HIGH-TECH WARRANTY PROJECT
COMMENT, P994413

Comments by Lorin Brennan

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Through The Telescope I, article published in UCC Bulletin on electronic contracting.

Through The Telescope II, article published in UCC Bulletin with more on e-contracting.

Why Article 2 Cannot Apply To Software Transactions, pre-publication draft of article for Duquesne Law Review.

1. INTRODUCTION

1.1. The FTC's call for comments on its proposed public forum on "Warranty Protection for High-Tech Products and Services" comes at a propitious time. Although the United States today remains the global leader in high technology, its leadership is coming is under fierce challenges, both from abroad and from within.

1.2. An accurate answer to many of the questions raised requires a review of legal and technical developments impacting software transactions. I have attached copies of three articles that discuss these matters. The first two articles, *Through The Telescope I* and *Through The Telescope II* discuss the emerging possibilities for electronic contracting on the Internet. The last one, *Why Article 2 Cannot Apply To Software Transactions*, is a pre-publication draft of a law review article that discusses in detail the proper commercial law for software transactions.

2. THE LAW APPLICABLE TO SOFTWARE TRANSACTIONS.

2.1. Under Preemptive Federal Law Software Is Licensed Not Sold.

2.1.1. Computer programs are copyrightable works. 17 U.S.C. § 101.

2.1.2. The Copyright Act mandates separate treatment for computer programs and their physical embodiments. Section 202 of the Copyright Act, 17 U.S.C. § 202, says:

> "Ownership of a copyright, or any of the exclusive rights under a copyright, is distinct from ownership of any material object in which the work is embodied. Transfer of ownership of any material object, including the copy or phonorecord in which the work is first fixed, does not of itself convey any rights in the copyrighted work embodied in the object; nor, in the absence of an agreement, does transfer of ownership of a copyright, or any of the exclusive rights under a copyright, convey property rights in any material object."

Under this section, a software package available in CompUSA is a *copy* of a separate, intangible, copyrightable *computer program*. They are *not* the same. Congress put it succinctly, H.R. Rep. No. 94-1476, 94th Congress, 2d. Sess, p. 124 (1976):

> "The principle restated in section 202 is a fundamental and important one: that copyright ownership and ownership of a material object in which the copyrighted work is embodied are entirely separate things."

2.1.3. Under Section 202, a computer program is not "sold" is the mass market. At most, what is sold is the *copy*. Under prior common law copyright, transfer of a physical object could transfer the common law copyright. Section 202 obliterates this result. This is precisely what Congress intended, H.R. Rep. No. 94-1476, 94th Congress, 2d. Sess, p. 124 (1976):

> "… the bill would change a common law doctrine … that authors or artists are generally presumed to transfer common law literary property rights when they sell their manuscript or work of art, unless those rights are specifically reserved. This presumption would be reversed under the bill …"

Under Section 202, as a matter of preemptive federal law, the sale of a material object in itself transfers *no* right in the embodied copyrighted work. *Saxon v. Blann*, 968 F.2d. 676, 680 (8th Cir. 1992) (manuscript); *Harris v. Emus Records Corp.*, 734 F.2d 1329, 1334 (9th Cir. 1984) (sound master); *Marobie-FL, Inc. v. National Association of Fire Equipment Distributors*, 983 F.Supp. 1167 (N.D. Ill. 1997) (clip art CD); *Applied Information Management, Inc. v. Icart*, 976 F. Supp. 149, 153 (E.D.N.Y. 1977); (software); *Design Options, Inc. v. Bellepointe, Inc.* 940 F.Supp. 86, 91 (SDNY 1992) (fabric designs); *Quintanilla v. Texas Television, Inc.*, 139 F.3d 494 (5th Cir. 1998) (video tape). This applies regardless of whether the license is exclusive, *Saxon v. Blann*, or non-exclusive, *Harris v. Emus Records*. Section 202 is not some recent innovation. It was the rule in Section 27 of the 1909 Copyright Act. Indeed, the Supreme Court laid down the rule nearly two centuries ago. *Stephens v. Cady*, 55 U.S. (14 How.) 528, 14 L.Ed. 528 (1852) (transfer of plates does not grant statutory copyright in map).

2.1.4. A mass market transaction cannot be a "sale" of the program. Section 101 of the Copyright Act says that a "transfer of copyright ownership" does not include a "non-exclusive license." Every mass market license is non-exclusive, *i.e.* there is no transfer of "title" in the copyright. Under UCC Article 2-106(1), a "sale" means "the passing of title from the seller to the buyer for a price." Since in a non-exclusive license no copyright "title" passes, such a license cannot be a "sale" of the computer program. *Berthold Types Ltd v. Adobe Systems, Inc.*, 101 F.Supp2d 697(E.D. Ill. 2000), a case involving a shrinkwrap software license, held just that:

> "A 'sale' is defined as 'the passing of title from the seller to the buyer for a price.' [Citation.] A pure license agreement … does not involve transfer of title, and so is not a sale for Article 2 purposes."

2.1.5. Case law confusion. As the attached articles discuss, early cases that treated a software transaction as a "sale of goods" never considered the Copyright Act. However, modern cases that do have repeatedly held the "sale of goods" characterization can not apply to software licenses, even in the mass market. As *Novemedix, Ltd. v. NDM Acquisition Corp.*, 166 F.3d 1177, 1182, 49 U.S.P.Q.2d 1613 (Fed. Cir. 1999), said:

> "Many commercial transactions are not governed by Article 2 of the UCC: sale of land or securities, assignment of a contract right, or granting a license under a patent or copyright, to name just a few. The mere fact that title to Article 2 goods changes hands during one of these transactions does not by that fact alone make the transaction a sale of goods."

Accord DSC Communications Corp. v. Pulse Communications, 170 F.3d 1354 (Fed. Cir. 1999*) cert. denied*, 120 S. Ct. 286 (1999) (restrictions on use prevented "sale"); *Berthold Types Ltd v. Adobe Systems, Inc.*, 101 F.Supp2d 697(E.D. Ill. 2000) (mass market license not a sale); *Adobe Systems Inc. v. One Stop Micro*, 84 F.Supp.2d 1086 (N.D. Cal. 2000) (same); *Applied Information Management, Inc. v. Icart*, 976 F.Supp. 149, 150 (E.D.N.Y. 1997); *Architectronics, Inc. v. Control Systems, Inc.*, 935 F.Supp. 425, 432 (S.D.N.Y. 1996) (transfer of intellectual property rights not a "sale"); *In re SSE International Corp.*, 198 B.R. 667, 670 (Bkrptcy.W.D.Pa. 1996) (license not a "sale" regardless of delivery of copy). The conceit that a mass market license is a "sale" of a computer program is legal nonsense.

2.1.6. Licensing Is Critical To Consumers. If Section 202 prohibits a transfer of any copyright interest from the mere transfer of a physical object, then what does the consumer get with mass market software? At best, the consumer purchases a *copy*. The Copyright Act does allow certain privileges to the authorized owner of a copy. These privileges, however, are

insufficient for many software uses. Moreover, the Copyright Act allows the software proprietor to limit them. This means that without an enforceable shrinkwrap or click-on license, many software customers are at risk of becoming copyright infringers. Let us see how this works.

2.2. An Authorized Owner of a Copy Has Limited Privileges.

2.2.1. The "first sale" doctrine. Section 109 of the Copyright Act says that a lawful sale of a copy "exhausts" the distribution right for that copy, so its further transfer is not an infringement. *See* 3 NIMMER § 8.12. However, the original sale must be authorized by the copyright owner. 17 U.S.C. § 109(a). The privilege does apply to someone who only acquires possession, 17 U.S.C. §§ 109(a) & (d), and it only effects the distribution right. *Design Options, Inc. v. BellePointe, Inc.* 940 F.Supp. 86, 91 (S.D.N.Y. 1996) (§ 109 does not authorize reproduction); *Midway Mfg. Co. v. Strohon,* 564 F.Supp. 741 (N.D.Ill. 1983) (or adaptation); *Red-Baron-Franklin Park, Inc. v. Taito Corp.*, 883 F.2d 59, 64 (or public performance).

2.2.2. The "computer use" privilege. Section 117 allows making a new copy or adaptation "as an essential step in the utilization of the computer program in conjunction with a machine." 17 U.S.C.A. § 117(a)(1). The copies may be leased, sold or otherwise transferred only with the original copy and all of the original owner's rights in the computer program. 17 U.S.C.A. § 117(b). This privilege is only available to the "authorized owner" of a copy. *DSC Communications Corp. v. Pulse Communications* 170 F.3d 1354 (Fed. Cir. 1999; *Allen-Myland v. International Business Machines Corp.*, 746 F.Supp. 520, 536-37 (E.D.Pa. 1990).

2.3. A Copyright Owner Is Not Required To Sell Copies

2.3.1. Under the Copyright Act, a copyright owner can restrict the sale of copies. Section 106(3) grants to the copyright owner the exclusive right "to distribute copies … of the copyrighted work to the public *by sale or otherwise*." The copyright owner is not required to authorize any sale of copies. In addition, the copyright owner can place restrictions on the use copies in ways that vitiate the first sale and computer use privileges. The Federal Circuit said so in *DSC Communications Corp. v. Pulse Communications* 170 F.3d 1354, 1359-1360 (Fed. Cir. 1999). Similarly, in *Adobe Systems Inc. v. One Stop Micro,* 84 F.Supp.2d 1086 (N.D. Cal. 2000), the court held that restrictions on ownership and transfer in a shrinkwrap license were enforceable and prevented the transaction from being a "sale" subject to the first sale doctrine.

2.3.2. Nothing in state law mandates copyright owners to sell copies. Article 2A of the UCC authorizes leases of personal property.

- Credit card companies rent their pieces of plastic to consumers.
- Public libraries lend copies of books to their patrons.
- Video stores rent copies of movies and video games to consumers.

Software vendors who wanted to could also rent copies of their programs under state law. If so, neither the "first sale" nor the "computer use" privileges would apply.

2.3.3. The software rental right would allow rental in any case.. A state law that purported to prohibit software vendors from renting copies could be preempted in any case. In 1990, Congress amended Section 109 to allow the owner of a computer program to control rental of a copy, even after a sale. Computer Software Rental Amendment of 1990, Pub. Law No. 101-650, Sec. 801, 104 Stat. 5089 *codified* 17 U.S.C. § 109(b). This "rental right" was enacted due to fear that the ease of copying would lead to wide scale piracy without restrictions on rental. It preempts state law. *Adobe Systems, Inc. v. Brenengen*, 928 F.Supp. 616 (E.D.N.C. 1996); *Central Point Software v. Global Software & Access*, 880 F.Supp. 957, 965 (E.D.N.Y. 1995).

2.4. Without An Enforceable License, Consumers Can Be Infringers

2.4.1. No shrinkwrap, infringement. If the shrinkwrap is not in force, then any later sale or disposition of a copy can be an infringement. *Stenograph v. Sims*, __ F.Supp. __, 2000 WL 964748, 55 USPQ2d 1436 (E.D. Pa. 2000) illustrates what can happen. Stenograph provided software to Varlack under a shrinkwrap license; Varlack then gave the software package to Sims as a gift. When Varlack breached the license, Stenograph sued for copyright infringement and conversion of the copies. The court found that due to restrictions on transfer in the license agreement, the "first sale" doctrine was inapplicable. This made the transfer of the copy to Sims unauthorized. There is no "good faith purchaser" defense to copyright infringement. *ARP Films, Inc. v. Marvel Entertainment Group*, 952 F.2d 643 (2d Cir. 1991); 4 NIMMER § 13.08. Invalidating a shrinkwrap or click-on license that authorizes distribution of copies can make any subsequent transfer of the copies, no matter how remote or innocent, an infringement.

2.4.2. Even with a first sale, infringement is possible. Even with an authorized sale of a copy, without a license many uses can be infringing. The first sale and computer use privileges are limited. Consider an application development program like JAVA or VISUAL BASIC. Without a license, making and distributing "runtime" copies would be infringing even with a "first sale."

2.5. Licensing Provides Enormous Benefits to Consumers

2.5.1. The Benefits of Licensing. Rather than restricting consumers, licenses often authorize more uses than allowed by the default privileges in the Copyright Act. But there are trade-offs, typically a disclaimer of warranties due to low price or innovative nature of the software.

2.5.2. Some Examples. Here are some examples.

- Competition: LINUX is a fast-growing operating system that many see as a competitor to Microsoft Windows. It is distributed under the "open source" GNU General Public License. *See* <http://www.linux.org/>. This license allows users to copy, modify, and redistribute copies of LINUX without charge, provided the supplier makes the source code available and disclaims all warranties. If the warranty disclaimers in this license are unenforceable, then any distribution of copies of LINUX would be infringing. The attached article discusses LINUX and the GNU license.
- Internet: Another program distributed under the GNU license is APACHE. *See* <http://www.apache.org/>. Many Web hosting services use it. If the GNU General Public License, including its waiver of warranties, is invalid, all the Web hosting services using Apache, along with every consumer Web page they host, face a claim of copyright infringer.
- Innovation: JAVA is a program developed by Sun Microsystems to run on any platform. *See* <http://java.sun.com.>. This makes it well suited to the Web where computers run Windows, UNIX, Mac OS, *etc.* The JAVA Software Development Kit can be downloaded for free subject to Sun's click-on license, <http://java.sun.com/products/jdk/1.2/li>, which includes a waiver of implied warranties and consequential damages. If this license is invalid, then everyone who used the JAVA SDK to make JAVA applet and embed it on a Web page could be an infringer.
- Variation: Many software programs use object oriented development. This involves combining pre-fabricated components from other suppliers into new applications. This is akin to building a house with standardized components (doors, frames, electrical outlets, *etc.*) instead of going into the woods to cut trees. An enormous number of components are available. *See* <http://www.componentsource.com/> for over 4,000 components available on-line. Many are also in CDs that combine programs from multiple vendors. I have a CD with over 100 Web

commerce programs that cost less than $5.00. Some programs are shareware; others allow free use for a limited period, but require going on-line and paying an additional fee for unlimited use. This is a valuable marketing tool for small vendors, and a huge convenience for consumers. Requiring each vendor to supply its "shrinkwrap" before my purchase of the sample CD would balloon the packaging to the size of a phone book and skyrocket its cost – at no benefit to me. Moreover, the expanded shelf space required for this packaging would undoubtedly mean that my local computer store would no longer carry it in the first place.

- Education: A huge number of "how-to" programming books contain CDs with sample copies of code and a shrinkwrap license authorizing their copying and distribution. For example, THINKING IN JAVA, by Bruce Eckel, is a popular text on JAVA programming. *See* <http://www.bruceeckel.com/javabook.html>. Originally published electronically on the Web, it only later became available in printed form. The license allows users to copy and reuse the code samples, subject to a disclaimer of all warranties. If this license are unenforceable, what writer would risk making another "how to" book available? For discussion of this license, *see* Lorin Brennan, *The Public Policy of Information Licensing*, 36 HOUSTON L.R. 61, 86-89 (1999).
- Public Service: The following organizations all use click-on licenses to distribute public service information on the Web: Consumers Union, Consumer Net, U.C. Berkeley, Dartmouth College, M.I.T., Texas Classroom Teachers Association, Public Broadcasting Association, Free Software Foundation, The Robert Woods Johnson Foundation, The Partnership For Food Safety Education, National Pediatric and Family HIV Resource Center, National Institute of Health Library, National Kidney Foundation, Guggenheim Museum, First Baptist Church (Rochester, MN) and Catholic Online Webmail. *See* Robert W. Gomulkiewicz, *The License Is the Product*: *Comments on the Promise of Article 2B For Software and Information Licensing* 13 BERKELEY TECHNOLOGY L.J. 891, 897-898 (1998) (listing URL's for these sites, along with sample copies of licenses).
- Government Assistance: OSHA has developed a series of expert systems programs to help explain their regulations. *See* <http://www.osha-slc.gov/dts/osta/oshasoft/.> However, there are limits on what an expert system can do. *See* Stuart Russell & Peter Norvig, ARTIFICIAL INTELLIGENCE: A MODERN APPROACH (Prentice Hall, 1995) ["RUSSELL & NORVIG"].) OSHA therefore includes a disclaimer with each program. One says: "This hazard advisor is an introduction to hazard recognition. **It is NOT able to identify ALL hazards.** It is NOT a substitute for safety and health professionals. **It will NOT determine compliance** with OSHA standards. It is designed for beginners not experts, but experts can use it, too." One would hope the entire federal government would support OSHA's efforts.

2.5.3. Protecting Consumers. If shrinkwrap or click-on software licenses, including their warranty waivers, are unenforceable, then many parties would be reluctant to provide valuable information to the public, and consumers who used information under invalid licenses could face infringement claims. This makes determining what law applies to software transactions crucial.

2.6. UCITA Is A Necessary And Appropriate Commercial Code

2.6.1. About UCITA. The Uniform Computer Information Transactions Act has been crafted to reconcile state commercial law to the federal intellectual property law for computer information transactions. The attached articles, along with many others, describe its consumer benefits. Here I mention briefly UCITA's effect on "shrinkwrap" and "click-on" contracts.

2.6.2. Procedural Limits. UCITA imposes procedural rules on the enforceability of shrinkwrap and click-on licenses to ensure that parties meaningfully assent to contract terms. It does this by requiring a "manifestation of assent" after an "opportunity to review," including a right of return. Basically, this allows a consumer a procedural right to unwind the license in appropriate cases. UCITA does not try to rewrite the substantive rules of federal intellectual property law at the state level, for obvious reasons.

2.7. UCC Article 2 Cannot Apply To Software Transactions

2.7.1. The Law. The attached article discusses why the "sale of goods" paradigm is incompatible with federal law when applied to software transactions.

2.7.2. The Politics. The claim that Article 2 should apply to software transactions is often political, not legal. It attempts to make any disclaimer of warranties by a software developer, large or small, legally ineffective by covert manipulation of contract formation rules to pretend that the software developer never "effectively" waived them. The problem with this tactic was explained by *ProCD, Inc. v. Zeidenberg*, 86 F.3d 1447, 1453 (7th Cir. 1996):

> Competition among vendors, not judicial revision of a package's contents, is how consumers are protected in a market economy. ProCD has rivals, which may elect to compete by offering superior software, monthly updates, improved terms of use, lower price, or a better compromise among these elements. . . . [A]djusting terms in buyers' favor might help Matthew Zeidenberg today (he already has the software) but would lead to a response, such as a higher price, that might make consumers as a whole worse off.

See also Jeff C. Dodd, *Time and Assent in the Formation Of Information Contracts: The Mischief of Applying Article 2 to Information Contacts*, 36 HOUSTON L.R. 195, 198-201 (1999).

2.8. Under Common Law, Shrinkwrap Licenses Are Fully Enforceable

2.8.1. State common law. If UCC Article 2 does not apply, then in states that have not adopted UCITA the common law of contracts applies to shrinkwrap and click-on licenses.

2.8.2. Shrinkwrap licenses are fully enforceable. As *Step-Saver Data Systems, Inc. v. Wyse Technology*, 939 F.2d 91, 99 (3rd Cir. 1991), explained:

> Under the common law, . . . an acceptance that varied any term of the offer operated as a rejection of the offer, and simultaneously made a counter offer. This common law formality was known as the mirror image rule, because the terms of the acceptance had to mirror the terms of the offer to be effective. If the offeror proceeded with the contract despite the differing terms of the supposed acceptance, he would, by his performance, constructively accept the terms of the "counteroffer," and be bound by its terms. As a result of these rules, the terms of the party who sent the last form . . . would become the terms of the parties' contract. This result was known as the "last shot rule."

This means that when the copies of the software arrive with the shrinkwrap license, the licensee accepts the shrinkwrap by using the software. The shrinkwrap then becomes enforceable in all of its terms, including any warranty waivers. The attached article discusses this point further.

2.8.3. Without UCITA. Without UCITA, the proper result under state law is: (i) the common law of contracts applies to software transactions, especially in the mass market; (ii) under the "last shot" rule, a shrinkwrap or click-on license becomes enforceable in *all* its terms, including any warranty disclaimer, by accessing or loading the software; (iv) the consumer has no right of return or other procedural protections like those in UCITA; and (v) there are few, if any, common law implied warranties, as discussed below. Indeed, invalidating the shrinkwrap or click-on license can make the consumer a copyright infringer, subject to statutory damages, 17 U.S.C. § 505, without the necessity of showing actual harm.

3. UNDERSTANDING COMPUTER PROGRAM FUNCTIONALITY.

3.1. Why An Understanding Is Essential

3.1.1. The basics. Any discussion of computer program warranties should start with an understanding of what a computer program is. Some parties assume a computer program is just like a used car or a toaster. It is not. A car that does not run forever is not "defective;" the Second Law of Thermodynamics tells us a perpetual motion machine is impossible. The law does not require unreasonable performance standards. *McMichael v. American Red Cross*, 527 S.W.2d 7 (Ky. 1975) (tainted blood not defective where no effective testing procedure existed). A proper understanding is crucial to avoid indulging in junk science.

3.2. What A Computer Program Is

3.2.1. Legal definitions inadequate. Legal definitions of "computer program" are often imprecise. In fact, a computer program is a precise mathematical object first formulated by Alan Turing in the 1930s. Numerous popular and technical texts discuss the precise nature of a computer program; they are listed in the attached article. A noted one is the Pulitzer Prize winner by Douglas R. Hofstadter, GÖDEL, ESCHER, BACH: AN ETERNAL GOLDEN BRAID (1988).

3.2.2. Computer Program are logic processors. In essence, we can think of a computer program as a "logic processor." Given a set of statements (input) it uses an algorithm (logic processor) to produce a result (output). By analogy, think of plane geometry as described in Euclid's *Elements*. Euclid begins with a series of postulates (inputs) and using deduction (logic processor) derives theorems (output). Theorems once derived can be fed back into the system as new input to deduce newer theorems. Turing developed a mathematical model of this procedure called a Universal Turing Machine (UTM). The Church-Turning thesis says that any computer program can be expressed by a UTM, *i.e*. a UTM is a universal model of effective computation. A UTM is not a physical "machine." It is a computer program. For a delightful demonstration of a UTM on the Internet, *see* <http://cgi.student.nada.kth.se/cgi-bin/d95-aeh/get/umeng>.

3.3. Why There Are Inherent Limits On Program Functionality.

3.3.1. It is impossible to build an algorithm that finds all "bugs" in every program. Turing proved some things are impossible for computer programs. Impossible does not mean "commercially impracticable." It means literally impossible; a computer the size of the known universe, running from the beginning until the end of time, could never do it. The classic case is the Halting Problem. For any computer program, we would like to know whether it will halt on

a given input or get stuck in an infinite loop and run forever. Turning proved that no algorithm (computer program) existed that could answer this question in general. This means that we can never design an all purpose "bug finder" utility guaranteed to take every computer program, process it, and print out a list of all "bugs." We would never know whether "bug finder" was still working or caught in an infinite loop. (This also ignores the enormously difficult problem of defining what we mean by a "bug" to begin with.) This means one must face testing every possible program interaction to find undesirable behavior.

3.3.2. Some problems are too complex to solve in any reasonable time. We can find some "bugs" in some programs, and maybe all "bugs" in small programs, but for large programs there can be a staggering number of combinations to test. For example, in theory one could test every possible combination of chess moves to find every winning strategy. But there are about 35^{100} nodes in the solution tree, a staggering large number. (*See* RUSSELL & NORVIG chpt. 5.) Thus, computer scientists classify problems by their complexity. The classes include:

- *Unsolvable*: These are problems, like the Halting Problem, that are impossible to solve, even in theory. Many crucial problems have been shown to be unsolvable.
- *Intractable*: These are problems for which there do not appear to be any algorithms that can solve them with a reasonable allocation of time and resources. They are called NP-Complete. Many problems are known to be NP-Complete.
- *Feasible*: These are problems that, at least in theory, can be solved with a reasonable allocation of time and resources by use of simple algorithms.

A deep unanswered question in computer science is whether it is even possible in theory to find algorithms to solve NP-Complete problems in a feasible way.

3.3.3. Illustration of Complexity. In the late 1990s, a PC operating system reportedly contained over 10 million code interactions; it also reportedly had over 14,000 possible "bugs" when released, although these were not considered serious impediments to user satisfaction. In a worst case scenario, testing all 14,000 "bugs" against all 10 million interactions at the rate of one per second would take $14 \times 10^3 \times 10^8$ seconds, or more than 400 years. And this assumes correcting one "bug" does not require re-testing.

3.3.4. Some Intractable Problems. Here are some intractable (NP-Complete) problems.

- *Traveling Salesperson*. A salesperson wants to visit several cities. What is the shortest route that only visits each city once? For an arbitrary number of cities, the potential routes grow exponentially fast. There is no known algorithm for solving this problem beyond "brute force," *i.e.* testing every combination. This is not an abstract puzzle. Designers of integrated circuit boards face it daily.
- *Prime Factors.* Determine whether an arbitrarily large number is prime. Designers of public key / private key encryption codes exploit the intractable nature of this problem.

Throwing more machines at NP-Complete problems (parallel computing) does not help, since many problems are not reducible to discrete steps that can be solved in parallel.

3.3.5. Complexity. The point is not that we cannot make computer programs which function well. The point is that we cannot evaluate computer programs with old-fashioned imagery derived from used cars and toasters. A computer program has feedback; it can refer back to itself to change its state. This feedback can lead to complex and unexpected behavior. Comparing a static object like a toaster with a dynamical system like a computer program for warranty purposes verges on junk science. Legal rules must recognize reasonable limits on what

we can test and accept some unexpected behavior in order to encourage innovation. This discussion is just the tip of the iceberg on complex systems. A good popular introduction is John Casti COMPLEXIFICATION, esp. chpt. 4 *The Lawless* (1994). More technical works are listed in the attached article. Further study and understanding is required before legal rules can develop appropriate performance requirements.

3.4. How Software Companies Deal With Them

3.4.1. Dealing With Complexity. Software developers deal with program complexity in any ways. These include:

- Development Contracts: Most software is custom written. Those who commission software (should) understand that testing is essential. The risks and costs are allocated by contract. It is like retaining any service provider, whether lawyer, accountant, architect, *etc*.
- Beta testing: Other companies use extensive "beta-testing" by providing pre-release versions to selected customers on advantageous terms in exchange for testing and feed-back.
- Software quality testing: Companies also engage in quality testing. There are number of software quality professional organizations.
- Technical support: Many vendors provide technical support to help users understand the software or to correct identified defects after delivery.
- Service Contracts: Other developers provide service contracts for configuring the system, training users, and correcting misbehaviors.
- Updates: Software companies often provide new updates and versions to add new functionality or improve past performance.
- Nothing: Some do nothing, but then the price is low. You get what you pay for.

3.4.2. Cost/Benefit Analysis. All of these procedures have a cost, which must be factored into the fee for the software. Different developers provide different mixes of cost/benefit depending on the software and their resources. Open source software, like LINUX or JAVA, is provided for free, but with no warranties or support. Shareware is provided for whatever the user wants to pay on an "as is" basis. Some companies provide free tech support; others charge for it under various plans. Some companies warrant that their software will perform as described in the documentation, and provide replacement or repair remedies with designated periods, say 90 days. There is an enormous variety to choose from.

3.5. What The First Amendment Does

3.5.1. The First Amendment applies to computer programs. As copyrightable literary works, 17 U.S.C § 101, computer programs are covered by the First Amendment. Judge Kaplan explained how in a thoughtful opinion in *Universal City Studios v. Reimerdes,* <http://www.nysd.uscourts.gov/courtweb/> (S.D.N.Y. Aug. 17, 2000). That they perform a function does not change the result; textbooks and "how to" manuals also perform a function. The First Amendment, of course, does not prohibit some regulation of content. As Judge Kaplan explained, programs that perform malicious actions like viruses, or break encryption codes, or infringe a copyright, can be appropriately regulated within the First Amendment.

3.5.2. The First Amendment impacts warranty liability. That being said, the First Amendment effects blanket imposition of non-disclaimable warranty liability even for functional content. *See, e.g., Winter v. G.P. Putnam's Sons*, 938 F.2d 1033 (9th Cir. 1991) (no liability for incorrectly identifying a poisonous mushroom as edible); *Cardzo v. True*, 342 So.2d 1053 (Fla. Dist. Ct. App. 1977) (no liability for failing to warn about ingredients in cookbook); *Roman v. City of New York*, 442 N.Y.S.2d 945 (1981) (no liability for inaccuracy in brochure about pregnancy risk); *Walter v. Bauer*, 439 N.Y.S.2d 821 (N.Y. Sup. Ct. 1981) (no liability for injury from experiment in a science book). For a thorough review, *see* Joel Wolfson, *Express Warranties and Published Information Content Under Article 2B: Does The Shoe Fit?*, 16 J. MARSHALL J. COMPUTER & INFO. L. 337 (1997); and Joel Wolfson, *Electronic Mass Information Providers and Section 552 of the RESTATEMENT (SECOND) OF TORTS: The First Amendment Casts A Long Shadow*, 29 RUTGERS L. REV. 67 (1997). First Amendment limits on computer program warranties were thoroughly considered by the UCITA Drafting Committee, and the provisions of the statute drafted accordingly. The "goods" implied warranties in UCC Article 2, being crafted for entirely different objects, are not appropriate for software.

4. EMERGING OPPORTUNITIES FOR CONSUMER EMPOWERMENT.

4.1. About Consumer Empowerment

4.1.1. The Possibility. A new possibility in e-commerce is consumer *empowerment*.

4.1.2. Through the Telescope. These attached *Telescope* articles describe the trend. Basically, the Internet is enabling the creation of new types of computer programs that can increase efficiency and reduce costs for consumers through automated contracting.

4.2. What The Software Industry Is Doing To Encourage It.

4.2.1. The New Technology. The amount of information on the Internet is already staggering and growing exponentially. To deal with it requires automated tools. The software industry is working overtime to develop automated electronic agents – "bots" – to search the Net and engage in automated bargaining if the parties want. But designing contracting programs demands some knowledge of basic technology. For example:

- Formal logic: IBM has a developed a set of Common Rules for dealing between electronic agents. *See* <http://www.research.ibm.com/rules/home.html>. Understanding what these rules can and cannot be "expected" to do requires understanding the abilities and limitations of formal logic. *See, e.g.* Edward A. Bender, MATHEMATICAL METHODS IN ARTIFICIAL INTELLIGENCE, chpt 6. (1996); Judge Ruggero J. Aldisert, LOGIC FOR LAWYERS: A GUIDE TO CLEAR LEGAL THINKING p. 158-162 (3rd ed. 1997).
- Game Theory: Understanding how automated bargaining agents come to agreement also requires some knowledge of game theory. This is basic undergraduate fare in economics, political science and mathematics. Lawyers need to know it too. *See, e.g.* Douglas G. Baird, Robert H. Gertner & Randal C. Picker, GAME THEORY AND THE LAW (1994); Jules L. Coleman, Douglas D. Heckathorn & Steven M. Maser, *A Bargaining Theory Approach to Default Provisions and Disclosure Rules in Contract Law*, 12 HAV. J.L. & PUB. POLY. 639 (1989) (cooperative game theory); *also* Ian Ayres and Robert Gertner, *Filing Gaps in Incomplete Contracts: An Economic Theory of Default Rules*, 99 YALE L.J. 87 (1989).

- Distributed AI: We need to develop the "protocol" or rules of the game under which e-agents interact along with the individual strategies they can or should use in individual negotiations. This is a province of Distributed Artificial Intelligence. *See* Jeffrey S. Rosenschein & Gilad Zlotkin, RULES OF ENCOUNTER: DESIGNING CONVENTIONS FOR AUTOMATED NEGOTIATIONS AMONG COMPUTERS (MIT Press 1994); *also* RUSSELL & NORVIG, *supra*; Hyacinth S. Nwana & Nader Azarmi (eds.) SOFTWARE AGENTS AND SOFT COMPUTING: TOWARDS ENHANCING MACHINE INTELLIGENCE (1997).
- XML: Several companies have created the Open Trading Protocol allowing communications of offers, acceptances, prices, *etc*., among electronic agents. *See* <http://www.otp.org/>. The OPT uses XML. *See also* <http://www.LegalXML.org>, a site for lawyers tying to develop XML standards for law. Microsoft, along other companies, hosts a site with numerous DTD's for business use. *See* <http://www.biztalk.org/BizTalk/default.asp>.

4.2.2. An Example – Disclosure of Terms. Consider an example of what this technology means: the debate whether to mandate "pre-purchase" disclosure of terms. To some this seems like a good idea since it allows litigation opportunities for failure to comply with a rigid formalism. Others have argued that forcing consumers to listen to a droning recitation in voice-mail jail offers no real benefits over allowing them to read contract terms at home with a right of return if dissatisfied. Putting aside legal aesthetics, another approach structures a "disclosure game" to determine the appropriate pay-offs. *See* Avery Katz, *The Strategic Structure of Offer and Acceptance: Game Theory and the Law of Contract Formation*, 89 MICH. L.R. 215 (1990); *also* Lorin Brennan *The Consumer Interest In Disclosure of Terms*, PLI SOFTWARE AND DATABASE LICENSING 739 (1999). One finds the real issue is not reading forms, but whether the effort to do so (transaction cost) justifies the expected reward. In some cases it is better to forego reading, assume the worst, and discount the price accordingly. Who wants to read a contract to buy a pencil? This forces suppliers who want to compete on beneficial contract terms to make an effort to disclose them, one reason why auto makers advertise warranty terms. Forcing "pre-purchase" disclosure in every case regardless of suitability, on the other hand, subjects consumers to a duty to read, making them bear transaction costs whether they want to or not.

4.2.3. Another Example – "Negotiation". Another example is an infatuation with "face-to-face negotiation" in the mass market. Of course academic lawyers like this idea. They know the "secret" legal rules for contracting and so have an advantage. But is it good for consumers? The most dramatic counter-example is automobile purchases on the Internet, as discussed in the first *Telescope* article. If consumers thought that "face-to-face negotiation" was beneficial, they would relish haggling for a car. Most don't. In fact, auto dealers learned that forcing consumers to negotiate actually increases sales. Consumers have instead used information obtained from the Internet to reduce negotiation costs for both sides and in turn obtain a lower price.

4.2.4. What Economists Say. The FTC's economists have conducted a thoughtful analysis of the possibilities for "frictionless" commerce on the Net. *See* Alan E. Wiseman, *Economic Perspectives On The Internet*, FTC Bureau of Economics (July 2000), <http://www.ftc.gov/be/economicissues.pdf>. Although they conclude the Internet is not yet truly frictionless, the possibility is definitely there. We should not let restrictive laws strangle the baby in the cradle before it has a chance to live.

4.2.5. What Role For Lawyers? Legal careers have often depended on a facility with *ex post* arguments to courts and regulators. Courts and rule making of course have a role to play. But if every transaction must be tested in a court before it is valid, the economy will grind to a halt. The Internet is allowing the creation of new automated bargaining tools to provide *ex ante*

results for secure automated bargaining. For lawyers to participate, they will need to learn new technology skills, but this is fitting. Lawyers should serve society, not the other way around. *See* Frank H. Easterbrook, *The Court and the Economic* System, 98 HARV. L. REV. 4, 11-12 (1984) (arguing that courts should consider "*ex ante* perspectives" that create incentives for optimal creation and use of information in the future rather than just "*ex post* arguments" about division of gains and losses among specific parties). The drafters of UCITA were concerned about empowering consumers by giving them the choice to access the full benefits of the Internet by use of new technology if they so desired.

4.3. The Possibilities For On-Line Dispute Resolution

4.3.1. An Aside. Since a question asked about it, here is a brief aside on the benefits of on-line dispute settlement.

4.3.2. The New York Convention. The New York Convention allows arbitration awards in one member country to be enforced in any other. It is one of the most successful treaties ever. *See* Leonard V. Quigley, *Accession By The United States to the United Nations Convention On The Recognition And Enforcement Of Foreign Arbitral Awards*, 70 Yale. L.J. 1049 (1961). Due to the Convention, it is easier to enforce an arbitration award internationally than a judgment, and arbitration awards are easier to obtain. A number of organizations are setting up sites to handle dispute resolution over the Internet. The Texas Bar maintains an excellent list. The ISANN domain name dispute resolution procedures are an example of successful arbitration in cyber-space. The independent motion picture industry has used international arbitration for decades, with awards enforced from France to Korea. Due to the New York Convention, consumers may find on-line arbitration the preferable way to resolve on-line disputes, especially with parties in other countries.

4.3.3. Cyber-Settle. Cyber-settle is an on-line site for dispute resolution. *See* <http://www.cybersettle.com/>. It is possible to build an settlement protocol for automated bargaining by electronic agents that can reach optimal results. The details are discussed in the *Telescope II* article. This could be an enormous benefit for those who wish to use it.

4.4. Implications For America

4.4.1. Importance. Using the proper commercial law for e-commerce has profound implications for American competitiveness in the fast-developing global information economy. America may be the leader today, but its leadership is coming under stiff challenge as more and more countries try to become havens for e-commerce.

4.4.2. European Union. For example, the European Union is taking enormous steps to assume first place in the Global Information Infrastructure. These include:

- E-Commerce Directive: The E.U. is completing an E-Commerce Directive for on-line contracting. *See* <http://europa.eu.int/eur-lex/en/com/dat/1999/en_599PC0427.html>
- Initiatives: The European Commission maintains its own Web site dedicated to helping business, especially small businesses, thrive in the global e-commerce. *See* <http://www.ispo.cec.be/ecommerce/>. As the Commission says:

> Electronic commerce is a revolution that is sweeping across the world, changing the way we do business, the way we shop and even the way we think. And at the forefront of the revolution is the European Commission's electronic commerce unit. We've been supporting research and development in technologies you take for granted now and the technologies that will become the norms tomorrow. We've been helping business in the European Community become more competitive and we're involved in exciting new technologies like mobile e-commerce, smart cards, ubiquitous Internet, digital TV and more.

- Market Space: As discussed in the first *Telescope* article, Swedish Telecom is sponsoring the development of an automated bargaining site called Market Space. *See* <http://www.sics.se/~market/>.

- AI & Law: An informal look at sites on the Internet (see the *Telescope* articles) shows that many initiatives in applying technology to law are happening outside the United States. The main journals are not American. *Artificial Intelligence and Law* is published in Europe. *See* <http://www.greenwich.ac.uk/~ne02/call.time.evid.html>. The *Journal of Law and Information* is Australian. *See* <http://www.comlaw.utas.edu.au/law/jlis/>. These Journals contain numerous articles about how other countries are moving forward to modernize their delivery of legal services. Aware of these trends, the Drafters of UCITA embraced the discussion of new technology and made sure the statute would support it.

4.4.3. Asia. Asian countries, especially Japan, are making their bid for a significant role in the Global Information Infrastructure. These include:

- Aglets: Cutting edge research for intelligent, mobile agents was done at IBM's research center in Japan. *See* <http://www.trl.ibm.co.jp/> ; *also* <http://www.aglets.org/>.

- E-Commerce: Japan's MITI maintains an Electronic Commerce Promotion Council. *See* <http://www.ecom.or.jp/qecom/ecom_e/index.html>. The site describes initiatives to support the development of e-commerce in Japan.

4.4.4. ICaR. A site that to me symbolizes the near future is ICaR. *See* <http://www.icarsystems.com/icar/english/index.htm>. It offers legal expert systems for analyzing the *U.S.* tax code and the *Russian* criminal code. I have no idea where they are located. On the Internet, it does not matter.

4.4.5. The Stakes. Other countries are straining to modernize their commercial laws, encourage business innovation, and empower consumers for global e-commerce. If America is to remain globally competitive, it must do the same. No country has a monopoly on human inventiveness. If the United States does not create a climate that rewards innovation, innovators will go elsewhere. The resulting decline in national wealth and influence will be precipitous and irreversible. The country can no longer allow yesterday's misconceptions about the commercial law applicable to software transactions to steal the hope for everyone's tomorrows.

5. ANSWERS TO THE QUESTIONS.

5.1. Question 1:

> What warranty protections exist for consumers who purchase software and other computer information products and services?

5.1.1. **Software**: As discussed above, consumers do not "purchase" software "products." They license a computer program and, at best, purchase a copy. This means we must analyze the result first under federal law, and then under state law.

5.1.2. Federal law: Under federal copyright law, if the software vendor conditions the distribution of copies on a waiver of warranties, then failure of this condition vitiates the license and makes use of the copy an infringement. ("Use" should be understood as shorthand for the technically correct "exercises any of the exclusive rights reserved to the copyright owner.") Under federal law, in an *exclusive* license, there can be an implied warranty of ownership.

5.1.3. State law: Software transactions are not properly subject to UCC Article 2. Thus, in states that have not adopted UCITA, the consumer gets whatever warranties exist under state common law, subject to federal and constitutional overlays. Many states do not provide any common law warranties. *See* Raymond T. Nimmer, *Images and Contract Law – What Law Applies To Transactions in Information*, 36 HOUSTON 1, 43-58 (1999). In states that have adopted UCITA, the UCITA warranties apply to the extent not waived or modified.

5.1.4. First Amendment: The First Amendment can limit imposing implied warranties on program content.

5.1.5. **Services**: Consumers do not "purchase" services. Again, we must analyze the results under federal law and state law.

5.1.6. Federal law: Since computer software is not within the enumerated categories for specially commissioned "works made for hire," it does not qualify for "for hire" status. *Graham v. James,* 144 F.2d 229 (2nd Cir. 1998)*; Aymes v. Bonelli*, 980 F.2d. 857, 860-61 (2d Cir. 1992); 1 NIMMER & NIMMER § 5.03[B][2][b]. Thus, a consumer who contracts for services to create software does not own the resulting copyright, regardless of payment, without obtaining a written assignment from the software developer. 17 U.S.C. § 204(a); *Graham v. James*. (In rare cases, the consumer may qualify as a "joint author.") The consumer is not necessarily entitled to an implied non-exclusive license by payment either. This is discussed in the attached article.

5.1.7. State law: UCC Article 2 does not apply to services. *D.L. Lee & Sons v. ADT Security Systems, Mid-South Inc.* 916 F.Supp. 1571 (1995) (warranties on services are not covered); William D. Hawkland, UNIFORM COMMERCIAL CODE SERIES § 2-102:4 (1999). Therefore, in states that have not adopted UCITA, a consumer gets the common law warranties, if any, applicable to services. As Prof. Nimmer explains, *at* 36 HOUSTON L.R. 45-46:

> "Outside Article 2 (or Article 2A), far greater diversity exists. There is no body of law that establishes an implied warranty of appropriate *results* with respect to information or services contracts. Instead, the case law focuses on the process of contract performance and the quality of that performance. Indeed, in many states, applicable case law holds that there are no implied warranties of quality in a services or information contract. [Citations and examples omitted.] …
>
> "The UCC structure misses the mark because the Article 2 warranty provisions focus on assurances about the *result* of the contract performance, while in these other contractual relationships, the ordinary and acceptable expectations of the parties focus more on the *process* of performing." [Emphasis in original.]

See also Milau Associates v. North Avenue Development Corp., 42 N.Y.2d 482, 398 N.Y.S.2d 882, 368 N.E.2d 1242 (N.Y. 1977) (no implied warranty of fitness in services contract).

5.2. Question 2:

> What expectations do consumers have about reliability of software and other computer information products and services? Are these expectations met?

5.2.1. Overview. "Consumer expectations" is an inappropriate measure of "reliability." If applied to software, it would raise serious practical problems and significant First Amendment concerns. Having said that, the spectacular and accelerating growth of the software industries could not have occurred if software users were generally dissatisfied.

5.2.2. Rejection of "Consumer Expectations". The "consumer expectations" doctrine has its origins in Restatement (Second) of Contracts § 211. Few states have adopted it, and those that do generally limit to insurance contracts. As *Allen v. Prudential Property & Casualty Insurance Co.*, 839 P.2d. 798, 802-803, 805-806 (Utah 1992) put it:

> "[A] number of states have struggles with the doctrine's scope, leaving a trail of inconsistent decisions and creating an obviously uncertain future for the doctrine in those states. ... Today, after more than twenty years of attention to the doctrine in various forms by different courts, there is still great uncertainty as to the theoretical underpinnings of the doctrine, its scope, and the details of its application. … It is not clear why estoppel, waiver, unconscionability, breach of implied duty of good faith and fair dealing, and the rule that ambiguous language is to be resolved against the insurer, are insufficient to protect against overreaching insurers when applied on a case by case basis."

A leading authority on the UCC undertook an extensive review of how the doctrine worked in Arizona, one of the few states that applies it outside the insurance context. *See* James J. White, *Form Contracts Under Revised Article 2*, 75 Wash. U.L.Q. 315 (1997). Based on the serious problems uncovered, the doctrine was rejected in Revised Article 2. *See* Holly K. Towle, *The Politics of Licensing Law* 36 HOUSTON L.R. 121, 154-161 (1999).

5.2.3. Factual Confusion In Using "Consumer Expectations." The nature of software raises considerable problems in testing "reliability" against "consumer expectations." The doctrine has been typically limited to insurance contracts with narrowly defined risk identifiable by established actuarial methods. Even there, there is great uncertainty in application. Applying such an ill-defined test to something as complex and variable as software is problematical.

5.2.4. Difficulty of Identifying "Consumer Expectations." What, for example, does the average software customer "expect" from LINUX? If you are developer eager to write your own device drivers for a small kernel operating system, you might be quite happy. If you are expecting a self-installing operating system configured for "plug and play" compatibility with hundred of add-ins and scores of available applications, your "expectations" might not be met. Does this make LINUX "defective"? Should the developer who expressly does not want the second product be denied LINUX because someone might be unhappy? Would any innovator continue to make new inventions if forced to appeal to the lowest common denominator?

5.2.5. Changing Configurations. "Consumer expectations" continually evolve as users think of new things for software to do. This is why we have new versions of existing software, as well as new programs like those for the Internet. The genius of innovation is that often people do not know what to expect until they see it, and even then it can take time for people to catch on. Vincent Van Gogh's paintings were condemned in his lifetime.

5.2.6. Many "Defects" Are Not. Many complaints about "defects" turn out to be misuse of the software, often from trying to do something the software was not intended to do of from simply failing to read the manual. *See e.g. M.A. Mortenson Co., Inc. v. Timberline Software Corp.* 998 P.2d 305 (Wash. 2000) (alleged "defect" only appeared after repeated misuse).

5.2.7. First Amendment. Finally, requiring a software developer to write a program that must meet "consumer expectations" raises troubling issues. A diet or cook book is not "unreliable" because it fails to meet "consumer expectations." *Winter v. G.P. Putnam's Sons,* 938 F.2d 1033 (9th Cir. 1991). A movie is not "defective" because someone does not like it.

5.2.8. UCITA Approach. A more appropriate analysis would look to the warranty provisions in UCITA. *See* discussion in R.T. NIMMER, 36 HOUSTON L.R. 43-58.

5.3. Question 3:

What remedies are typically available to consumers if software or another computer information product or service fails to perform as the consumer expected?

a. What warranty remedies are available to purchasers of such products and services?
b. What remedies are supplied by state or federal law?
c. Do consumers seek to invoke these remedies, and if so, how often are they successful?

5.3.1. Answer. Again, consumers do not "purchase" software or services. The vast majority of states reject "consumer expectations" as a valid test of performance reliability even for tangible goods, so the question assumes something that does not exist.

5.3.2. Warranty Remedies. A "warranty" is a contact term. Thus, the available remedies are those for breach of contract. States do not generally impose implied warranties for the result of services, only, if at all, for the reasonableness of efforts expended. For states that have not adopted UCITA, software transactions should be properly subject to common law requirements, if any. Any implied warranty obligation will be subject to Copyright Act and First Amendment concerns. Consumers can enforce warranty provisions in a license in the usual manner.

5.4. Question 4:

Are consumers able to comparison shop for different computer information products or services based on the terms of warranty coverage? Are consumers interested in doing so? Do manufacturers or sellers of software and other computer information products and services compete with each other on the basis of warranty coverage?

5.4.1. Answer: See discussion above on automated contracting and the strategic (game theoretic) issues involved.

5.5. Question 5:

Do the current protections encourage efficiency in the timing, selection, and amount of detail in information conveyed to consumers?

5.5.1. Answer: As discussed above and in the attached articles, we need a modern commercial code that modernizes state commercial law for information transactions in harmony with federal requirements. UCITA is that code. It is the only state commercial code with substantive rules tailored to e-contracting. It is the only commercial code recognizing that consumers can be the creators and users of their own standard form contracts.

5.6. Question 6.

Do existing laws and industry practices protect consumers in the event that software and other computer information products or services are defective? How often does this occur?

5.6.1. Answer: See the answers to prior questions.

5.7. Question 7.

What developments are underway by private or public entities at the international, national, state, or local levels that would have an impact on consumer's rights in the context of transactions involving software or other computer information products and services?

a. How would the proposed Uniform Computer Information Transactions Act (UCITA) affect consumers?

b. What role, if any, would be appropriate for the federal government with respect to protecting consumers who purchase software or other computer information products and services? What role, if any, would be appropriate for state and local government? Consumer groups? Private industry?

c. Are there international developments prompting uniformity of software or other computer information products and services?

5.7.1. Role of UCITA. As discussed above, UCITA is critical for modernizing the law of information transactions in the emerging world of global, on-line, electronic commerce.

5.7.2. Federal role. Congress has already decided that consumers fare best by laws that further "progress of science and the useful arts." As the Supreme Court said in *Harper & Row, Publishers, Inc. v. Nation Enterprises,* 471 U.S. 539, 558:

> "[T]he Framers intended copyright itself to be the engine of free expression. By establishing a marketable right to the use of one's expression, copyright supplies the economic incentive to create and disseminate ideas."

See also Rockwell Graphic Sys., Inc. v. Dev Indus., Inc., 925 F.2d 174, 180 (7th Cir. 1991) ("The future of the nation depends in no small part on the efficiency of industry, and the efficiency of industry depends in no small part on the protection of intellectual property.")

5.7.3. State role. States can play a part by modernizing their commercial laws, consistent with federal mandates, to foster innovation and growth in information commerce. Old Article 2 is not and cannot be suited for this task. Non-uniform, common law rules are little better. Nationwide adoption of UCITA is the best approach.

5.7.4. Private Industry. At discussed above, the software industry is working to develop automated bargaining tools to increase efficiency and reduce costs of e-commerce. Modern lawyers are participating. Government should support their efforts.

5.7.5. International Developments. As discussed above, international competition is fierce and growing. There are many initiatives to develop uniform software standards, often in alignment with the International Standards Organization. An example is the international standard for HTML and XML sponsored by W3C in Geneva. *See* <http://www.w3c.org/>.

5.8. Question 8:

What is the impact of characterizing a mass-market software transaction as a license as opposed to a sale of goods?

a. What is the rationale for such a characterization?

b. What are the legal implications of this characterization?

c. How does this affect consumers?

d. To what extent, if any, should software transactions be treated differently from transactions involving other intellectual property, such as the sale of compact discs, videocassettes, and printed books?

e. Are some types of products involving intellectual property better suited to be distributed to consumers in license transactions as opposed to a sale of goods? Why?

5.8.1. Rationale for the categorization: A mass market software transaction must be characterized as a license of a computer program under federal copyright law. The copyright owner can elect to sell a *copy* and rely on default copyright rules to control uses, as in, for example, video game cartridges. But in the mass market a computer program is *licensed*.

5.8.2. Legal Implications Of The Categorization: Treating a mass market software transaction as a license accords with federal law, better protects licensees from copyright infringement claims, and enables uses of the copyrighted information beyond the default uses allowed solely by authorized ownership of a copy.

5.8.3. Effects on Consumers: As discussed above, licensing allows consumers to use a copyrighted computer program in ways beyond those authorized from a mere sale of copies.

5.8.4. Different treatment for "other intellectual property." Question 8.d confuses a *copy* and a copy*right*. As Congress explained, H.R. REP. NO. 94-1476, at 53 (1976):

> The definition of these terms in section 101, together with their usage in section 102 and throughout the bill, reflect a fundamental distinction between the "original work" which is the product of "authorship" and the multitude of material objects in which it can be embodied. Thus, in the sense of the bill, a "book" is not a work of authorship, but it is a particular kind of "copy." Instead, the author may write a "literary work," which in turn can be embodied in a wide range of "copies" and "phonorecords," including books, periodicals, computer punch cards, microfilm, tape recordings, and so forth.

"Compact discs, videocassettes, and printed books" are copies of copyrightable works. They can embody a variety of different copyrightable works, including literary works, motion pictures, sound recordings or computer programs. The same is true for cassettes and books.

5.8.5. A copyright primer. Section 106 of the Copyright Act grants the copyright owner certain exclusive rights in different types of copyrightable works. For example, the Copyright Act does not grant motion pictures a display right, since that makes little sense for movies. The Copyright Act however, does not limit the type of copies in which the copyright owner may elect to embody a work, nor limit the distribution right by the type of copy.

5.8.6. Are some products "better suited" to license than "sale"? Whether a particular work is "better suited" for one means of exploitation or another is for the copyright owner to choose. The copyright owner may sell copies and rely on the default rules in the Copyright Act, or may engage in licensing, in different location and at different times. Congress has given the copyright owner the right to make that choice.

5.8.7. Easy of copying encourages licensing. That being said, many software providers find that licensing is the most efficient approach for them. The same computer program can often be used in different configurations; the only difference is the license. *See* Robert W. Gomulkiewicz, *The License Is the Product*: *Comments on the Promise of Article 2B For Software and Information Licensing* 13 BERKELEY TECHNOLOGY L.J. 891, 897-898 (1998). An obvious example is a site license, which authorizes making multiple copies of a single CD, rather than providing multiple CDs. As *ProCD v. Zeidenberg* explained, licensing also allows arbitrage, which fosters lower consumer prices. In *Adobe Systems Inc. v. One Stop Micro.,* 84 F.Supp.2d 1086 (N.D. Cal. 2000), the court considered a shrinkwrap license which allowed Adobe to provide its PageMaker and related software to educational users for lower prices.

5.8.8. Internet availability. The "sale of goods" mischaracterization for software transactions has repercussions when making software available over the Internet. Does the Internet entail a distribution of copies or a public performance? If a distribution of copies, then due to the packet-switching nature of the Internet, each Internet service provider and telephone company ("ISP") is making a copy. If the copy is unauthorized, they face liability for contributory or vicarious copyright infringement. This "ubiquitous copy" issue caused considerable concern for ISPs. *See* 3 NIMMER § 12B.01[B][2]. Congress therefore adopted an elaborate "notice and take down" scheme to protect ISPs in appropriate circumstances. (*See* 17 U.S.C § 512.) A claim that software is "sold" over the Internet necessarily means there is a distribution of a tangible copy, and that each ISP intermediary is a "reseller" with warranty liability. In particular, if the copy is infringing, there is a violation of an implied warranty of "title." Such a result at the state level runs afoul of the Congressional compromise, raising serious preemption questions. It is another demonstration why the "sale" imagery is inconsistent with federal mandates.

5.9. Question 9.

To what extent, if any, do mass market licenses for software typically create express warranties?

5.9.1. Answer. As discussed above, software providers offer a range of "typical" costs/benefit approaches.

5.10. Question 10

To what extent, if any, do implied warranties arise in the context of mass market licenses for software?

5.10.1. Answer. See answers to Questions 1 and 2.

5.11. Question 11.

To what extent, if any, do mass market licenses for software typically disclaim express or implied warranties?

5.11.1. Answer. "Typical" covers a diverse range of practices. See the discussion above of the many sites that disclaim warranties in order to make information available to the public.

5.12. Question 12.

How are consumers affected by the use of "shrinkwrap" or "clickwrap" licenses in mass market purchases of software?

a. How are these licenses treated under existing law - that is, to what extent are these licenses enforceable?

b. What types of terms are typically included in a software license?

c. What types license of terms are beneficial to consumers? What types of terms may cause consumer harm? What legal recourse do consumers have in such circumstances?

d. To what extent are the terms of shrinkwrap or clickwrap licenses currently available to interested consumers prior to purchase?

e. What is the impact of license terms mandating certain types of alternative dispute resolution, such as arbitration? How frequently, if at all, are such terms enforced by licensors?

f. Do shrinkwrap or clickwrap licences discourage firms from competing on the basis of licensing terms? If so, which terms would be more likely to change if there were full prior sale disclosure? Why?

5.12.1. Answer: Under federal law, computer programs are licensed in the mass market. Without an enforceable shrinkwrap or click-on license, the licensee faces a substantial risk of becoming a copyright infringer. Thus, UCITA provides appropriate procedural tools to allow assent to a shrinkwrap or click on up front to forestall an infringement claim, but enables a right of return to unwind the transaction in appropriate cases. If UCITA does not apply, then a shrinkwrap or click-on license is enforceable in all its terms under the common law "last shot" rule. State law has limited ability to change many substantive rules impacting this result due to the preemptive nature of federal intellectual property laws.

5.12.2. Consumers as contract makers: This question also appears to presuppose a static contracting model. As the attached *Telescope* articles discuss, the Internet is allowing consumers to create their own automated contracting tools. The firing line for these tools is consumer privacy. E-agents could be empowered to allow consumers to create their own "privacy contracts" that a supplier must assent to in order to complete a transaction. These will be standard forms created by consumers. Indeed, just at the open source movement developed the GNU Open Source license and made it freely available, in theory consumer advocates could not develop the "Open Source Privacy Contract" and make it available to consumers who want to use it. This would require enforcing standard forms and shrinkwraps within appropriate procedures when a consumer imposes one on a supplier. UCITA does that.

5.13. Question 13.

What role, if any, does the Magnuson-Moss Warranty Act play in the marketing, sale, or licensing of software or other computer information products or services to consumers?

a. Is it appropriate that software be treated as a "consumer product" subject to the Act?

b. Is it appropriate that software be treated as "tangible personal property" subject to the Act?

c. Is it appropriate for the typical consumer transaction to acquire software to be treated as a "sale" of software subject to the Act?

d. Is it appropriate that software licenses be treated as a "warranties" subject to the Act?

5.13.1. Answer: The Magnuson-Moss Warranty deals with tangible products. Copyrighted computer programs are intangible works of the mind. They are not the same. As Congress said, H.R. Rep. No. 94-1476, 94th Congress, 2d. Sess, p. 124 (1976):

> "The principle restated in section 202 is a fundamental and important one: that copyright ownership and ownership of a material object in which the copyrighted work is embodied are entirely separate things."

5.14. Question 14.

Recent proposed revisions to UCC Article 2 (sale of goods) suggest that post-sale disclosure of terms may become acceptable in the sale of goods context. What would be the costs and benefits of applying a licensing model to goods covered by UCC Article 2? Does this suggest the importation of a licensing model into such sales of goods? If so, what effect, if any, will this have on consumers?

5.14.1. Answer: It is important to distinguish a "sale" from a "license." For a sale of goods, the value of the physical object is the linchpin of the transaction. It is thus fitting that title to the goods passes to a buyer in a sale, and Article 2-401 so provides. But in an information transaction, the primary value is use or of access to the intangible information. As a result, one uses licensing because intellectual property law "… expressly assumes that the right owner (not the copy possessor) retains the rights and significant control over even the copy of the information delivered to the transferee, regardless of possession or knowledge of the information by the transferee." (*Id.* R.T NIMMER, *at* 36 HOUSTON L.R. 39.) Because someone licenses intangible information with a right to control certain subsequent uses of copies consistent with intellectual property law does not mean that a "licensing model" should apply to a traditional sale of goods which do not embody information.

5.14.2. Copyright Act: This is the other side of Section 202 of the Copyright Act: "transfer of ownership of a copyright, or any of the exclusive rights under a copyright, [does not] convey property rights in any material object." There is no argument that a licensing model for intangibles should apply to a sale of goods. The argument is that a sale of goods model should not apply to a license of intangibles, even if use of the intangible happens to be enabled though providing a physical embodiment.

5.15. Question 15.

What should be the primary focus and scope of the Commission's initial public forum on "Warranty Protection for High-Tech Products and Services?"

5.15.1. Answer. See answer to Question 16.

5.16. Question 16.

Which interests should be represented at the Commission's initial public forum on "Warranty Protection for High-Tech Products and Services?"

5.16.1. Answer. If the purpose is to understand the real state of American commercial information law and its effect on America's global competitiveness, then an example of what could be done is the Second ACM Conference on Electronic Commerce, sponsored by the IBM Institute For Advanced Commerce this October. The announcement says: "The natural focus of the conference is on issues that are computer scientific in nature, but we also seek research relevant to those issues but which draw in a significant way on economics, game theory,

management, law, and other disciplines." <http://www.ibm.com/iac/ec00/index.html>. The accepted papers shows a scientific and business establishment grappling with the real problems of creating an effective world of on-line commerce to benefit all. Lawyers should be doing the same type of innovative thinking.

5.16.2. Participants. Participants in a modern conference should include lawyers who understand the relationship between intellectual property and commercial law, economists familiar with the Internet, computer scientists and mathematicians able to discuss e-commerce and automated contracting issues, and international figures with knowledge of America's position in the global on-line economy. In a word, those looking forward, not looking back.