness of claimed compositions, not the

31. ACS Hosp. Sys. v. Montefiore Hosp., 732 F.2d 1572, 1577 (Fed. Cir. 1984).

32. *See* Raytheon Co. v. Roper Corp., 724 F.2d 951, 960-1 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 835 (1984).

33. *Bell*, 991 F.2d at 784.

34. In contrast to the Weissman sequences, Bell used a probe with 23 nucleotides based on a sequence of eight amino acids, none of which were unique. Rinderknecht indicates that IGF-I has only a single amino acid coded with a unique codon and IGF-II has none. Thus, Weissman is in opposition to Bell.

35. In re Burckel, 592 F.2d 1175, 1179 (CCPA 1979).

36. *Bell*, 991 F.2d at 785.

obviousness of the method by which the composition is made.[37]

CONCLUSION

The Court concluded that: (1) the Board was clearly in error in its determination that Weissman teaches toward, rather than away from Bell's claimed sequences; (2) the requisite teaching or suggestion to combine the prior art references was absent; and (3) the PTO did not establish that the claimed sequences would have been obvious over the combination of Weissman and Rinderknecht.[38] The Court's conclusion that the combination of prior art references does not render the claimed invention obvious, resulted in reversal of the Board's decision to affirm the Examiner's rejection of Bell's Claims 25-46.

The importance of *Bell* is that it is in opposition to the PTO's policy to declare as gene derived from known amino acid sequences by use of general cloning methods to be obvious.[39] This decision will require Examiners to take a closer look at this type of patent application on an individual basis in order to make a decision regarding obviousness.

The *Bell* decision is an addition to a growing body of case law dedicated to the unique concerns related to biotechnology.[40] This case law should provide encouragement for biotechnology companies desiring to protect their inventions which are the products of expensive, labor and time-intensive research. This law provides attractive incentives (i.e., patent protection) to companies who devote their resources to research. It is an indication that the current boom in biotechnology will continue long into the future.

37. In re Thorpe, 777 F.2d 695 (Fed. Cir. 1985). "Patentability of a product does not depend upon its method of production." *Id.*, at 697.

38. *Bell*, 991 F.2d at 785.

39. *See* Rex Bossert, *Ruling Hailed as Protection for the Future*, DAILY JOURNAL, April 26, 1993, at 1.

40. For example, this decision is consistent with other recent Federal Circuit cases, in which the Court granted patents for genetic materials used in treatment of anemia and multiple sclerosis.

BOOK REVIEWS

INTELLECTUAL PROPERTY PROTECTION AND MANAGEMENT: LAW AND PRACTICE IN JAPAN, Teruo Doi.

George J. Alexander†

In the United States, a number of authors have produced comprehensive work on domestic intellectual property. A needy lawyer has alternatives to the electronic databases.

Customarily, United States treatises are concise and informative, weaving a myriad of specifics into a pattern of law. It may not be great literature but it is very useful law.

Many of the works produced in other countries are different and, I would be tempted to say, more verbose and less comfortable for case-hardened lawyers. That assumes it is written in English, the only language U.S. lawyers are likely to understand. The difference in expression may be a product of the differences between common law and code based systems.

Professor Doi has produced a masterful book in the American tradition. It is destined to hold the place of a Prosser on Torts in the field of Japanese intellectual property law. The book would be an outstanding addition to legal literature if many others had competing volumes. In a field in which English language information is very scarce, it is a unique contribution.

The book is comprehensive, with chapters on such traditional topics as employee inventions, regulation and copyright in cable television, performance rights, trade secrets, domestic trademark protection and protection against infringing importation and restrictive trade practices in patent and know-how licensing. It is extremely timely, reporting Japanese legislation concerning unfair competition, the Copyright Act, and the Trademark Act passed or modified in the 1990s.

Coverage is not tradition-bound, however. It has chapters on such evolving concepts as computer technology copyright and the

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copyright protection of videograms. It gives insights into Japanese organization. When describing government regulation and copyright protection of cable television, the author provides charts describing the growth of the industry and ownership of cable stations. When employee invention rights are discussed, the problems are fully explored, even reaching the question of taxation of compensation for employee inventions.

This book is indispensible for lawyers who have professional concerns about any of the issues covered. They will find it lucid, comprehensive and authoritative. More than that, they will find it of familiar style requiring no special knowledge of Japan or its legal system. The book is also clearly not transliterated. Professor Doi is an expert in his field not only as it applies to Japan but also in its American application. If it has a fault, it may be that its masterfully uncomplicated exposition may lead an novice attorney to believe that Japanese law is as similar to her own as the law of another state.

For those less interested in specific information concerning Japanese law, however, a close reading of the book can provide an insightful view of cultural differences between the United States and Japan. Here trade secrecy is a often a problem because employee mobility makes it difficult for employers to suppress the spread of secrets. Domestic law protects mobility by limiting the rights of employers to declare production methods secret thus allowing employees to market their skills elsewhere.

In Japan, the author notes, employees are reluctant to leave an employer. "Under such a system there is not much fear of trade secrets being stolen by employees," the author notes.[1]

Professor Doi has created a work no intellectual property lawyer affected by Japanese law should neglect. That probably includes almost all intellectual property lawyers.

1. T. Doi, Intellectual Property Protection and Management: Law and Practice in Japan (Waseda University 1992) at 35.

THE HACKER CRACKDOWN: LAW AND DISORDER IN THE ELECTRONIC FRONTIER. By Bruce Sterling. *Bantam Books*, 1992. 328 pages. $23.00

By Kenn Lara†

INTRODUCTION

The Hacker Crackdown: Law and Disorder on the Electronic Frontier, by Bruce Sterling, is a contextual account of the police raids against electronic bulletin boards that occurred in the early 1990s. Using these law enforcement hacker raids as the narrative watermark of the book, the author places the raids within the historical milieu of telephones and computers. He divides the book into four major chapters: Crashing the System, The Digital Underground, Law and Order, and The Civil Libertarians. Within each chapter, the technological concepts and their functions within the system or network are discussed. In addition, Crashing the System includes historical and social background on the telephone and the telephone companies. This chapter also describes the real life characters who played roles in using, and sometimes abusing, the technology and the system. The Digital Underground looks at the kinds of computer users that inhabit electronic bulletin boards, and gives characterizations of those users who were daring enough to exploit the openness of "cyberspace." Interjected between the technology and the human users are discussions of the conceptual frameworks, theories, and philosophies that guide the interaction between the people and the machines of the "electronic frontier." The chapters on Law and Order and The Civil Libertarians highlight, on a personal level, the conflict between the law and the hackers.

This is a story of the breakthroughs, events, and people that created the electronic frontier. It is also a story of the legal and theoretical implications of this new time and space frontier, a frontier the author terms as "cyberspace." The book is a fascinating introduction to the technology, lingo, and people of cyberspace, which is all told in easy-to-read and -understand language.

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CRASHING THE SYSTEM

This section begins by highlighting the crash of AT&T's long-distance telephone switching system on January 15, 1990. The author considers this event the catalyst for the eventual hacker crackdown. The crash, which left 60,000 people without service and took nine hours to repair, convinced politicians and law enforcement agencies to regard computer hackers seriously as national security threats. After much investigation, it was found that the AT&T crash of January 15, 1990, was caused by a software defect ("bug") and not by hacker interference. However, forces were set in motion that placed indirect, if not direct, blame upon computer hackers as a potential threat which could result in such mishaps in the nation's telephone system.

In a flashback, the author reviews the birth and development of the Bell System, and its holding company, AT&T. From Alexander Graham Bell to the breakup of "Ma Bell," the reader is given an overview of the symbiotic growth and expansion of the telephone and Ma Bell. There is also an overview of Ma Bell's guiding philosophy of public service and intensive research and development — "One Policy, One System, Universal Service." A brief account is given of the special relationship between Ma Bell and the government; this relationship often was intimate enough to almost be illegal. It was a relationship that ended in 1983, when the Bell System was ordered by a federal court to dismantle itself. From this breakup, there resulted the Regional Bell Operating Companies, the RBOCs (pronounced "arbocks"), which would play significant roles in the hacker crackdown, both as victims of hackers and as their eventual pursuers.

The author gives the reader an adequate foundation for comprehending the impact of hackers on the telephone company establishment. The concept of secrecy and the means of maintaining it are also discussed in this chapter. Telephone companies, or "telcos," wanted to maintain the security of their property and services, both tangible and intangible, but their systems were susceptible to electronic break-ins. Property security in cyberspace was a difficult matter because "theft" of telco services and electronic documents often left no physical evidence. The only evidence was the appearance of classified documents on numerous electronic bulletin boards, or long-distance service used but for which no payment was made. To the telcos, security meant preventing the misuse of their services and electronic documents. Only in the '90s have security

concerns realistically focused on potential threats to the entire telephone system.

THE DIGITAL UNDERGROUND

This chapter is very effective at pulling the reader into the world of semi-clandestine electronic bulletin boards (BBs) and their users. Sterling presents the relationships clearly and convincingly, leaving the reader with a good understanding of the users' mentality, the impact on the telcos, the RBOCs, the government, and cyberspace. This is by far the best chapter in the book.

As related by Sterling a fascinating world of code names, "techno-lingo," "handles," and bravado fills cyberspace. For example, the philosophy of a "phone phreak" is markedly different from that of a computer hacker. The latter does not even consider the former to be a member of cyberspace, but many people, including those in law enforcement agencies, regard both as "cyberpunks."

Phone phreaks, the author attests, are mainly concerned with the misappropriation of phone service. Their activities range from breaking into phone booths and stealing the change to using black boxes to discover long-distance access codes. The author believes their activities are both destructive and criminally reprehensible.

In contrast, computer hackers also like to break into telco systems, but are less destructive and less criminally reprehensible in their actions, as they usually leave the system intact. The challenge of navigating through supposedly secure telco systems is what drives these cyberpunks. They only copy a document as proof of their hacking skills; it is a trophy to show off to their friends and the rest of the world. Because they leave the original where they found it, they do not consider copying a file to be stealing. They do not use the copied document for financial gain, only for personal bragging rights, which they employ against other telco bandits and the telcos themselves.

The electronic bulletin boards are considered neo-speakeasies for computer users. They have names such as "The Administration," "ALIAS," "Anarchy Inc.," "Apple Mafia," "Black Bag," "Elite Phreakers and Hackers Club," "Legion of Doom," "The Phirm," "The Punk Mafia," "Neon Knights," and "Nihilist Order," to name a few. Members link up with the BB and begin communications, most of which involve the uploading and downloading of various and sundry items such as pirated software, copied confidential documents, credit card numbers, long-distance access codes, and text files for manuals. It was a gathering place where your

"handle" hid your true identity and your infiltration skills spoke for you. Users with handles such as "Carrier Culprit," "The Executioner," "Black Majik," "Solid State," and "Mr. Icon" would electronically congregate and exchange news of their exploits. It was an electronic underground that changed often, as users logged in and logged out and the BBs went online and offline. User access to and within the numerous boards was often secretive and elitist. Only those "in the know" were allowed the greatest access. To be "in the know" meant knowing the lingo, "the rap," and the action. As the boards and users become bolder, they attracted the attention of law enforcement agencies.

LAW AND ORDER

As boards became more blatant in their neo-criminal "phreaking" activities and because communications often crossed state lines, the federal government, especially the Secret Service and the FBI, began to take an interest. With the help of the Secret Service and FBI, regional law enforcement agencies mounted sting operations and investigations of crooked boards. They sometimes put up their own board to catch crooked users. Or, they would send in an undercover officer as a user on a suspect board.

This kind of covert action scared many a BB system operator ("sysop") and user. Some BBs took themselves offline and laid low for a while, but would eventually go back online. Users began to distrust other users, especially new ones. But few were ever to discover the undercover officer users. These agencies and officers, termed by the author as "Cyberspace Rangers," became well known within cyberspace. With the cooperation of the telcos, they successfully infiltrated the boards and began arresting and prosecuting individuals connected with boards involved in illegal activities.

A major issue discussed by the author is that during the raids, all the equipment was seized. Even in cases where no charges were pressed, the authorities have continued to keep the equipment, to the financial detriment of the owners.

Unfortunately, the author does not delve into other possible Fourth Amendment problems and evidentiary questions. The dummy BBs set up by law enforcement agencies and undercover users bring up entrapment and wiretapping issues, as well as problems involving search warrants and resonableness. The author, however, does give some attention to first amendment concerns in the next chapter.

THE CIVIL LIBERTARIANS

The actions by law enforcement agencies, described in the previous chapter, triggered a counterreaction from computer civil libertarians. Hacker raids in 1990 and 1991 by the Secret Service, Chicago Task Force, and the Arizona Organized Crime and Racketeering Unit were highly publicized in the media. This attracted the attention of computer entrepreneurs such as Mitch Kapor, of Lotus 1-2-3 fame, who founded the Electronic Frontier Foundation, a civil liberties organization, in reaction to the hacker crackdown. These computer civil libertarians seek to defend those who were the targets of the hacker crackdown. They believe that the raids and seizures are constitutionally unsound. To these civil libertarians, the First and Fourth Amendments are being compromised in cyberspace for so-called "national security reasons."

The author gives background on some of these entrepreneurial civil libertarians who brought publicity to bear against the law enforcement operations. For example, the reader is given an account of the well-publicized trial of Craig Neidorf, who was charged with wire fraud and transportation of stolen property. Neidorf ran a board that, through a circuitous route, obtained a confidential Southern Bell document. Neidorf was apparently the unfortunate recipient of the pirated document through users who uploaded and downloaded the document.

CONCLUSIONS

This book guides the reader through the stories of the hacker crackdown, via a narrative, story-telling format which prohibits the excessive use of technical language. This is both a strength and weakness. It is a weakness because it does not go into much legal or technical depth of the subject matter. It does not purport to be a manual on cyberspace, hacking, phone phreaking, or the telcos and their systems. It is, however, broad in its treatment of the recent interactions between citizens and the law in cyberspace wherein lies the book's strength.

It gives an overview of the electronic frontier and its potential legal implications. For some readers the lack of in-depth discussion and/or analysis on the first and fourth amendment ramifications of the hacker crackdown may be troublesome. However, it appears that constitutional lawyers were not the targeted audience of this book. Thus, the legal analyses may be sufficient for the lay reader who simply wants to learn more about computer hackers and electronic bulletin boards.

There are places in the narrative where the author seems to go off on philosophical tangents that tend to lose the reader. The relevancy of the tangent to the story matter is often questionable. It seems that the author sometimes gets lost between the narrative as a story and the narrative as a philosophical monologue of free thought. But in these instances, the author does eventually extricate himself, and the narrative continues.

In general, this book makes for a good introduction for lawyers who may want to enter the legal cyberspace. It is a timely and easy-to-read work that introduces the reader to the contextual background of cyberspace, where the constitutional battles of tomorrow will soon be fought.