

Computer Software: Does Article 2 of the Uniform Commercial Code Apply?

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INTRODUCTION

The ubiquity of computer technology is experienced by all of us.¹ Typing is done on a word processor, banking transactions are performed at automatic teller machines, and cash registers at many store check-out counters are computer terminals which instantaneously transmit sales and inventory data to a central computer. Computers² are also used in routing telephone calls, in synchronizing traffic lights, in the operation of complex medical equipment, and in the use of everyday things such as cameras and microwave ovens.³ Additionally, small desk top computers are used at work or at home for tasks ranging from balancing a checkbook to purchasing stock.⁴

It is inevitable that this growing use of computers has raised many legal issues.⁵ One facet of computer technology presenting particularly difficult legal issues is the treatment of software.⁶ The tremendous expenditures of both time and money required to develop software coupled with the explosive growth of the software industry⁷ has led to increased litigation.⁸

The question addressed by this article is whether article 2 of the Uniform Commercial Code (hereinafter U.C.C.) applies to computer software.⁹ This question is of more than academic significance¹⁰ in light of the size of the computer industry. As of 1982 computers outnumbered people.¹¹ Additionally, the total investment in software in the United States already exceeds \$200 billion despite the fact that the computer industry is only in its infancy.¹² Moreover, the software portion of the computer industry is rapidly becoming the largest segment; by 1990 it is estimated that 80% of the expenditures for computers will be for software.¹³ Consequently, failure to bring software transactions within the domain of article 2 leaves an enormous commercial industry subject to individual state statutes and state common law.¹⁴

A major drawback of excluding software transactions from article 2 coverage is that it pushes the software industry back to pre-U.C.C. days, when legal formalities controlled instead of business and commercial practices.¹⁵ For example, under the common law if a computer software buyer sent a standard purchase order form to a software producer who responded with a standard purchase order confirmation promising delivery, both parties would assume that a binding agreement was created. However, since in almost all cases the purchase order and the confirmation forms contain different terms, the common law would treat the purchase order as an initial offer and the confirmation as a counteroffer.¹⁶ Therefore, absent action by the software buyer that amounted to acceptance of the counteroffer, no contract was created.¹⁷ To eliminate the potential problems that can arise in such a typical commercial transaction involving an exchange of forms, article 2 substantially changes the common law rule and allows a contract to be created in the above situation.¹⁸

Additionally, omission of terms in an agreement and reliance by the parties on prior performance under the agreement, or under other contracts between the parties, or on industry customs and practices, can be problematic under the common law.¹⁹ Article 2, however, recognizes that business entities engage in business in this manner, and therefore it contains 'gap-filler' sections which supply omitted terms.²⁰ Also, performance by the parties and industry practices are given great weight by article 2 and in some cases may form part of the contract.²¹

Another drawback of reliance on state common law is the lack of uniformity among different jurisdictions. This lack of uniformity was a major problem prior to the enactment of the U.C.C. and its elimination was one of the main objectives of the U.C.C.²² The need for uniformity in commercial law is even more important today since most businesses operate in national markets. A disturbing trend is already evident in the computer area. Various states are beginning to pass specific legislation for the computer industry.²³ A continuation of this trend will ultimately create a confusing body of law which will vary among jurisdictions and subject software companies to the difficulty of attempting to comply with different laws in different states when they engage in nationwide marketing.²⁴

Application of article 2 to software transactions avoids overemphasis on legal formalities and the potential consequences of non-uniformity in the law since it has been adopted by forty-nine states.²⁵ The underlying policy of the U.C.C. is to simplify and clarify the law so it reflects the realities of the commercial marketplace and provides a uniform and predictable body of law.²⁶ Such goals have positively affected commercial transactions within the domain of article 2 and will necessarily enhance development of commercial law as it applies to software.

The applicability of article 2 to software depends upon two determinations. First, software must be a good as defined by article 2.²⁷ Second, software must be either sold or supplied via a non-sale transaction which is determined to be within the domain of article 2.²⁸

Disagreement exists about whether software is a good because of the confusing and contradictory usage of terminology in the computer industry.²⁹ Rapid advances such as the unbundling of hardware and software³⁰ and the reduced need for custom software³¹ have led to the formation of independent software producers who create and mass-market over-the-counter or canned software which is often usable on more than one computer.³² These rapid advances limit the long term precedential value of prior judicial decisions and thereby create confusion when such decisions are looked to despite changes in the computer field.³³ Confusion between the intellectual property aspects of software³⁴ and the physical medium containing the software³⁵ have also created uncertainty about whether software is a good. Additionally, the recognition that software represents a culmination of an abstract idea transformed into a physical medium embodying the software has raised questions about the status of software as a good.

A comparison of software with the many things routinely viewed as goods under article 2 buttresses the conclusion that software is also a good.³⁶ Despite the confusing terminology and the continual advances in technology, software embodied in a physical medium is analogous to goods such as a book or an automobile which may embody intellectual property and represent the transformation of intangible ideas and knowledge into a physical form.

Assuming software is a good, if it is sold article 2 is applicable to the transaction. However, software is typically licensed to users to protect the value of the software by controlling its use.³⁷ Jurisdictions which view the U.C.C. as a statute and therefore apply it literally would find such licensing transactions outside the scope of article 2 since title to the software is not transferred in the typical license transaction. However, an increasing number of jurisdictions treat the U.C.C. as a code and have extended the coverage of article 2 to both leases and bailments.³⁸ A further extension to software license transactions is supported by the same logic used to bring leases and bailments within the scope of article 2.³⁹

Hybrid transactions involving both goods and services have also been a source of confusion. Various judicial decisions have espoused different analyses which vary the outcome of a particular hybrid transaction.⁴⁰ Therefore, the determination of whether article 2 applies to software provided with support services,⁴¹ custom programming,⁴² time-sharing arrangements⁴³ or service bureau contracts⁴⁴ may depend upon which hybrid analysis is utilized in a particular case. This uncertainty can be avoided by recognizing and applying the U.C.C. as a true code, thus allowing article 2 to be applied to all transactions which involve goods as defined by article 2. Such an expansive view furthers the underlying code policies of uniformity and predictability⁴⁵ and is mandated by commercial practice which is increasingly utilizing non-sale transactions in lieu of traditional sales transactions.⁴⁶ Otherwise, article 2 will slowly decrease in importance as fewer true sales transactions are utilized.

This article will examine the question of whether software is within the article 2 definition of a good. Despite disagreement among commentators, a careful analysis indicates general judicial agreement that software is a good. An examination of the tangible and intangible property aspects of software plus a comparison of software with typical article 2 goods further supports the conclusion that software is a good. The extension of article 2 to software transactions which typically involve licensing in lieu of sales will be explored. In addition, the article will analyze whether the U.C.C. is a code or a statute, and examine the general treatment of lease, bailment, and hybrid transactions. A comparison of these types of transactions with software transactions, coupled with the determination that the U.C.C. is a code leads to the conclusion that software transactions are within the domain of article 2.

I. SOFTWARE: IS IT A GOOD UNDER ARTICLE 2 OF THE U.C.C.?

A. Sources of Confusion About the Status of Software

The determination of whether software is within the scope of article 2 of the U.C.C. is controlled by two seemingly simple sections. Section 2-102⁴⁷ makes article 2 generally applicable to 'transactions in goods' and section 2-105(1)⁴⁸ generally defines 'goods' to be all 'movable' things. Despite these two sections being clear on their face, much confusion and resulting disagreement exists among commentators about the status of software.⁴⁹

This uncertainty regarding article 2 treatment of software is inconsistent with the expansive definition of goods developed by the courts for other products. In *Lobianco v. Property Protection, Inc.*,⁵⁰ the Pennsylvania Superior Court said that goods under the U.C.C. embraces every species of property other than real estate, choses in action, and investment securities.⁵¹ In accordance with this expansive view numerous things have been held to be goods under article 2.⁵² It is confusion about the nature of software that has engendered much of the controversy regarding its status under article 2.

One source of this confusion is technical illiteracy,⁵³ which is exacerbated by the confusing use of computer terminology by experts in the field, who themselves disagree on the meaning of many terms.⁵⁴ This renders it almost impossible for the technically unsophisticated to appreciate the merits of a legal controversy concerning this subject matter. One judge expressed his frustration over computer terminology by stating:

"After hearing the evidence in this case the first finding the Court is constrained to make is that, in the computer age, lawyers and courts need no longer feel ashamed or even sensitive about the charge, often made, that they confuse the issue by resort to legal 'jargon,' Law Latin or Norman French. By comparison, the misnomers and industrial shorthands of the computer world make the most esoteric legal writing seem as clear and lucid as the Ten Commandments or the Gettysburg Address; and to add to the Babel, the experts in the computer field, while using exactly the same words, uniformly disagree as to precisely what they mean."⁵⁵

The use of the term software to describe different things exemplifies the confusing nature of computer terminology.⁵⁶ Not only are different definitions of software advanced, but software generally refers to a computer program regardless of its stage of development or the medium used to contain a program.⁵⁷ A program expressed as a flowchart,⁵⁸ or in source code⁵⁹ or object code,⁶⁰ is still called software.⁶¹ A computer program will be referred to as software if the program is embodied in a hard disk, a

diskette, a reel of magnetic tape, or a deck of punched paper cards.⁶² The manuals which explain the operation of a particular program are considered software by some people, while others do not include these within the definition of software.⁶³ The hiring of a programmer to create software to be used exclusively on the purchaser's computer may also be referred to as purchasing software, rather than as the rendition of services.⁶⁴

In contrast, music, for example, is described using different terms, depending on the form it takes. Music sold as notes written on a scale is called sheet music. Accompanying words to the music are called lyrics. If music is recorded on a phonograph record it is generally referred to as a record. Music recorded on audiotape will be referred to as a cassette or a reel-to-reel tape depending on the type of tape medium utilized. Finally, hiring a band to play music at a party involves a service contract to provide music. It is therefore necessary to look beyond bare terminology to ascertain the status of software. The proper determination of whether software is a good must focus on its stage of development and the medium in which it is embodied.

Another source of confusion arises from rapid changes in computer technology. The legal system places great emphasis on precedent, but the technology and market conditions for computers have changed so significantly and rapidly in the last decade that the factual considerations upon which many decisions were based may no longer exist.⁶⁵

One major change, for example, was the transformation of software from an incidental part of a computer system designed to operate only on that system to a separate product which is increasingly independent of the hardware.⁶⁶ When computers first began to be used commercially they were expensive machines requiring specialized software to be custom written for the computer user.⁶⁷ Generally, this software was written by experts provided by the computer manufacturer. In other cases, standardized software produced by the manufacturer especially for the computer being sold could be used. The sale of a computer with software and programming services was accomplished via a bundled transaction in which the sale price was the same whether the buyer wanted only the hardware or in addition, the software and programming services.⁶⁸ Antitrust considerations eliminated bundled transactions and divided the computer industry into two distinct segments—hardware manufacturers and software manufacturers.⁶⁹

As a result of this division, computer manufacturers today sell hardware which usually includes only operating systems software.⁷⁰ They may also separately sell some applications software, but such software is increasingly being provided by independent software companies who provide both custom programming services and mass-marketed or canned software.⁷¹ Although large computer systems still require custom programming, the sale of canned software is rapidly becoming a growing segment of the software industry, especially with the advent of powerful small computers which provide a ready market for mass produced canned software.⁷² Additionally, advances in computer technology have resulted in software being capable of use on many computers. Consequently, software which was once viewed merely as a part of a particular computer system must now be viewed as a product that is distinct from the computer hardware in which it is used.⁷³

B. Software: Distinguishing Between Tangible and Intangible Property Aspects

Understanding the general process of how software is created is important because the software's state may be relevant to whether it is a good under article 2.⁷⁴ Additionally, an understanding of the development process assists in distinguishing between intangible intellectual property aspects of software⁷⁵ and tangible property aspects represented by tangible objects or mediums which embody intellectual property.⁷⁶ In determining the scope of article 2 it is imperative to maintain the distinction between these different property interests because even though intellectual property may not fit within the article 2 definition of goods, a tangible object which embodies such intangible property is still a good.⁷⁷

Software which starts out as an idea for performing a specific function on a computer is an intangible at this stage. Since computers do not comprehend ideas, before such an idea can be employed by a computer it must be reduced to a computer language which can be encoded onto a physical medium such as magnetic tape, punched paper cards, or a diskette.⁷⁸ At this point the physical medium containing the software is a tangible object.⁷⁹

The particular stage of the software development process or the medium containing the software is therefore relevant to whether it is a good under article 2. This is not a novel concept. Property law recognizes that something may be classified as different types of property depending on its use or form. Additionally, a change in use can alter the property classification of an item.⁸⁰ For example, a growing forest is considered real property. Once the trees are cut down, milled into lumber, and placed in a lumber yard as inventory they are personal property. If the lumber is then used to construct a house it is treated, at least for many purposes, as realty.⁸¹ Similarly, information provided by a professor in a lecture is not a good under article 2; but if the professor publishes the same information in a book or records it on a phonograph record, the resulting book or record would be a good under article 2.⁸² Likewise, software in its early stages of development, when it is only an intangible idea, is not a good. However, when this idea is translated into a specific computer language and embodied in a tangible medium such as a diskette, a 'movable' thing within the article 2 definition of a good exists.⁸³

Even though software in the form of a tangible medium such as a diskette is a movable thing within the article 2 definition of a good, it may simultaneously incorporate intangible intellectual property which falls outside the scope of article 2.⁸⁴ In *Triangle Underwriters, Inc. v. Honeywell, Inc.*,⁸⁵ a sale of a computer system consisting of hardware, standard software, and custom software resulted in breach of contract claims when the system failed to function properly because the software did not operate as promised. In determining that the system as a whole was within the article 2 definition of goods, the court noted that the software consisted of both intangible intellectual property aspects, represented by ideas and concepts, and the resulting products of those intellectual property aspects which was software.⁸⁶

This distinction between intangible intellectual property and tangible⁸⁷ mediums embodying such property has also been identified in other contexts. In *Apple Computer, Inc. v. Franklin Computer Corp.*,⁸⁸ a case deciding that software was subject to copyright

protection, the defendant argued that software contained in a ROM was not copyrightable since copyright protection did not extend to tangible physical objects such as a ROM which is really a part of the computer.⁸⁹ The court, however, understood the distinction between intangible intellectual property and tangible objects containing such property, and held that although the ROM itself was not subject matter covered by copyright, the software embodied in the ROM contained intangible intellectual property that could be subject to copyright protection.⁹⁰ Other courts and commentators have confused this distinction by declaring simply that software is an intangible collection of ideas or concepts.⁹¹

An examination of some typical article 2 goods further elaborates the distinction between intangible intellectual property and tangible physical objects embodying such property. A book is a good under article 2.⁹² However, a book comprises ideas which anyone is free to read and utilize since ideas are in the public domain. For example, if someone purchases a book describing how to build a house, the reader is free to use the construction techniques and other valuable knowledge imparted by the book to build a house. The reader is not, however, free to duplicate the book a house. machine if the author claims copyright protection for the book.⁹³ The copyright law entitles the author to protect the form of expression of the information in the book.⁹⁴ The book itself, however, is a tangible object consisting of paper, ink and glue which can be freely resold⁹⁵ and is a good under article 2 despite the existence of intangible intellectual property rights in the book under the copyright law.⁹⁶

An automobile is also a good under article 2.⁹⁷ However, despite purchasing and taking title, the owner's rights in the automobile may be restricted. Novel inventions incorporated in the automobile may be protected by patent law which would prevent the owner from examining the patented invention and reproducing and using it elsewhere, such as in another vehicle, without the permission of the patent owner.⁹⁸ Again, in this case something can be a good within article 2 despite the existence of intangible intellectual property rights in the good under the patent law.

It has been asserted, however, that when a purchaser or licensor of software contained in a medium such as a diskette pays for such software, they are really paying for the intangible ideas represented by the software and not the diskette, which has little value unless it is encoded with the software.⁹⁹ Although this argument may initially seem logical, it breaks down when applied to the many things held to be goods.¹⁰⁰ Books and magazines are goods under article 2 even though their value lies in the intangible information they contain, and not in the paper, binding, or ink used to produce them.¹⁰¹ It is difficult to discern any distinction between software embodied in a physical medium and a writer's ideas or stories embodied in a physical medium. Both start out as intangible ideas which are ultimately refined and incorporated into a physical form. Software can be contained on a diskette, a magnetic tape or on other mediums¹⁰² while a story can be embodied in a printed book, or on a record or a magnetic tape. In both cases the initial idea existing in the author's mind is an intangible, which is not a movable thing, and therefore not a good under article 2.¹⁰³ However, once this intangible idea is converted into a tangible object which embodies the idea, a movable thing exists which is a good under article 2. A cassette, reel-to-reel tape, or record from which a story can be listened to are all tangible objects that are movable things and therefore goods under article 2.¹⁰⁴

It is illogical to reach a different result for computer software.¹⁰⁵ Both magnetic computer tape embodying software and magnetic audio tape containing a voice reading a story must be inserted into appropriate equipment to produce the desired output. It seems clear, therefore, that this magnetic tape is a good whether it contains an audio recording or a computer program. Otherwise, one has the incongruous result that magnetic tape encoded for use by a tape recorder to produce audio output is a good while magnetic tape encoded for use by a computer to produce audio output is not a good.¹⁰⁶

If the existence of underlying intangible ideas or property in a resulting tangible product divested a tangible object of its status as a good, few products would be considered goods under article 2. In *Crescent Amusement Co. v. Carson*¹⁰⁷ the court said:

"There is scarcely to be found any article susceptible to sale or rent that is not the result of an idea, genius, skill and labor applied to a physical substance. A loaf of bread is the result of the skill and labor of the cook who mixed the physical ingredients and applied heat at the temperature and consistency her judgment dictated. A radio is the result of the thought of a genius, or several such persons, combined with the skill and labor of trained technicians applied to a tangible mass of substance. An automobile is the result of all these elements, and of patents, etc.; and so on, ad infinitum."¹⁰⁸

Many products routinely viewed as goods under article 2 are really of value only because they encompass intangible property in the form of a novel idea or unique method of accomplishing a task. A television, an automobile tire, a medical x-ray machine, a telephone, and computer hardware all have value because they represent an embodiment of intangible ideas. In many cases, the above products, along with millions of other products, embody novel ideas or features which are intangible property protected by patent law.¹⁰⁹

Other products are made by secret processes which are also intangible property. Such processes are maintained by the manufacturer as a trade secret to preserve the value of the product by preventing others from duplicating it.¹¹⁰ One ubiquitous example is Coca-Cola.¹¹¹ The process for making Coca-Cola is a closely guarded secret because the product resulting from that secret has enormous economic value.¹¹² Other products such as books or magazines have value because, among other things, they encompass intangible intellectual property rights protected by copyright.¹¹³ Trademarks, which are words or symbols used to identify goods, are another form of intangible intellectual property which may substantially increase the value of a good.¹¹⁴ For example, clothing which prominently displays a 'Gucci' or 'Izod' trademark may have significantly enhanced value simply due to the presence of the trademark.

Consequently, things which are tangible movable objects and therefore goods covered by article 2 are not stripped of their article 2 status simply because they either embody or result from intangible intellectual ideas or property.¹¹⁵ A contrary approach would frustrate the application of article 2 since a significant number of goods universally viewed as being within article 2 would fall outside by virtue of patent, copyright, trade secret, or trademark rights incorporated in or associated with the goods. Since article 2 does not

contain an explicit exemption for software, there is no valid reason to treat software any differently than other goods which embody intangible intellectual property. Underlying facts should therefore be the appropriate guideposts rather than unclear terminology and confusing distinctions.

Looking beyond the terminology and the distinctions between tangible objects and the intangible intellectual property they may embody leads to the conclusion that software contained in a tangible object is a good within article 2.

C. The Status of Software: The Judicial View

A careful analysis of the case law does not reveal great judicial uncertainty about whether to treat software as a good.¹¹⁶ The weight of authority treats computer software as being within the article 2 definition of a good without lengthy analysis or discussion.

In *RRX Industries v. Lab-Con, Inc.*,¹¹⁷ the court found the California version of the U.C.C. applicable to a contract for the purchase of software. The court, noting that for the U.C.C. to apply the software must be a good, had no difficulty concluding without analysis that the software was a good under U.C.C. section 2-105.¹¹⁸

The court then made a factual determination as to whether the services provided with the sale of the software were a predominant or incidental part of the transaction.¹¹⁹ This determination was necessary since, under California law, a contract for the sale of goods would be classified as a service contract outside the domain of article 2, if services provided with the sale of goods were the predominant aspect of the transaction. It follows from this decision that the court views software as a good; the investigation of the services provided in a particular transaction was merely to ascertain whether the predominant feature of the transaction was the sale of goods or the providing of services.¹²⁰ The court concluded in *RRX Industries* that the seller's contractual obligation to install the software, to repair any software errors, and to train the buyer's employees in the operation of the software were merely incidental services,¹²¹ and therefore the transaction fell within article 2.

In *Compu-Med Systems Inc. v. Cincom Systems Inc.*,¹²² a contract for the purchase of software resulted in an action for fraud and breach of contract against the seller when the software allegedly failed to perform as represented by the seller. In denying the seller's motion to dismiss the complaint or in the alternative to grant summary judgment, the court relied upon two sections of article 2. The court found that the buyer had given the seller adequate notice of the alleged breach of contract, as required by section 2-607(3)(a),¹²³ and therefore the buyer was not barred from bringing the action. Additionally, the court found section 2-719(2)¹²⁴ applicable to the question of whether the contract provided an exclusive remedy that precluded the buyer's recovery of consequential, special, or indirect damages. The court applied article 2 to this transaction without addressing the threshold question of whether software is a good; therefore, it must be assumed that the court viewed software as a good within the domain of article 2.

In *W. R. Weaver Co. v. Burroughs Corp.*,¹²⁵ a computer user leased a Burroughs computer from the defendant and purchased application software to run on that computer. When the computer and software failed to operate as warranted the computer user sought consequential damages based on theories of express and implied warranty and strict liability. The appellate court specifically found article 2 inapplicable to the computer hardware portion of the transaction since the hardware was leased and article 2, at least in Texas, is limited to sales.¹²⁶ Article 2 was held applicable to the software sale, however, and therefore the statute of limitations embodied in section 2-725¹²⁷ and the warranty exclusion contained in section 2-316¹²⁸ were applicable to the software sale.¹²⁹ Although the court did not directly address whether the software was a good, such a conclusion is implicit in the court's application of article 2 to the software transaction.

In *Hi Neighbor Enterprises v. Burroughs Corp.*,¹³⁰ a buyer entered into two contracts for the purchase of computer hardware and accompanying training, support services and other material. The buyer also executed two contracts for the purchase of software and computer education courses. Dissatisfaction with the seller's performance under the contract led the buyer to sue for breach of contract and fraud. In analyzing the enforceability of damage and warranty limitation clauses of the contracts, the court, applying Florida law, determined that sections 2-719¹³¹ and 2-316¹³² of article 2 rendered the clauses valid.¹³³ Like the court in *W.R. Weaver Co.*, the *Hi Neighbor* court also failed to expressly address whether software was a good and simply implied this conclusion by finding article 2 applicable to contracts for the sale of software.

Two courts have expressed some uncertainty about whether software is a good within article 2. In *Samuel Black Co. v. Burroughs Corp.*,¹³⁴ a buyer contracted to purchase a computer as well as software for the computer. The software was never completed and the buyer returned the computer and sued the seller for, among other things, breach of contract. The court found that Michigan law controlled the transaction and stated that 'there is reason to doubt whether the courts of Michigan would treat the computer system transaction . . . as falling within the scope . . . of the Uniform Commercial Code's ('UCC') article on sales.'¹³⁵ The court then declined to resolve the question of the applicability of article 2 because it felt the outcome of the case would be the same whether article 2 did or did not apply.¹³⁶ Based on this reasoning the court simply applied article 2 to the transaction by analogy.¹³⁷

In *Hartford Mutual Insurance Co. v. Seibels, Bruce & Co.*,¹³⁸ the court was also unsure whether software was a good under article 2. In this case a buyer obtained software under a license agreement and brought suit in tort and under the warranty provisions of article 2 when the software allegedly failed to operate properly. The court recognized that the application of article 2 depended, in part, upon a finding that the software was a good.¹³⁹ However, the court declined to decide whether the software in question was a good within article 2 since the court was deciding a motion for summary judgment and facts relevant to whether the software was within article 2 were in dispute.¹⁴⁰

The various decisions addressing the question of whether software is a good under article 2 have either explicitly or implicitly found software to be a good, or at worst have left the question open. This treatment of software, combined with the superficial nature of the analyses supporting the judicial conclusions that software is a good within article 2, indicates only limited judicial uncertainty about the conclusion that software is a good.¹⁴¹

II. TRANSACTIONS WITHIN THE SCOPE OF ARTICLE 2

A. Background

The determination that software is a good within the article 2 definition does not automatically make article 2 applicable to software. Before article 2 can apply an inquiry must also be made into the type of transaction involved.¹⁴² Although general agreement exists that the sale of goods is subject to article 2, disagreement exists about whether transactions other than pure sales are within the scope of article 2. The applicability of article 2, for example, to the leasing of goods and hybrid transactions involving both the sale of goods and the rendering of services varies depending on the jurisdiction.¹⁴³ This is significant for software since it is usually provided to users via license agreements which are non-sale transactions.¹⁴⁴ It is therefore necessary to examine and compare judicial treatment of various non-sale transactions to determine how software should be treated.

B. *The Uniform Commercial Code: True Code or Statute?*

The basic question of whether article 2 extends to non-sale transactions depends, in part, on whether the U.C.C. is viewed as a statute or as a code.¹⁴⁵ A judicial conclusion that the U.C.C. is a statute or a code is determinative, at least to some extent, of its scope.¹⁴⁶ As will be shown below, if viewed as a statute, non-sale transactions generally would be excluded from article 2 coverage while such transactions might be covered by article 2 if the courts treated the U.C.C. as a code.

Although 'statute' and 'code' are frequently used as synonyms, a true code is distinctly different than a statute.¹⁴⁷ One well known commentator, Professor Grant Gilmore, provided the following explanation of the difference between a code and a statute:

"A 'statute,' let us say, is a legislative enactment which goes as far as it goes and no further: that is to say, when a case arises which is not within the precise statutory language, which reveals a gap in the statutory scheme or situation not foreseen by the draftsmen (even though the situation is within the general area covered by the statute), when the court should put the statute out of mind and reason its way to a decision according to the basic principles of the common law. A 'code,' let us say, is a legislative enactment which entirely pre-empts the field and which is assumed to carry within it the answers to all possible questions: thus when a court comes to a gap or an unforeseen situation, its duty is to find, by extrapolation and analogy, a solution consistent with the policy of the codifying law; the pre-Code common law is no longer available as the authoritative source. We may take another, subsidiary distinction between 'statute' and 'code.' When a 'statute,' having been in force for a time, has been interpreted in a series of judicial opinions, those opinions themselves become part of the statutory complex: the meaning of the statute must now be sought not merely in the statutory text but in the statute plus the cases that have been decided under it. A 'code,' on the other hand, remains at all times its own best evidence of what it means: cases decided under it may be interesting, persuasive, cogent, but each new case must be referred for decision to the unfiled code text."¹⁴⁸

An examination of the historical considerations leading to the creation of the U.C.C. indicates that it was intended to produce a single uniform body of law to which commercial lawyers and businessmen could look to answer all commercial questions and solve all commercial problems.¹⁴⁹ Express U.C.C. language supports the view that the U.C.C. is intended to be a true code.¹⁵⁰ Section 1-104 states that the U.C.C. is intended as a uniform coverage of its subject matter. The official comment to this section clarifies this position further by stating that the U.C.C. is 'intended as a uniform codification of permanent character covering an entire 'field' of law.'¹⁵¹

The U.C.C. also acknowledges that commercial law changes and therefore the U.C.C. should be liberally construed to promote the underlying policy of permitting continuous expansion of commercial practices.¹⁵² An official comment states that the U.C.C. is intended to be developed in light of unforeseen and new circumstances and practices.¹⁵³ Other official comments go further by implying areas outside the express language of the U.C.C. which could be subject to U.C.C. principles.¹⁵⁴ The U.C.C. also deals with the possibility of gaps which will inevitably arise both from unforeseen problems and from changes in commercial transactions and practices.¹⁵⁵ Section 1-103 allows the common law to be used to fill in gaps that may be discovered.¹⁵⁶ A careful reading of this section supports the conclusion that the U.C.C. is a true code since the common law is subordinate to U.C.C. provisions.¹⁵⁷

Proponents of the position that the U.C.C. is a statute look to the very basis of our system of jurisprudence which finds its roots in the English common law.¹⁵⁸ A common law system narrowly construes statutes to limit their application to situations explicitly within the statutory language.¹⁵⁹ Judicially developed principles, known as common law, are then utilized to deal with situations not within the domain of a statute.¹⁶⁰ Great emphasis is attached to these decisions.¹⁶¹ In contrast, a civil law system relies on codes which are intended to be the source of general principles applicable to situations falling both within and without the express code language.¹⁶² The underlying policy of a code is therefore contrary to the common law basis of our legal system.

If the U.C.C. is viewed as a statute, it follows that the scope of article 2 is limited to the exact wording of article 2. Section 2-101 states that the title for article 2 is 'sales.' If article 2 is read in light of principles of statutory construction which promote internal consistency it appears to be limited to sale transactions. A sale is expressly defined to be the passing of title from the seller to the buyer for a price.¹⁶³ A careful reading of the entire text of article 2 indicates that only ten sections fail, at least in part, to explicitly mention 'sale,' 'buyer' or 'seller.'¹⁶⁴ However, seven of these sections refer either directly or indirectly to 'contracts' or 'agreements' which are defined by section 2-106 to refer to contracts or agreements for the present or future sale of goods.¹⁶⁵ Consequently only three sections in article 2 are not explicitly limited to the sale of goods, and therefore if it is viewed as a statute its scope is primarily limited to sales.¹⁶⁶ Agreements to provide software by nonsale transactions, such as by licenses, would not, under this approach, be generally covered by article 2.¹⁶⁷

The one difficulty with this approach is the statement in section 2-102 that article 2 is generally applicable to 'transactions in goods,' a significantly broader area than sales transactions.¹⁶⁸ At least one commentator has argued that the express statement in section 2-102 that article 2 applies to transactions in goods is misleading due to the inadvertent use of the word 'transactions' in place of 'sales.'¹⁶⁹ However, section 2-102 also states that article 2 applies to transactions in goods unless the context otherwise requires. It can therefore be argued that this broad statement of scope is not meant to undermine the explicit references to sales in almost every section of article 2.¹⁷⁰ Instead, this broad scope is simply for purposes of accuracy since some sections of article 2 deal both with sale of goods and with matters collateral to the sale of goods.¹⁷¹

Judicial decisions have not expressly confronted the issue of whether the U.C.C. is a statute or a code. The general approach of the case law has been to focus on a particular non-sale transaction to determine if it should be covered by article 2 rather than examining the underlying question of whether the U.C.C. is a code or a statute. This approach is exemplified in *Hertz Commercial Leasing Corp. v. Joseph*.¹⁷² In this case a dispute arose over a leased muffler pipe-bending machine and the court was confronted with the question of whether the U.C.C. applied to equipment leases.¹⁷³ Rather than analyzing whether the U.C.C. was a code or a statute the court instead carefully examined the particular transaction involved. The court concluded that the reasons for and the extent of equipment leasing today justified holding that such leases were covered by the U.C.C.¹⁷⁴ An analysis of the decisions that have examined whether to extend article 2 beyond sales transactions indicates a judicial split. Some courts appear to view the U.C.C. as a statute and consequently limit it to its express language¹⁷⁵ while other courts seem to view it as a code by broadly applying U.C.C. principles to transactions outside the express scope of the relevant section.¹⁷⁶

C. Lease and Bailment Transactions Generally

The use of leases in lieu of outright purchases is a recent and rapidly expanding practice¹⁷⁷ which challenges the judiciary to decide how to view the U.C.C. In *Bona v. Graefe*,¹⁷⁸ the court treated article 2 as a statute and rejected the application of the article 2 warranty sections to the lease of a golf cart. The court made its position very clear by stating that 'if the draftsmen had intended the sections to apply to leases of goods as well as to sales, they should have said so.'¹⁷⁹ The court then emphasized its view of article 2 as a statute by stating that the extension of article 2 to leases would be improper judicial legislation.¹⁸⁰ The same logic prevailed in *W. R. Weaver Co. v. Burroughs Corp.*,¹⁸¹ which involved a lease of a computer coupled with the sale of software to be used to operate the computer. Article 2 was held applicable to the software since it was sold but inapplicable to the computer since it was leased and therefore not within the scope of article 2.¹⁸²

In contrast to this statutory approach, *Hertz Commercial Leasing Corp. v. Transportation Credit Clearing House*¹⁸³ recognized that the failure to expressly include leases in article 2 was a gap in article 2. The court looked to the underlying policy of article 2 to bridge the gap rather than simply dismissing the code as inapplicable and resorting to the common law.¹⁸⁴ *Hertz Commercial Leasing Corp.* recognized that the leasing of equipment is a recent device which is often equivalent to a sale but is resorted to for tax purposes.¹⁸⁵ Furthermore, the court realized that it would be anomalous if this expanding volume of commercial transactions structured as leases were subject to different rules than outright sales when both transactions resulted in identical economic results.¹⁸⁶

Although most cases discussing the scope of article 2 involve leases, the question of whether bailments are covered by article 2 has also arisen. In *Mieske v. Bartell Drug Co.*,¹⁸⁷ the Supreme Court of Washington, sitting en banc, extended article 2 to a bailment transaction.¹⁸⁸ In this case, a customer delivered thirty-two fifty foot rolls of developed movie film to a store to be spliced onto four larger reels. The film company to which the stores sent the film lost or destroyed the film. In awarding damages to the customer, the court utilized article 2 provisions to find an exclusionary clause on the film receipt which limited damages to be unenforceable. In analyzing the applicability of article 2 the court focused on section 2-102 which declares that article 2 applies to 'transaction in goods.'¹⁸⁹ The court then concluded that the drafters of article 2, by including section 2-102, intended its scope to be broader than sales, and therefore the bailment involved in this case came within article 2.¹⁹⁰

Hertz Commercial Leasing Corp. and *Mieske* exhibit judicial recognition of the U.C.C. as a code rather than a statute and a consequent willingness to apply article 2 to transactions that are not within the express wording of article 2. However, the majority of courts take a middle ground between viewing article 2 as a statute or a true code. For example, only when a lease transaction is determined to be analogous or equivalent to a sale will many courts apply article 2 to the transaction.¹⁹¹ Additionally, rather than applying article 2 in its entirety to lease transactions, most courts apply article 2 on a section-by-section basis.¹⁹² A direct consequence of this approach is that a court must first determine if the lease transaction in question is the type within the scope of article 2, and second, if it is subject to article 2, which article 2 sections apply.¹⁹³ Both of these findings are heavily dependent on factual circumstances and therefore they are not conducive to easy determination or predictability. Consequently, this approach, although laudable in its attempt to liberally construe the U.C.C., in reality leads to uncertainty because whether a particular lease is within the domain of article 2 and which sections of article 2 apply depends on the particular facts of each case.¹⁹⁴ Such a result is contrary to the goals of clarity, stability, and uniformity in the law which were basic policy reasons for the creation of the U.C.C.¹⁹⁵

D. Sale and Lease of Software

The outright sale of software alone is within the domain of article 2 if software is a good.¹⁹⁶ Additionally, the sale of software coupled with the sale of a computer system is within the domain of article 2 if both the software and the hardware are goods. In *Triangle Underwriters*¹⁹⁷ a computer system that included both hardware and software was sold.¹⁹⁸ When the system failed to operate properly because the software did not perform as promised the buyer brought suit for breach of contract. The court held that the transaction was a sale of goods and applied the statute of limitations found in section 2-725 of article 2 to bar the action.¹⁹⁹

The judicial trend, already discussed, of extending article 2 to leases in general applies with equal force to software leasing. In *Office Supply Co. v. Basic/Four Corp.*,²⁰⁰ the court had no difficulty applying article 2, with regard to warranties, remedy limitations, and the statute of limitations, to both the sale of hardware and the lease of software. The court noted that, although the software transaction was technically a lease, it was structured as a lease simply for purposes of copyright protection and therefore did not affect whether article 2 applied.²⁰¹ Additionally, the court noted that neither party to the suit had contended that the software lease had any effect on the applicability of article 2.²⁰² Likewise, *United States Welding v. Burroughs Corp.*²⁰³ assumed, without discussion, that the warranty provisions of article 2 were applicable to a transaction involving the lease of both computer hardware and operating software.²⁰⁴

It is apparent, therefore, that the leasing of software is not treated, for purposes of applying article 2, any differently than the leasing of any other equipment or personal property. Once a determination is made that software is a good, the same rationales that allow article 2 coverage to extend, in many jurisdictions, to leases of other goods also applies to software leases.

E. Licensing of Software

If article 2 is viewed as a statute strictly limited to its express language, then courts finding leases to be outside article 2 because a sale has not occurred will probably determine a license of software to be outside article 2 for the same reason.²⁰⁵ In both cases a transfer of title has not occurred and therefore a sale, which is required by the express wording of almost all sections of article 2, has not taken place.²⁰⁶

If article 2 is viewed as a code, the judicial trend of extending article 2 to leases should also apply to the licensing of software.²⁰⁷ In *Mieske* the same logic was used to extend the coverage of article 2 to a bailment for mutual benefit.²⁰⁸ This logic also applies to software licensing. Establishing a separate body of law to cover each new type of non-sale transaction used in place of a sale would undermine the original impetus behind the U.C.C. which was to unify and clarify commercial law.²⁰⁹

Hertz Commercial Leasing Corp. and other cases which apply article 2 to leases look beyond the name given to a transaction. These cases focus on the underlying reason for the transaction and whether the transaction is equivalent or analogous to a sale.²¹⁰ The growing field of equipment leasing in lieu of a sale is used for tax, financing, and other commercial purposes.²¹¹ For example, in some cases leases are structured with options to buy the goods at the end of the lease term for a nominal cost, such that the leases are really analogous or equivalent to a sale.²¹² The effect of software license transactions and the underlying rationale for such transactions must therefore be examined, since this is the most common method of providing software to users.²¹³

An understanding of why software is licensed requires an examination of how new products in general are protected from duplication. When a new product is created and marketed, the development costs are normally recouped through mass production and sale of the product. However, many products can easily be copied and sold at a fraction of the developer's cost since the copier does not have any development costs to recoup.²¹⁴ To combat this problem companies rely on trade secret law if the product can be made in such a manner as to make duplication impossible.²¹⁵ Additionally, products only made available to a limited number of users may be confidentially licensed as trade secrets if the use of the product can be controlled to maintain secrecy.²¹⁶ Otherwise, patent and copyright law may be utilized to erect legal impediments to copying a product.²¹⁷

The applicability of patent law to software is unclear,²¹⁸ but even if applicable, rapid changes in computer technology would eliminate the value of any patent protection, which is both costly²¹⁹ and time consuming to obtain.²²⁰ A patent typically takes several years to obtain and the software may be obsolete or have greatly reduced value by the time a patent is issued.²²¹ Trade secret protection was formerly the most widely used method of protecting software.²²² However, its current use is restricted at most to specialized software which is individually licensed on a limited basis and therefore subject to secrecy and control.²²³ The use of trade secret law in the rapidly growing market for canned software, designed for use in small inexpensive computers used at home and by small businesses, is questionable since no practical method exists for ensuring that a tremendous number of users will maintain the software as a trade secret.²²⁴ Such confidential use by all users would be necessary for trade secret protection to be successful since a single public disclosure of a trade secret vitiates trade secret protection.²²⁵

The ease with which software can be duplicated,²²⁶ the questionable applicability and suitability of patent law to software, and the limited utility of trade secret law have resulted in increased reliance on copyright to protect software.²²⁷ There are certain limitations, however, to copyright protection.²²⁸ Although copyright law prohibits unauthorized duplication of software even if it is sold,²²⁹ sale of the software by the software producer allows the buyer to freely resell or transfer the software to someone else.²³⁰ Copyright does not protect the underlying algorithms or processes upon which a computer program is based even if these are proprietary information of the software producer.²³¹ Copyright also does not restrict use of a program, so it is possible for several users to share the same software. For example, the software can be loaded into a single computer so it is available to multiple users who have access to the computer via remote terminals.²³²

Due to the limitations of copyright protection, software producers have been forced to resort to additional methods used in conjunction with copyright to protect their investments in the creation of software. Technical methods such as copy protection schemes have provided one source of protection.²³³ Licensing of software provides additional legal protection, especially when the software is already protected by copyright.²³⁴

Under the copyright law, the copyright owner has several exclusive rights which include the right to control the making of copies and the public distribution of copyrighted works.²³⁵ This means that copyrighted software can not be reproduced or distributed without the permission of the copyright owner. However, the so-called 'first sale doctrine' provides that the sale of a copy of the copyrighted work embodied in a tangible medium extinguishes the copyright owner's distribution right with regard to the particular copy

sold.²³⁶ As a result, once software embodied in a tangible medium such as a diskette is sold, the buyer is free to sell or otherwise dispose of that diskette without permission of the copyright owner.²³⁷ However, the first sale doctrine includes an express limitation. It does not apply to anyone who has obtained possession of the tangible medium containing the copyrighted work 'from the copyright owner by rental, lease, loan, or otherwise, without acquiring ownership of it.'²³⁸ Therefore, if a software vendor retains ownership in all of the copies of his software by only selling users a license to use the software, the effect of the first sale doctrine is avoided.²³⁹ This allows software producers to restrict disposition of the software by users.

Software licenses are also used to attach additional conditions to the use of software.²⁴⁰ One typical condition is that the software user must protect the underlying algorithms²⁴¹ and processes used in the software which are beyond the scope of copyright protection.²⁴² Typically this underlying information is alleged to be a trade secret of the software producer which the software user is required to maintain in confidence.²⁴³ This condition, which is certainly valid for software that is individually licensed on a limited basis, is also included in many shrink-wrap or tear-me-open licenses²⁴⁴ accompanying mass-marketed or canned software.²⁴⁵ Although the validity of requiring shrink-wrap licensees to protect underlying algorithms and processes as trade secrets is questionable in light of established principles of trade secret law,²⁴⁶ both Louisiana and Illinois have enacted explicit statutes making such a license provision enforceable.²⁴⁷ Therefore, by licensing software the software producers are attempting both to control its use by limiting its transfer to others and to protect the underlying algorithms and processes contained in the software.²⁴⁸

Although licensing of software is not an actual sale under article 2 since the software producer retains title to the software, it has many of the incidents of a sale.²⁴⁹ Canned software obtained subject to a shrink-wrap or tear-me-open license is most analogous to a sale. A typical license of this type would be classified as a perpetual paid-up license since the one time license fee paid for the software is all that is required.²⁵⁰ Furthermore, the license is perpetual, provided there is adherence to its terms. In this type of transaction the software producer has effectively sold the software despite retention of title, since the producer has no realistic expectation of ever getting the software back.²⁵¹ The extension of article 2 to such software transactions therefore seems justified on the same basis that article 2 has been extended to leases and bailments. Article 2 has been applied to leases based on the realization that leases are often used for tax or other purposes, and therefore they are really analogous if not equivalent to a sale.²⁵² Shrink-wrap or tear-me-open software licenses are likewise equivalent to a sale since they are utilized, not to avoid a sale per se, but rather for purposes of copyright²⁵³ and protection of proprietary information.²⁵⁴

Individual licensing of special purpose software on a limited and carefully controlled basis to preserve trade secrecy has fewer incidents of a sale. The software producer will have more control over how the software is used, periodic license fees may be required, and the software may be subject to return to the licensor once the license is terminated. The duration of such a license may be critical however. In *H.M.O. Systems, Inc. v. Choicecare Health Serv., Inc.*,²⁵⁵ software was provided via a non-expiring or perpetual license; thus, the lack of title transfer does not seem relevant since a permanent right to use the software existed.²⁵⁶ Additionally, the exponential advancement of computer technology can render a license which is limited to a specific duration of time equivalent to a sale. In *State v. Central Computer Service*²⁵⁷ a ninety-nine year license was given for the use of software.²⁵⁸ The advancement of computer technology guarantees that this software will be useless prior to the termination of the license term.²⁵⁹ Therefore, although the licensor has retained title to the software the licensor has no expectation that the software will ever be returned by the licensee because it will be worthless long before the license term ends. If the duration of the individually negotiated license is for a very limited time then this type of transaction is less analogous to a sale. However, despite the fact that some software license transactions may have fewer incidents of a sale than others, most of these transactions are, to a greater or lesser degree, closely analogous or equivalent to sales.

The current judicial trend of expanding the domain of article 2,²⁶⁰ although not uniformly followed,²⁶¹ should therefore be applied to all software license transactions. Just as the court in *Hertz Commercial Leasing Corp.* recognized that leases analogous or equivalent to sales should be treated as being within the scope of article 2 to avoid creation of a separate body of law for an increasingly common type of transaction,²⁶² software licenses should also be covered by article 2 for the same reasons. Software is typically licensed to protect certain rights provided by copyright and to protect underlying information utilized in creating the software.²⁶³ In all other respects most software license transactions resemble sales and should therefore be treated as being within the scope of article 2.²⁶⁴

The fact that different types of software licenses have differing incidents of sale should not affect the application of article 2 to such transactions. The underlying U.C.C. policy of promoting uniformity in the law requires this result.²⁶⁵ Otherwise, whether a particular license transaction was within the domain of article 2 would depend ultimately on an individual case by case evaluation of the factual circumstances of each license transaction.

F. Hybrid Sale/Service Transactions Generally

Software is often provided in combination with various types of services²⁶⁶ or used in the performance of service contracts.²⁶⁷ Before examining such software transactions in detail, judicial treatment of analogous hybrid sale/service transactions generally must be reviewed.

Pure service contracts - the opposite end of the spectrum from pure sales transactions - generally fall outside of the domain of article 2.²⁶⁸ However, pure service and pure sale transactions represent the extreme ends of a continuum.²⁶⁹ Most transactions are hybrids involving both the sale of goods and the performance of services.²⁷⁰

In *Skelton v. Druid City Hospital Bd.*,²⁷¹ a hospital patient was injured during a surgical procedure when part of a suturing needle used by the surgeon broke off and remained in the patient's body. The needle, which is a good under article 2, was simply an

inexpensive tool used by the surgeon in performing the operation. Although surgery is primarily a service, the use of the needle in performance of the service resulted in the court finding a transaction in goods within the scope of article 2.²⁷² This approach, although not widely followed, exemplifies the broad application of article 2 beyond its express language, in accordance with the philosophy that the U.C.C. is a true code.²⁷³

Another approach is to apply article 2 only to the portion of a hybrid transaction which involves goods. In *Foster v. Colorado Radio Corp.*,²⁷⁴ a contract for the sale of a radio station involved a totality of assets of which no more than ten percent were goods under article 2.²⁷⁵ The court therefore applied article 2 to those assets which were goods, and non-code law was applied to the remaining assets.²⁷⁶ Although this approach seems equitable at first glance, it fails to promote uniformity and simplicity in commercial transactions since different aspects of a transaction will be subject to different bodies of law.²⁷⁷

Despite the approach followed by Skelton and Foster a contrary common law rule for dealing with hybrid sale/service contracts seems to have survived enactment of the U.C.C.²⁷⁸ Prior to adoption of the U.C.C. a contract was examined to determine if it predominately involved the performance of services or the sale of goods, and it was then classified according to the predominate feature.²⁷⁹ This approach is still the most frequently utilized analysis when a court is faced with a contract involving both goods and services.²⁸⁰ Like the other approaches, this treatment of hybrid transactions also fails to promote uniformity in commercial transactions. Additionally, it creates a lack of predictability because whether a hybrid transaction is designated as a sales contract or a service contract depends on the particular facts of each transaction.²⁸¹ Consequently, this approach necessitates a case by case approach which promotes a lack of uniformity and is inherently unpredictable.

Several other tests have also been developed by the courts to determine if a contract involving both goods and services falls inside or outside the scope of article 2.²⁸² In *Bonebrake v. Cox*,²⁸³ the court ascertained the main thrust of the transaction by examining the intent of the parties. The transaction, which involved a contract to deliver and install bowling equipment, was determined to be a contract for the sale of goods within article 2 since the sale of the equipment, rather than its installation, was found to be the main thrust of the contract.²⁸⁴ In *Lake Wales Publishing Co. v. Florida Visitor, Inc.*²⁸⁵ a contract for printing pamphlets was held to be covered by article 2. The court focused on the final product resulting from the contract and concluded that since the end product, pamphlets, fit the article 2 definition of goods, article 2 applied to the contract despite the extensive printing services involved.²⁸⁶ In *Wivagg v. Duquesne Light Co.*,²⁸⁷ a printing shop owner sued a public utility for damages to the owner's business due to a fire caused by faulty electrical wiring maintained by the utility. The court determined solely on public policy considerations that providing electrical service was sufficiently analogous to a sale that article 2 applied.²⁸⁸

The variety and amorphous nature of the analyses used to determine how to treat hybrid sale/service transactions is a model of the lack of uniformity in the law.²⁸⁹ Eliminating this lack of uniformity was one of the motivating forces behind enactment of the U.C.C.²⁹⁰ An examination of how software transactions, which typically involve the licensing of software provided with various services, would be treated under the various analyses discussed above strongly supports the extension of article 2 to such transactions.

G. Hybrid Transactions Involving Software

Software is usually supplied with support services to assist the software user in utilization of the software.²⁹¹ Support services for mass-marketed over-the-counter or canned software are typically provided in the form of an accompanying looseleaf book or manual which explains in detail how to use the software. Support services in this form should not alter the designation of software as a good since the accompanying manual is itself a good.²⁹²

However, complex software designed for a large computer system may require more extensive support services. In addition to detailed manuals, personnel provided by the software vendor will install and debug²⁹³ the software and train the software user's personnel in the operation of the software.²⁹⁴ In this case the transaction involves both goods, in the form of software, and services provided to use the software. In the majority of jurisdictions the transaction will be classified as a contract involving goods or a service contract depending upon which feature predominates.²⁹⁵ If the installation, training, and debugging are merely incidental to providing the software, then the goods aspect will predominate and article 2 will apply. However, it may be possible for the service aspects to be so extensive that a court could conclude that they predominate and therefore find that the transaction is a service contract outside the scope of article 2.

In *RRX Industries* the court was confronted with a software transaction that involved both the sale of software and accompanying services.²⁹⁶ The seller contracted to install the software on the buyer's computer and to correct any errors in the software discovered after installation. The seller also agreed to train the buyer's employees in the operation of the software and to upgrade the software in the future.²⁹⁷ The system proved unreliable, however, because the seller was unable to correct defects in the software. The buyer successfully brought suit for breach of contract and was awarded general and consequential damages. In affirming the award, the Ninth Circuit noted that the district court's award of consequential damages under article 2 of the U.C.C. could only stand if the software was a good and the software transaction was a contract for the sale of goods rather than a contract to provide services.²⁹⁸ The court then found that the sale of goods aspect, the sale of the software, was the predominant feature of the transaction, with the services being only an incidental part of the transaction.²⁹⁹ Consequently, the Ninth Circuit found, under the predominate feature test, that in this case the sale of software with accompanying services was a contract for the sale of goods covered by article 2.³⁰⁰

Alternatively, if the analysis used in *Bonebrake* is applied the main thrust of the transaction will determine whether article 2 applies.³⁰¹ Typically this analysis would lead to the conclusion that article 2 does apply since, regardless of the quantum of support services provided, acquiring the software will be the primary thrust of the transaction. If the final product resulting from the transaction is the focus of the analysis, such as in *Lake Wales Publishing Co.*, article 2 would be applicable if the final product, a

properly installed and operating computer program, is a good.³⁰² If the determination depends on public policy considerations, such as in *Wivagg*, the determination of whether article 2 applies is uncertain.³⁰³ A court relying on *Wivagg* would only apply article 2 if it felt the transaction was sufficiently analogous to a sale. Application of *Foster* would require differentiating between the portion of the transaction involving goods and the portion involving services.³⁰⁴ Based on this approach article 2 could apply to the software while the service aspects of the transaction would not be subject to article 2. Finally, the determination that software is a good would render article 2 applicable under *Skelton* regardless of the quantity of support services involved.³⁰⁵ The mere use of a good in a transaction is all that *Skelton* required for the transaction to come within the scope of article 2.

Large computer systems, such as those used by a governmental agency or a chain of nationwide retail stores, frequently require custom programming due to the systems' size and the specialized tasks being computerized. Some companies employ their own in-house personnel to do the programming, but frequently outside consultants design and implement the necessary software. Although most courts would probably determine that this involves a service contract, since the service aspect predominates, a different conclusion is also possible depending upon which analysis is used.

Despite substantial programming services, if the final product, software, is a good, the *Lake Wales* analysis would require application of article 2.³⁰⁶ Likewise, under *Skelton* the fact that the programmer would use computer hardware, which is a good, to create software makes article 2 applicable to the transaction.³⁰⁷ If the analysis used in *Bonebrake* was employed, the applicability of article 2 would depend upon whether the main thrust of the transaction was determined to be providing services or the creation of a specially manufactured good in the form of software.³⁰⁸ Focusing on public policy considerations, as done in *Wivagg*, produces uncertain results,³⁰⁹ while reliance on *Foster* would apply non-article 2 law to the service aspects of providing programming services.³¹⁰

An increasingly common form of computer use is time-sharing. Time-sharing involves access to large computers containing large amounts of data or extensive computing capability by small home computers or computer terminals via telephone lines. The WESTLAW and LEXIS computer systems are examples of such time-sharing.³¹¹ A user pays WESTLAW or LEXIS for the right to access the company's computer from a computer terminal or a small home computer which communicates with the company's computer via a telephone line. Although the user merely pays for access to the WESTLAW or LEXIS computers, such access involves the use of software in the WESTLAW and LEXIS computer systems. A similar type of computer use involves service bureaus. These bureaus receive data from customers which is subjected to computer processing by the service bureau with the resulting computer output being supplied to the customer.³¹² A typical example is a service bureau which receives employee payroll data from an employer and utilizes a computer system to prepare payroll checks and to compile yearly employee payroll records. In this case the employer receives a tangible product in the form of payroll checks and employee wage records which were created with the service bureau's computer hardware and software.

Time-sharing and the use of service bureaus involve a direct and indirect use of software, respectively. Although courts have found such transactions to be service contracts outside the scope of article 2,³¹³ the various analyses applied to other transactions may produce different results. The *Skelton* analysis would render article 2 applicable to both time-sharing and service bureau transactions since both involved goods such as computers.³¹⁴ *Lake Wales* focused on the final product and therefore under this approach article 2 may apply in some cases.³¹⁵ For example, if a service bureau produces tangible output such as a typed report or a data compilation on a computer diskette, article 2 will apply if the report or data compilation is a good under article 2. *Foster* would require application of article 2 only to the goods portion of the transaction.³¹⁶ The public policy approach relied on by *Wivagg*³¹⁷ and the main thrust analysis of *Bonebrake*³¹⁸ would produce uncertain results while the predominate feature analysis³¹⁹ would probably result in article 2 not being applicable.

The various approaches that can be used to determine if a hybrid transaction involving software is within the domain of article 2 fail to promote uniformity since the application of article 2 depends on both the factual circumstances and the test applied to the transaction. Rather than having the applicability of article 2 depend on which legal analysis is utilized, a decision that it is applicable to all software transactions would allow uniform results. Such a decision would allow judicial extension of article 2 to bailments and leases to be extended further to hybrid transactions involving software.³²⁰

CONCLUSION

The determination of whether article 2 is applicable to software transactions is an important and timely question. The size of the computer industry coupled with the exceptional growth of software markets has created an enormous industry. The development of commercial law, as applied to this industry, will be greatly affected by whether article 2 is applicable. The extension of article 2 to software transactions will promote uniformity, predictability, and commercial reality which are policies underlying the U.C.C. In contrast, if software transactions fall outside the domain of article 2, the trend of developing applicable law on a piecemeal basis, which varies from state to state, will intensify. Such an approach would prove particularly troublesome for the software industry which typically markets its products on a national basis and would therefore have to comply with the individual laws of each state.

The application of article 2 to computer software transactions depends upon two conclusions. First, software must be within the article 2 definition of a good. Second, non-sale software transactions, which typically involve licensing of the right to use software, must be within the domain of article 2. Looking beyond the confusing terminology that is endemic to the computer industry, it can be seen that once software, which begins as an intangible idea, is reduced to a tangible form embodied in a physical medium, such as a diskette or magnetic tape, a good exists. The physical nature of the software in this form makes it a 'movable' thing as required by the article 2 definition of a good. The existence of intellectual property aspects in the software, typically subject to copyright or trade secret protection, does not divest the software embodied in a tangible medium of its status as a good. The software in this form is simply a good that embodies intellectual property aspects. A contrary result, if applied to all goods, would result in a substantial number of products traditionally viewed as goods under article 2, being removed from the domain of article 2. Books, telephones, automobiles, clothing, food products and innumerable other products, universally viewed as goods, frequently embody various forms of intellectual property. Therefore, if the existence of intellectual property aspects in a product eliminated its status as a good, the

scope of article 2 would be severely limited. Consequently, the determination that software embodied in a tangible medium is a good seems inescapable.

Even if software is a good, however, the extension of article 2 to typical software licensing transactions must be established. Strict statutory construction of article 2 would limit its scope to sales, and therefore non-sale software licensing transactions would be beyond the reach of article 2. However, an increasing number of jurisdictions have extended article 2 to non-sale transactions such as leases and bailments. This extension has been based on a desire to apply article 2 to a growing class of transactions that are analogous or equivalent to sales, but used for tax or other financial reasons. The same logic supports extension of article 2 to software licensing since such transactions are also analogous if not equivalent to sales. Typically, software is licensed to preserve rights under the copyright law and to aid in maintaining the confidentiality of underlying proprietary information contained in the software. Therefore, the extension of article 2 to software license transactions is consistent with the extension, by some courts, of article 2 to leases and bailments.

Extending article 2 to hybrid software license transactions which involve software, which is a good, and accompanying services is more troublesome. In dealing with the analogous situation of hybrid transactions involving both sales and services, the courts have developed a variety of different analyses, which produce differing results. Application of these analyses to hybrid software transactions such as licensing of software with support services, custom programming, time-sharing arrangements, or service bureau contracts produce different results depending on the analysis used. This uncertainty can be eliminated by extending article 2 to all transactions involving goods. Such a uniform extension, which already occurs under some of the above analyses, is justifiable if the U.C.C. is viewed as a true code. This expansive approach is required if article 2 is to have any lasting vitality in contemporary commercial markets which are increasingly resorting to non-sale transactions in lieu of traditional sales transactions.

FOOTNOTES

1. See D. BENDER, *COMPUTER LAW: EVIDENCE AND PROCEDURE* section 4B.01-4B.15 at 4B-2 to 4B-119 (1984) (discussion of numerous computer applications).
2. See *infra* note 66 for background with regard to computers.
3. The computer industry has been one of the fastest growing parts of the United States economy. Average annual growth rates for companies in this industry have been 11.1% for the twenty-five year period ending in 1980. Additionally, very few businesses can be successful without some type of computer assistance. Note, U.C.C. Section 2-719 as Applied to Computer Contracts - Unconscionable Exclusions of Remedy?: *Chatlos Systems, Inc. v. National Cash Register Corp.*, 14 CONN. L. REV. 71, 93 & n.100 (1981). The industry is expected to continue growing. The number of computers in use is expected to increase by a factor of ten during the next decade. Reed, *Decade's Top Jobs - Where to Write for Details on 20 Fastest-Growing Careers*, N.Y. Times, Oct. 13, 1985, at 17J.
4. According to one estimate there may be 10 million small home computers in use by 1990. Samuelson, *Our Computerized Society*, NEWSWEEK, Sept. 9, 1985 at 73. One expert has predicted that in the business world everyone will have a micro-computer on their desk within the next ten years. Bulkeli, *Adapting to Computer Age Sends Executives to School*, Wall St. J., Jan. 28, 1981, at 31, col. 4.
5. For example, in *Cagle v. Boile Mortgage Co.*, 261 Ark. 437, 549 S.W.2d 474 (1977), the court cancelled a \$28,000 note and mortgage because a computer error resulted in a usurious rate of interest being unintentionally charged. But see *First American Nat. Bank v. McClure Construction Co.*, 265 Ark. 792, 581 S.W.2d 550 (1979) (same court reached opposite result on similar facts). Computer software errors have also caused many other problems that may give rise to substantial liability. For example, such errors have caused near misses between commercial airliners, an unintended closing of a nuclear power plant, and false warning of impending military attacks. See Gemignani, *Product Liability and Software*, 8 RUTGERS COMPUTER & TECH. L.J. 173, 173 (1981). See also Brannigan & Dayhoff, *Liability for Personal Injuries Caused By Defective Medical Computer Programs*, 7 AM. J. L. & MED. 123 (1981) (article examines potential for liability arising from use of computers in field of medicine); Freed, *Products Liability in the Computer Age*, 12 FORUM 461, 462 (1977) (article examines application of products liability law to software). See generally Nimmer & Krauthaus, *Computer Error and User Liability Risk*, 26 JURIMETRICS J. 121 (1986) (examination of the liability risks arising from widespread reliance on computers).
6. It should be noted that software is a term subject to numerous definitions and meanings. See *infra* notes 54, 56. However, for purposes of this article, software and computer program are used interchangeably to refer to a computer program that is embodied in a tangible medium. For a detailed explanation of what software is and how it is created, see *infra* note 57. The protection of software with traditional intellectual property law concepts exemplifies the legal difficulties in dealing with software. Early attempts to protect software successfully relied on trade secret law. Bender, *Trade Secret Protection of Software*, 38 GEO. WASH. L. REV. 909 (1969). This approach was practical in the early days of computers when systems were so expensive that their use was limited to a small number of users. Under these circumstances the creator of the software could scrupulously maintain the software in secret and require the limited number of customers to use the software under a confidential license. The widespread use of computers due to tremendous increases in reliability, coupled with drastic size and cost reductions eliminated reliance on trade secret law for many types of software which became widely disseminated. The patent law (35 U.S.C. section 1 et seq. (1982)) was viewed as an alternate source of protection since it did not depend on secrecy or limited confidential disclosure. A landmark Supreme Court decision, *Diamond v. Diehr*, 450 U.S. 175 (1981), established that a unique manufacturing method which involved use of a computer was patentable. However, a careful reading of *Diamond* and subsequent lower court decisions limit the scope of the patent law and leave the parameters of available protection unclear. See Milde, *Life After Diamond v. Diehr: The CCPA Speaks Out on the Patentability of Computer-Related Subject Matter*, 64 J. PAT. OFF. SOC'Y 434 (1982) (discussion of decisions subsequent to *Diamond*). Software protection was also sought under the copyright law (17 U.S.C. section 101 et seq. (1982)) but the applicability of

copyright to software was widely disputed. The copyright act of 1976 was amended in 1980 to clarify its coverage of software. However, the availability of copyright protection for software was not unequivocally established until the Third Circuit reversed the district court in *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240 (3d Cir. 1983), and extended copyright protection to all forms of software. Despite the availability of traditional forms of intellectual property protection for computer technology, Congress recognized the need for a new form of protection. This new type of protection embodied in the Semi-Conductor Chip Protection Act, Pub. L. 98-260, Title III, 98 Stat. 3347 (1984) (codified at 17 U.S.C. sections 901-904), grants the creator of a new chip or micro-processor the right to control the use and production of the new chip or micro-processor for a limited time. The difficulties with regard to how to protect software led Congress to appoint a commission to study the problems of protecting software. See Pub. L. No. 93-573, 88 Stat. 1873 (1974) (establishing National Commission on New Technological Uses of Copyrighted Works). The final report of the Commission, reproduced in 3 *COMPUTER L.J.* 53 (1981-82), led to amendment of the copyright law. See *Computer Software Act*, Pub. L. No. 96-517, sections 10(a)-10(b), 94 Stat. 3015, 3028 (1980) (codified as amended at 17 U.S.C. sections 101 and 117 (1982)). The treatment of software under the tax law has also been unclear. Jurisdictions vary to some extent with regard to whether software is subject to the same taxes as hardware. See Comment, *Software Taxation: A Critical Reevaluation of the Notion of Intangibility*, 1980 B.Y.U.L. Rev. 859 (arguing software is tangible for tax purposes). See also note 91 *infra*. A general discussion of the legal issues created by the computer industry appears in Schmidt, *Legal Proprietary Interests in Computer Programs: The American Experience*, 21 *JURIMETRICS J.* 345 (1981).

7. It was estimated that 80% of all expenditures for computer goods and services in the United States were for software by the late 1970's, in contrast to the late 1950's when only 40% of total expenditures were for software. Semple, *The Legal Incidents of Computer Software and Its Use as Collateral in Secured Transactions*, 7 *CANADIAN BUS. L.J.* 450 n.1 (1982-83).

8. As of 1982, Burroughs Corporation, a major manufacturer of computers, had more than 250 lawsuits pending against them, brought by dissatisfied purchasers of their computers. Holmes, *Application of Article Two of the Uniform Commercial Code to Computer System Acquisitions*, 9 *RUTGERS COMPUTER & TECH. L.J.* 1, 4 n.10 (1982). The frequency with which suits are brought for inoperative software and data processing errors has created a new industry. At least four insurance companies offer data processing errors and omissions policies to computer companies. These policies cover claims resulting from negligent errors or omissions committed in the formulation of software or other related activities. *Who Ya Call? Byte Busters Insure Computer Risks*, 1 *Computer L. Strategist* at 3 (Dec. 1984). Additionally, in one suit in which a computer buyer successfully sued the seller because the computer failed to operate properly, a new tort of 'computer malpractice' was advanced but rejected by the court. *Chatlos Systems v. National Cash Register Corp.*, 479 F. Supp. 738, 740-41 n.1 (D.N.J. 1979).

9. The importance of this question caused the Committee on Computer Law (via its Sub-committee on Commercial Liability) of the Association of the Bar of the City of New York to study the question of whether software is within the domain of article 2 of the U.C.C. The committee's report conclusively determined that software was a good under article 2 and that software transactions, which are typically non-sale transactions, should be governed by article 2. The report is published in 40 *THE RECORD* 754 (1985). Additionally, the U.C.C. Committee of the American Bar Association Section of Corporation, Banking & Business Law has formed a subcommittee to examine the scope of the U.C.C. with regard to computer software, among other things. See Chairman's message, 41 *BUS. LAW.* 2 (Feb. 1986). Commentators have had differing views on this question. See Davidson, *Negotiating Major System Procurements*, 3 *COMPUTER L.J.* 385, 400 (1982) (considerable debate and confusion has arisen from the question of whether software is a good under article 2); Semple, *supra* note 7, at 457 (status of software under article 2 has been judicially considered but never squarely decided); Compare Note, *The Warranty of Merchantability and Computer Software Contracts: A Square Peg Won't Fit in a Round Hole*, 59 *WASH. L. REV.* 511 (1984) (software is an intangible and therefore not within the scope of article 2) with Note, *Computer Programs as Goods Under the U.C.C.*, 77 *MICH. L. REV.* 1149 (1979) (software embodied in a tangible medium is within the scope of article 2); See generally R. BERNACCHI & G. LARSEN, *DATA PROCESSING CONTRACTS AND THE LAW* 137-39 (1974) (arguing that article 2 should apply to data processing transactions); D. BRANDON & S. SEGELSTEIN, *DATA PROCESSING CONTRACTS*, 109-10 (1976) (applicability of article 2 to software licenses questionable since software user does not obtain title or ownership of the software); Brooks, *Systems Contracts*, 1981 *COMPUTER LAW* 161, 201-16 (discussion of the applicability of article 2 to computer transactions); Davidson, *Project Control in Computer Contracting*, 4 *COMPUTER L.J.* 133, 136 (1983) (most software licenses are drafted as if the U.C.C. applied even though such application is unclear); Holmes, *Application of Article Two of the Uniform Commercial Code to Computer System Acquisitions*, 9 *RUTGERS COMPUTER & TECH. L.J.* 1 (1982) (discussing the application of article 2 of the U.C.C. to computer transactions generally); Raysman, *Warranty Disclaimer in the Data Processing Contract*, 6 *RUTGERS J. COMPUTERS TECH. & L.* 265 (1978) (courts have generally agreed that the U.C.C. applies to sale of computer hardware, but application to software unclear). It should be noted that the focus of this article is limited to the question of whether article 2 applies to computer software. The consequences of whether article 2 applies are not dealt with in detail. See generally Nycum, *Liability for Malfunction of a Computer Program*, 7 *RUTGERS J. COMPUTERS TECH. & L.* 1, 2-7 (1979) (discussion of the consequences of applying article 2 to software); see notes 14, 15-21 *infra* and accompanying text with regard to the consequences that flow from deciding that article 2 does or does not apply to software.

10. Although only limited attempts have been made to resolve the question of whether article 2 is applicable to software, see *supra* note 9, numerous commentators have recognized the importance of the question. See, e.g., McGonigal, *Application of Uniform Commercial Code to Software Contracts*, 2 *Computer L. Serv. Rep. (Callaghan)* 117 (1978) ('whether article 2 of the Uniform Commercial Code . . . applies to computer software contracts should be of great concern to the contract draftsmen, especially in the areas of implied warranties, consequential damages, disclaimers and limitations on liability, and taxes in those states which distinguish between goods and services for purpose of sales tax.'). Nycum, *supra* note 9, at 2 (the author states '[at this time no one knows for certain what law would govern a contract for a computer program.] She then examines the importance of this question in light of the different remedies available depending on whether article 2 of the U.C.C. applies.'). The question of whether article 2 is applicable to software has also been raised in judicial decisions. See, e.g., *RRX Industries v. Lab-Con, Inc.*, 772 F.2d 543 (9th Cir. 1985). Additionally, the importance of applying article 2 to commercial transactions in general is evidenced by numerous suits in which the scope of article 2 was an important question. See, e.g., *infra* notes 175 and 176.

11. Bender, *Software Protection: The 1985 Perspective*, 7 *W. NEW ENG. L. REV.* 405, 407 n.3 (1985).

12. *Id.* at 408; Reiling & Lester, *Marketing Software Products*, 8 *AM. PAT. L.Q.J.* 294, 294 (1980).

13. Bender, *supra* note 11, at 408 n.4. As early as 1978 an estimated 15,000 programs were being written per day in the United States. C. TAPPER, *COMPUTER LAW* 13 (1985). Software is being created for the United States government at the rate of \$10 billion worth each year and corporations spend an average of one-third of their net profits on data processing services. Additionally, software expenditures exceed hardware expenditures today. E. KEET, *PREVENTING PIRACY: A BUSINESS GUIDE TO SOFTWARE PROTECTION* 3 (1985).
14. This same rationale has been applied to lease transactions. Some courts have applied article 2 to leasing transactions to avoid having non-article 2 law applicable to equipment leasing while article 2 applied generally to sale transactions. See *Hertz Commercial Leasing Corp. v. Joseph*, 641 S.W.2d 753 (Ky. Ct. App. 1982); *Hertz Commercial Leasing Corp. v. Trans. Credit Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392 (Civ. App. 1969), *rev'd on other grounds*, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970). The consequences of finding a particular transaction outside the scope of article 2 are illustrated by several commentators who have examined the differences between the common law of contracts and contract law under article 2. See Hawkland, *Major Changes Under the Uniform Commercial Code in the Formation and Terms of Sales Contracts*, 10 *PRAC. LAW.* 73 (1964); Note, *The Uniform Commercial Code and Contract Law: Some Selected Problems*, 105 *U. PA. L. REV.* 837 (1957). See also J. WHITE & R. SUMMERS, *UNIFORM COMMERCIAL CODE* 23 (1980) (contracts easier to form under article 2 because article 2 reduces common law formalities, imposes a wider range of obligations than the common law, and supplies missing terms that might prevent contract formation under the common law). 15. See, e.g., Grogan, *Winning the Battle of the Forms in Product Distribution*, *COMPUTER L. ANN.* 247, 249-50 (1985).
16. See *id.*; See also J. CALAMARI & J. PERILLO, *CONTRACTS* 68 (1977) ('the common law rule is that a purported acceptance which adds qualifications or conditions even as to a trivial detail operates as a counter-offer and thereby a rejection'). In *Wagner v. Rainier Mfg.*, 230 Or. 531, 538, 371 P.2d 74, 77 (1962), the court stated that 'acceptance [of an offer must be 'positive, unconditional, unequivocal and unambiguous, and must not change, add to, or qualify the terms of the offer.'
17. Strict application of the common law acceptance rule by the courts has proven detrimental to commerce since most business transactions today are consummated by an exchange of printed forms which usually contain different ancillary terms. J. CALAMARI & J. PERILLO, *supra* note 16, at 68.
18. See U.C.C. s 2-207. For a discussion of the operation of s 2-207, see J. WHITE & R. SUMMERS, *supra* note 14, at 24-39. See also Grogan, *supra* note 15, at 250, which notes that s 2-207 was intended to deal with typical everyday commercial transactions which involve printed forms.
19. Under the common law an enforceable contract must generally contain terms specifying subject matter, price, payment terms, quantity, quality, duration and work to be done. J. CALAMARI & J. PERILLO, *supra* note 16, at 43-44 & n.17 (1977).
20. See, e.g., U.C.C. s 2-305 (open price term); U.C.C. section 2-308 (place of delivery not specified); U.C.C. section 2-309 (time for performance not specified); U.C.C. section 2-312 (warranty of title term omitted). This general principle is best stated in U.C.C. section 2-204(3): Even though one or more terms are left open a contract for sale does not fail for indefiniteness if the parties have intended to make a contract and there is a reasonably certain basis for giving an appropriate remedy. See also J. WHITE & R. SUMMERS, *supra* note 14, at 104-36 (general discussion of 'gapfiller' provisions contained in article 2 of the U.C.C.).
21. See U.C.C. section 1-205 (dealing with course of dealing and use of trade); U.C.C. section 2-308 (dealing with absence of specified place of delivery). See also U.C.C. section 1-102(2)(b), which states that one of the purposes of the U.C.C. is 'to permit the continued expansion of commercial practices through custom, usage and agreement of the parties.' See generally J. WHITE & R. SUMMERS, *supra* note 14, at 98-104 (general discussion of how performance by the parties and usage in the trade is treated under article 2).
22. U.C.C. section 1-102(2)(c) states that one of the underlying policies of the U.C.C. is 'to make uniform the law among the various jurisdictions.' The General Comment of National Conference of Commissioners on Uniform State Laws and the American Law Institute, which appears in 1 U.L.A.--U.C.C. at XV (1976), states 'uniformity throughout American jurisdictions is one of the main objectives of this code.' But see Taylor, *Uniformity of Commercial Law and State-By-State Enactment: A Confluence of Contradictions*, 30 *HASTINGS L.J.* 337 (1978) (discussing how total uniformity has not been realized).
23. See, e.g., LA. REV. STAT. ANN. sections 51:1961 to 51:1966 (West Cum. Supp. 1986) and Software License Enforcement Act, ILL. REV. STAT. ch.29, sections 801-08 (Supp. 1986), which both statutorily enforce sale of software via shrink-wrap or tear-me-open licenses. Similar statutes have been proposed in Hawaii, Arizona and California. Sherman, *Shrink-wrap Licensing of Computer Programs*, 1985 *COMPUTER L. INST.*, 541, 556. See *infra* note 244 and accompanying text for definition of shrink-wrap and tear-me-open licenses. See also Legislation, 2 *COMPUTER LAW.* 31 (August 1985) (pending legislation in California would require that manufacturers and retailers of consumer computer products offer warranties; pending legislation in New York state would provide that all home computers sold in New York state be covered by a warranty).
24. Such a prediction is very likely when technology and the law is involved. For example, the various United States Courts of Appeal, applying the same patent law (35 U.S.C. section 1 et seq. (1982)) to various new technologies, were unable to interpret the law uniformly. For example, in *Moore v. Shultz*, 491 F.2d 294, 300 (10th Cir.), *cert. denied*, 419 U.S. 930 (1974), the court said that it was a question of fact whether 35 U.S.C. section 103 was satisfied, while *Swofford v. B.W., Inc.*, 395 F.2d 362, 367-68 (5th Cir. 1968), said it was a question of law whether 35 U.S.C. s 103 was satisfied. The extent of the non-uniformity and its impact on businesses operating on a nation-wide basis was so severe that Congress radically altered the federal court structure with regard to the patent law. All appeals in patent cases are now heard by the newly created United States Court of Appeals for the Federal Circuit, in lieu of the various United States Courts of Appeal which previously had jurisdiction over such cases. See *Federal Courts Improvement Act of 1982*, Pub. L. No. 97- 164, 96 Stat. 25, 37 (1982) (codified at 28 U.S.C. section 1295(a)).

25. The entire U.C.C. has been adopted by forty-nine states and by the District of Columbia and the Virgin Islands. Louisiana has only adopted articles 1, 3, 4, and 5 of the U.C.C. 1 U.L.A.--U.C.C. at III (1976).

26. See U.C.C. section 1-102. See also *Nanakuli Paving and Rock Co. v. Shell Oil Co.*, 664 F.2d 772 (9th Cir. 1981) (underlying purpose of U.C.C. is to permit commercial usage to be liberally interpreted); *Cleveland Lumber Co. v. Proctor and Schwartz, Inc.*, 397 F. Supp. 1088 (N.D. Ga. 1975) (purpose of U.C.C. is to make commercial law uniform and predictable); *Community Bank v. Jones*, 278 Or. 647, 566 P.2d 470 (1977) (purpose of U.C.C. is to promote consistency and predictability in commercial transactions); *A. M. Knitwear Corp. v. All America Export-Import Corp.*, 390 N.Y.S.2d 832, 41 N.Y.2d 14, 359 N.E.2d 342 (1976) (main purpose of U.C.C. is to simplify, modernize and clarify commercial law); *Pacific Products, Inc. v. Great Western Plywood, Ltd.*, 528 S.W.2d 286 (Tex. Civ. App. 1975) (objective of U.C.C. is to provide a comprehensive set of rules for governing commercial transactions in place of different rules established by the different legislative and decisional law of different states). 27. See U.C.C. section 2-102 (article 2 applies to 'transactions in goods'); U.C.C. section 2-105(1) (defines 'goods' for purposes of article 2). See *infra* notes 47 and 48 for full text of sections 2-102 and 2-105(1). See *infra* text accompanying notes 47-141 for detailed discussion of whether software is a good under article 2.

28. Although sales are within the domain of article 2, the extension of article 2 to nonsale transactions depends upon the particular type of transaction and the jurisdiction involved. See *infra* text accompanying notes 142-320 for a detailed discussion of transactions within the scope of article 2.

29. See *infra* notes 54-56 and accompanying text.

30. Prior to 1969 computer hardware and software were sold via a 'bundled transaction' in which the buyer paid the same price for the hardware whether he wanted the software and programming services or not. Antitrust considerations led to unbundling of hardware and software, and today each is generally sold separately. See *Bender*, *supra* note 11, at 411 n.11; *Semple*, *supra* note 7, at 450 n.2; *Note*, 59 WASH. L. REV. 511, *supra* note 9, at 512-13 n.9.

31. Custom software is a program specially designed and created for a computer user. Typically, very complex computer systems may require such custom software since standard software may not meet the needs of the computer user. See *Nycum*, *Legal Aspects of Custom Developed Software in COMPUTER SOFTWARE 1984: PROTECTION AND MARKETING* 649. However, the cost of custom software has led to a reduced market for it. See *Brooks*, *Acquisition and Exploitation of Custom Software*, in *Id.* at 695; See also *Note*, U.C.C. Section 2-719 as Applied to Computer Contracts--Unconscionable Exclusions of Remedy?: *Chatlos Systems, Inc. v. National Cash Register Corp.*, 14 CONN. L. REV. 71, 107 n.186 (1981) (computer vendors usually provide standard software in lieu of custom programming); *D. BENDER*, *supra* note 1, section 3.02(4) at 3-9 (noting disadvantages of custom software, as opposed to standard software).

32. These software producers, usually referred to as software houses, provide only software and compete in the software market with companies that provide both hardware and software. *Note*, 59 WASH. L. REV. 511, *supra* note 9, at 513. The growth of the software market for these software houses has expanded dramatically to the point where the software market is larger than the hardware market today. *D. Bender*, *supra* note 11, at 41.

33. The slow evolution of the law coupled with the conservative nature of judges and attorneys is problematic when dealing with rapidly changing computer technology. *T. HARRIS, THE LEGAL GUIDE TO COMPUTER SOFTWARE PROTECTION: A PRACTICAL HANDBOOK ON COPYRIGHTS, TRADEMARKS, PUBLISHING AND TRADE SECRETS* 37 (1985).

34. Intellectual property rights may exist in software pursuant to copyright and trade secret law. The form of the expression of the software is considered a literary work protectable via copyright. See 17 U.S.C. sections 101-102 (1982). Additionally, underlying ideas upon which the software is based may be trade secrets protectable by maintaining the software as confidential material. See *Cybertek Computer Prods., Inc. v. Whitfield*, 203 U.S.P.Q. 1020, 1022 (Cal. Super. Ct. 1977) (trade secret protection applicable to software in practically all jurisdictions); *J. & K. Computer Sys., Inc. v. Parrish*, 642 P.2d 732, 735 (Utah 1982) (trade secret protection appropriate for software intended to be kept confidential).

35. Software is distributed to users embodied in a variety of physical mediums. For example, a program may be stored on punched paper cards or paper tape. Today programs are more commonly contained on magnetic tape, or on a small plastic device called a disk or diskette. Additionally, a program may be contained in a small electronic device such as a read-only memory or ROM. See *Stern*, *Section 117 of the Copyright Act: Charter of the Software Users' Rights or an Illusory Promise?*, 7 W. NEW ENG. L. REV. 459, 462 n.20 (1985); *Taphorn*, *Software Protection in the International Marketplace*, 10 N.C.J. INT'L L. & COM. REG. 617, 619 (1985); *Comment*, *Copyright Protection for Computer Programs in Object Code in ROM*, 10 N.C.J. INT'L & COM. REG. 667, 669 (1985) (software stored on punched cards, magnetic tape or floppy disk); and the dissent of Commissioner Hersey to the final report of the National Commission in *New Technological Uses of Copyright Work*, reproduced in 3 *COMPUTER L.J.* 53, 87 (1981-82). See also *infra* note 66.

36. See *infra* note 52.

37. See *infra* note 144 with regard to software license transactions.

38. See *infra* text accompanying notes 145-176 for a discussion of whether article 2 of the U.C.C. is a code or a statute.

39. See *infra* text accompanying notes 177-95 for a discussion of the extension of article 2 to leases and bailments.

40. See *infra* text accompanying notes 266-290 for a discussion of the various judicial analyses applied to hybrid transactions involving both sale and service aspects.
41. Software is often provided with support services such as installing the software in the user's computer and educating the user in the operation of the software. Improved versions of the software will often be provided to the user and any latent defects in the software will be corrected for the user. See Note, 77 MICH. L. REV. 1149, *supra* note 9, at 1158-61.
42. See *supra* note 31.
43. See *infra* note 311 and accompanying text.
44. See *infra* note 312 and accompanying text.
45. See U.C.C. s 1-102(1) and 1-102(2) (1978).
46. See *Hertz Commercial Leasing Corp. v. Transportation Credit Clearing House*, 59 Misc. 2d 226, 228-29, 298 N.Y.S.2d 392, 395 (N.Y. Civ. Ct. 1969), *rev'd* on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (N.Y. App. Term 1970) (equipment leasing is a recent device widely used as a substitute for a sales transaction that is really equivalent to a sale); Note, *Commercial Law: Uniform Imposition of the Risk of Loss in Equipment Leasing*, 37 OKLA. L. REV. 317, 317 (1984) (lease arrangements are often used today to acquire goods or equipment instead of outright purchases). See also, Davies, *Equipment Leasing: A Decade of Growth*, 1983 LLOYD'S MARITIME & COMM. L.Q. 631, 631 (notes the tremendous growth, in both the United States and Great Britain, of equipment leasing).
47. U.C.C. section 2-102 states: Unless the context otherwise requires, this Article applies to transactions in goods; it does not apply to any transaction which although in the form of an unconditional contract to sell or present sale is intended to operate only as a security transaction nor does this Article impair or repeal any statute regulating sales to consumers, farmers or other specified classes of buyers. U.C.C. section 2-102 (1978).
48. U.C.C. section 2-105(1) states: 'Goods' means all things (including specially manufactured goods) which are movable at the time of identification to the contract for sale other than the money in which the price is to be paid, investment securities . . . and things in action. 'Good' also includes the unborn young of animals and growing crops and other identified things attached to realty as described in the section on goods to be severed from realty (Section 2-107). U.C.C. section 2-105(1) (1978).
49. See *supra* note 9. The scope of article 2 with regard to transactions in general is also unclear. For example, compare *Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House*, 55 Misc. 2d 226, 298 N.Y.S.2d 392 (N.Y. Civ. Ct. 1969), *rev'd* on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (N.Y. App. Term 1970) (scope of article 2 is broader than just sales and therefore the court said article 2 applied to commercial equipment leases) with *Bona v. Graefe*, 264 Md. 69, 73, 285 A.2d 607, 609 (1972) (article 2 does not apply to a bailment because express wording of article 2 limits its application to sales). See also *Skelton v. Druid City Hosp. Bd.*, 459 So. 2d 818 (Ala. 1984) (court noted that article 2 applies to transactions in goods, which is broader than sale of goods, and applied section 2-315 of article 2 to services of a surgeon who stitched up a patient); Note, *The Extension of Article 2 of the Uniform Commercial Code to Leases of Goods*, 12 TULSA L.J. 556, 564-65 (1977) (although author argues article 2 should be extended to leases, author believes wording 'transactions in goods' in section 1-102 of article 2 was an inadvertent error and draftsmen intended to use term 'sales' in place of 'transactions'). But see Comment, *Application of Article 2 of the Uniform Commercial Code to Leases*, 1969 WASH. U.L.Q. 90 (concluding that article 2 should not extend to leases).
50. 292 Pa. Super. 346, 437 A.2d 417 (1981).
51. *Id.* at 350. See also *Lakeside Bridge & Steel Co. v. Mountain State Constr. Co.*, 400 F.Supp. 273, 277 (E.D. Wis. 1975) (court found that whether something is movable is the crucial element in determining if it is a good subject to article 2). Based on the finding in *Lakeside*, software embodied in a physical medium, such as a diskette, is clearly a good under article 2 since it is movable.
52. *Lakeside Bridge & Steel Co. v. Mountain State Constr., Inc.*, 400 F. Supp. 273, 277 (E.D. Wis. 1975) (structural materials sold and shipped to dam site where they were permanently installed); *Gulf Coast Fabricators, Inc. v. Mosley*, 439 So. 2d 36, 38 (Ala. 1983) (prefabricated building); *Morrow v. New Moon Homes, Inc.*, 548 P.2d 279, 287 (Alaska 1976) (mobile homes); *Moore v. Burt Chevrolet, Inc.*, 39 Colo. App. 11, 12, 563 P.2d 369 (1977) (used goods); *Capital Assoc., Inc. v. Hudgens*, 455 So. 2d 651, 658 (Fla. Dist. Ct. App. 1984) (video games and juke boxes); *Cardozo v. True*, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App. 1977) (books); *Morridge Mfg. Co. v. Butler*, 451 N.E.2d 677, 680 (Ind. Ct. App. 1983) (distributorship agreements for grain dryers); *Helfey v. Warbash County REMC*, 151 Ind. App. 176, 179, 278 N.E.2d 608, 610 (1972) (electricity); *Burton v. Artery Co.*, 279 Md. 94, 97, 367 A.2d 935, 937 (1977) (trees, shrubs and sod); *Burnham v. Mark IV Homes, Inc.*, 387 Mass. 575, 581, 441 N.E.2d 1027, 1033 (1982) (modular homes); *Guaranteed Foods of Neb., Inc. v. Rison*, 207 Neb. 400, 406, 299 N.W.2d 507, 511 (1980) (groceries and food products); *Silverman v. Alcoa Plaza Assoc.*, 37 A.D.2d 166, 323 N.Y.S.2d 39, 45 (App. Div. 1971) (shares of cooperative apartment stock); *Lobianco v. Property Prot., Inc.*, 292 Pa. Super. 346, 350, 437 A.2d 417, 419 (1981) (installation of burglar alarm system). See generally *State Dept. of Revenue v. Northern T.V., Inc.*, 670 P.2d 367, 371 (Alaska 1983) (noting the broad definition of goods in many areas of the law, the court said sale of air time to broadcast T.V. program was sale of goods under Alaska Business License Act).
53. Senior Judge Bazelon of the United States Court of Appeals for the District of Columbia has stated that our legal system suffers from technical illiteracy. Bazelon, *Coping With Technology Through The Legal Process*, 62 CORNELL L. REV. 817, 817 (1977). See also Holmes, *supra* note 8, at 2-3 (inability of judges and lawyers to understand computerese has caused confusion with regard to whether article 2 applies to computer acquisitions).

54. See, Note, Contracting for Performance in the Procurement of Custom Computer Software, 13 GOLDEN GATE U.L. REV. 461, 461, 462-63 (1983) (because of disagreement among experts with regard to meaning of computer terminology parties to a computer contract should agree on applicable definitions and include such definition in the contract); see also D. BENDER, *supra* note 1, section 2.06 at 2-112.4 (software defined differently by different authors); T. HARRIS, *supra* note 33, at 33 ('the rather elusive term software as used by those in the computer industry may refer to several distinct conditions or elements of a total package.');

Bender, *supra* note 11, at 407 (software defined differently by different authors); McGee, Financial and Tax Accretiey for Computer Software, 7 W. NEW ENG. L. REV. 651, 654 (1985) (no single accepted definition of software); Tunick, Computer Law: An Overview, 13 LOY. L.A.L. REV. 315, 317 n.15 (1980) (no generally accepted definition of 'software in computer industry.');

Semple, *supra* note 7, at 451 ('a general definition of software is of little use because of the diversity and breadth of meaning encompassed by the word'); Note, 77 MICH. L. REV. 1149, *supra* note 9, at 1164 n.74 (software has no exclusive definition).

55. Honeywell Inc. v. Lithonia Lighting Inc., 317 F. Supp. 406, 408 (N.D. Ga. 1970). See also Note, 14 CONN. L. REV. 71, *supra* note 3, at 102 ('it is a well-known fact that computer people speak a highly technical language that is incomprehensible to the layman'). Additionally, in the manual accompanying one computer, the manufacturer stated that '[probably few people in the history of the world have done a better job of making themselves incomprehensible than computer scientists.]' FRANKLIN ACE 100 USER REFERENCE MANUAL at 1-7 (1982).

56. See, e.g., Teamsters Sec. Fund of Northern California, Inc. v. Sperry Rand Corp., 6 Comp. L. Serv. Rep. (Callahan) 951, 957 (N.D. Cal. 1977) (software is set of instructions, recorded on media such as magnetic tapes or disks, that is read into computer through hardware devices such as tape or disk drives); Telex Corp. v. IBM, 367 F. Supp. 258, 274 (N.D. Okla. 1973), modified, 510 F.2d 894 (10th Cir. 1973), cert. dismissed, 423 U.S. 802 (1975) (computer program, often referred to as software, is series of instructions for computer); First Nat'l Bank v. Dept. of Revenue, 85 Ill. 2d 84, 86, 421 N.E.2d 175, 177 (1981) (software broadly defined to include the information, usually on magnetic tapes, disks or punched cards, supplied with computer plus flowcharts, instruction manuals, and counseling and expert engineering assistance furnished by the software seller). See also D. CANNON & G. LUECKE, UNDERSTANDING MICROPROCESSOR G-4 (1979) (software is a set of computer programs, procedures, and in some cases documentation, concerned with the operation of a computer system); T. HARRIS, *supra* note 33, at 22 (software is programs that enable computers to accomplish tasks); J. ROSENBERG, DICTIONARY OF COMPUTER 488 (1984) (software includes computer programs, documents, procedures, and user's manuals); I. SINCLAIR, INSIDE YOUR COMPUTER 107 (1983) (software, also called computer programs, are instructions that tell the computer what to do); Ross, The Patentability of Computer 'Firmware', 59 J. PAT. OFF. SOC'Y 731, 736 (1977) (computer programs collectively referred to as software); Comment, 1980 B.Y.U.L. Rev. 859, *supra* note 6, at 859 n.2 (software does not include documentation, manuals, or support services); Note, Computer Software and Tax Policy, 84 COLUM. L. REV. 1992, 1992 n.1 (1984) (author defines software to be the tapes or disks on which computer programs are embodied and excludes documentation from definition of software); Note, Strict Products Liability in Computer Software Caveat Emptor, 4 COMPUTER L.J. 373, 374 n.1 (1983) (author defines 'computer program' to be instructions that control computer in contrast to 'software' which author defines as the tangible item containing the computer program); Note, 59 WASH. L. REV. 511, *supra* note 9, at 511 (software is an intangible collection of ideas comprising detailed instructions which tell a computer what to do). Software has been defined as comprising three components. The first component is the 'program' which is a series of instructions understandable to a computer and capable of achieving a certain result. The second component is the 'data base' which is the physical representation of the data to be acted upon by the computer. The third component is the 'documentation' which comprises all the documents that explain or describe the operation of both the software and the hardware. D. BENDER, *supra* note 1, section 2.06(1) at 2-112.4. The United States Bureau of Standards defines software as '[computer programs, procedures, rules, and possibly associated documentation concerned with the operation of a data processing system.]' McGee, *supra* note 54, at 654. Additionally, the Internal Revenue Service defines software as 'all programs or routines used to cause a computer to perform a desired task or set of tasks, and the documentation required to describe and maintain those programs.' Rev. Proc. 69-21, 1969-2 C.B. 303. See also 17 U.S.C. section 101 (1982) (copyright law states '[a 'computer program' is a set of statements or instructions to be used directly or indirectly in a computer in order to bring about a certain result]'). See generally note 54 *supra* (notes confusion over the definition of software).

57. Software is a general term for sets of instructions that direct the computer to perform various steps to carry out a particular task. Software, also called a 'computer program' or simply a 'program', can exist in a variety of forms or states and can be stored or embodied in a variety of devices. See *Comptroller v. Equitable Trust Co.*, 296 Md. 459, 464 A.2d 248, 250 (1983). See also Note, Semiconductor Chip Protection: Changing Roles for Copyright and Competition, 71 VA. L. REV. 249, 251 & n.13 (1985) (software permanently stored in an electronic circuit, such as an ROM, is referred to as firmware). Software starts out as an intangible idea or objective for performing a specific function on a computer. Since computers do not comprehend ideas, before such an idea can be employed by a computer it must be reduced to a form that is understandable to the computer. Therefore, after developing a clear understanding of the program's objective, the software designer or programmer creates a representation, such as a flowchart, that illustrates the basic logic of the program. Such a flowchart comprises standard symbols and words which lay out the basic logic. See Grogan, Decompilation and Disassembly: Undoing Software Protection, COMPUTER L. ANN. 5, 6 (1985). In addition to a flowchart, a program may also be represented at this stage in mnemonic form which is a list of abbreviated English language sentences that are simpler, easier to write, and consume less space than a flowchart. D. CANNON & G. LUECKE, UNDERSTANDING MICROPROCESSORS 6-2 (1979). Such mnemonic form is typically used today in lieu of flowcharts. See MacGrady, Protection of Computer Software-An Update & Practical Synthesis, 20 HOUS. L. REV. 1033, 1035 (1983). The diagrammatic representation of software in a flowchart or other form is understandable to any programmer but it cannot be used by a computer. Therefore, the programmer must convert his representation of the software into any one of several standard high level computer languages, called source code, which consist of English words, abbreviations, numbers, and mathematical symbols. The software can now be fed into a computer via a variety of methods, such as by typing the various steps of the program, in source code, into the computer via a keyboard. The computer is still unable to directly understand the software in its source code form but other internal programs, referred to as compilers, assemblers or interpreters, translate the steps expressed in source code to a form directly understandable by the computer. See D. CANNON & G. LUECKE, *supra* at 6-12. This form, known as machine language or object code, would consist of clusters of 'Os' and 'Is' if written out symbolically. Once software is created and converted to either source or object code it is usually placed in one of several memory devices or storage mediums so it can be used repeatedly. See Bender, *supra* note 11, at 409 (program in source or object code form can be stored on various media such as punched cards or magnetic tape); Comment, 10

N.C.J. INT'L L. & COM. REG. 667, *supra* note 35, at 669 (program can be stored on punched cards, magnetic tape or floppy disks). Programs which are used internally by a computer for basic operations which allow the computer to operate are generally classified as operating software or operating systems. See Note, Copyright Law & Computer Software: The Third & Ninth Circuits Take Another Bite of the Apple, 49 ALB. L. REV. 170, 174 & n.11 (1984) (operating systems coordinate internal activities of computer hardware); Note, Defining the Scope of Copyright Protection for Computer Software, 38 STAN. L. REV. 497, 502 (1986) (operating or systems software makes computer function and runs other software). See also D.BENDER, *supra* note 1, sections 2.06[2 at 2-114 to 2-117 (1984) (detailed discussion of operating system software). Often, some of this operating software is permanently contained in internal memory devices known as ROMs. Software which provides specific applications for the user such as programs for word processing or financial management are generally classified as application software and usually stored on a disk or magnetic tape. See Note, 49 ALB. L. REV. 170, *supra*, at 174 ('application programs, such as video game cartridges or word processing programs, interact directly with the computer user.'). Note, 38 STAN. L. REV. 497, *supra* at 502 (application programs interact directly with user to serve user's needs); M. MASON, AN INTRODUCTION TO USING COMPUTERS IN THE LAW 20-21 (1984) (application programs are what make a computer useful by allowing it to perform diverse tasks for user). Application software is usually obtained either by hiring a programmer to create a custom program for the user's special needs or by purchasing a standard canned program which can be used as is in the computer. Holmes, *supra* note 8, at 6. Operating software is usually of little interest to the computer user since it is a function of the computer's design and invisible to the user. The user is generally interested in application software, however, since these are the programs the user deals with directly and actually operates. A multitude of this type of software is commercially available on diskettes or magnetic tapes and this is one of the major reasons computers have become so numerous and useful. The quantity of application software available is often what determines whether a computer will be commercially successful. See, e.g., Can Amiga Rock & Roll?, Newsweek, Oct. 14, 1985, at 66 (noting lack of adequate application software may be one factor preventing commercial success of a new computer). Software is supplied to users in a variety of forms and via a variety of commercial transactions. Software may be supplied as an integral part of computer hardware. For example, sale of certain hardware, such as a central processing unit or a CPU, usually includes some operating software permanently stored in a ROM which is incorporated in the CPU. This software, called firmware, is viewed as part of the hardware when a computer is obtained. See Holmes, *supra* note 8, at 5 (system programs frequently supplied with and built into computer hardware); Bender, *supra* note 11, at 410 (system programs, also called operating software, are often supplied with computer hardware by hardware manufacturer). Application software which enables the computer to perform specific functions for the user is supplied separately from the computer hardware and it is often capable of being used on different computers provided the computers use the same operating software. See M. MASON, *supra*, at 20; Note, 49 ALB. L. REV. 170, *supra*, at 174. This software must be supplied to users in a readily usable form so it is provided embodied in a physical medium such as magnetic tape or a diskette. This allows the software producer to deliver software in a standardized form which can be used on a variety of computers. The user merely inserts the diskette into a disk drive and operating software then transfers the application software from the diskette to the CPU so the computer can perform the appropriate applications. Some computer system users may require specialized application software customized to their particular requirements. Such a user may obtain conventional application software on a diskette or tape and modify it to meet those special requirements. Alternatively, the user may employ a programmer who creates custom software to meet the user's needs. The programmer will go through the various steps already discussed for the development of software and the resulting program will be stored on some physical medium such as a disk or magnetic tape. For a general discussion of the development process of software see Grogan, *supra*, at 6-8; Bender, *supra* note 11, at 408-09; Comment, 10 N.C.J. INT'L L. & COM. REG. 667, *supra* note 35, at 668-71.

58. See *supra* note 55. See also D. BENDER, *supra* note 1, section 2.06(3)(b) at 2- 119 (detailed discussion of flowcharts).

59. See *supra* note 57.

60. *Id.*

61. See T. HARRIS, *supra* note 33, at 33-36; Bender, *supra* note 11, at 408-09.

62. See *infra* note 66 for a discussion of various mediums in which software is stored.

63. Compare Note, 84 COLUM. L. REV. 1992, *supra* note 56, at 1992 n.1 (documentation accompanying a computer program not within definition of software) with D. BENDER, *supra* note 1, section 2-112.4 (definition of software includes all documents that explain or describe software operation).

64. See Note, 4 COMPUTER L.J. 373, *supra* note 56, at 393.

65. See T. HARRIS, *supra* note 33, at 37 (problems result when the law, which is slow to evolve, is applied to the fast moving field of computers).

66. By way of background, a broad overview of a computer reveals a machine that lacks the ability to think and which has limited capabilities. A computer can only perform repetitious steps and calculations. See T. HARRIS, *supra* note 33, at 19-20. However, because it can perform such steps and calculations at lightning speeds without error and without tiring it can be adapted to a myriad of uses. See M. MASON, *supra* note 57, at 8 (computer performance measured in millionths of a second). Almost all tasks can be reduced to a series of steps, which a computer can then be used to execute. For example, computer-aided legal research via the LEXIS or WESTLAW systems allows the user to instruct the computer to find every case in a particular jurisdiction which mentions a certain word or series of words. A person could manually perform this task by actually reading every case over a period of months or even years. The computer performs this same procedure except that it can provide you with either the citations or the full text of the cases that contain those words in a matter of seconds or minutes. See generally D. CANNON & G. LUECKE, *supra* note 57, at 1-20 to 1-21 (number problems that would potentially take weeks or even months to compute by hand can be solved by a computer in minutes). A computer consists of various types of components which are referred to by different names. The electronic guts of a computer which may be contained in a cabinet or box are referred to as the 'central processing unit' or 'CPU.' The CPU, which is really the computer's brain, controls the operation of the computer and enables it to perform the various tasks it is asked to do. See

T. HARRIS, *supra* note 33, at 20. The computer operator communicates with the computer via 'input devices' which take various forms. One form seen at the check-out counters of many retail stores is the 'optical character reader' or 'OCR.' In supermarkets this device is typically built into the check-out counter. When packaged food items are passed over it the OCR reads a code on the label which is then transmitted to the computer. Among other things, this device can keep track of inventory and instantly compute your bill. In other stores the OCR is a hand-held gun-shaped device which is passed over the product label by the store cashier. The most common input device, however, is the 'keyboard,' which resembles an ordinary typewriter keyboard. The computer operator types information into the computer just as someone would type on a typewriter. To obtain the output of a computer, which are the results of the task carried out by the computer, 'output devices' are required. Typical output devices are 'monitors' which are video screens that resemble a television screen. These monitors may also be referred to as a 'cathode ray tube,' 'CRT,' 'video display terminal,' or 'VDT.' Another common output device is a 'printer' which provides printed computer output. Printers come in a variety of types with the differences generally being the quality and speed of printing. See M. MASON, *supra* note 57, at 17-18 (discussion of different types of printers and the different printing speeds and output quality provided by different printers). Another essential element of the computer system is 'memory' which is the portion of the system where information is stored. D. CANNON & G. LUECKE, *supra* note 57, at G-3. The computer must be able to store information it is using to perform a particular task in addition to storing data for future recall. Common electronic memory devices are 'random access memories' or 'RAMs,' 'read only memories' or 'ROMs,' 'programmable read only memories' or 'PROMs,' and 'erasable programmable read only memories' or 'EPROMs.' These devices are internal memory devices which are usually located within and permanently connected to the computer. Additionally, there are several other storage mediums which are used in conjunction with memory devices. These mediums, called 'auxiliary mass storage' or 'auxiliary memory,' can be used to store information received from memory and to provide information to memory for use by the computer. The most common of these storage mediums are 'disks' which are either removable or permanently connected to the computer. M. MASON, *supra* note 57 at 10-12. Removable disks, called 'floppy disks,' 'diskettes' or 'floppies,' consist of a circular plastic disk, similar in size and appearance to a 45 RPM record, which is enclosed in a square rigid envelope. See generally L. POOLE, M. McNIFF & S. COOK, *APPLE II USER'S GUIDE 157-60* (1981) (discussion of disks). Floppies are utilized by inserting them into a 'disk drive' which is the mechanism that enables them to receive data from the computer memory or to provide stored data to the computer memory. Permanently connected disks are called 'hard disks' or 'winchester disks.' 'Magnetic tape' is also used as a storage medium. It is very similar to the tape used on a reel-to-reel tape recorder, but because it is the slowest medium for retrieving data, its uses are limited. See M. MASON, *supra* note 57 at 13. The basic difference between the various memory devices and storage mediums is the amount of information that can be stored and the speed with which the computer can obtain information or store information in the memory device or storage medium. For example, a computer can retrieve information from a 'RAM' used as the computer's main memory anywhere from 25,000 to 75,000 times faster than it can obtain data from an auxiliary storage medium such as a diskette. *Id.* at 10. The various computer components already discussed are generically referred to as 'hardware.' Depending on the size and type of computer all of the various hardware elements may be combined in a single enclosure or they may exist as separate elements connected together by wire cables. If a computer consists of separate elements connected to the CPU by cables, then all hardware elements connected to the CPU are called 'peripherals.'

67. Bender, *supra* note 11, at 438.

68. See Note, 59 WASH. L. REV. 511, *supra* note 9, at 512 n.9; Raysman, *supra* note 9, at 268.

69. See Raysman, *supra* note 9, at 268; Semple, *supra* note 7, at 450 n.2.

70. Bender, *supra* note 11, at 410. See Samuelson, *CONTU Revisited: The Case Against Copyright Protection for Computer Programs in Machine Readable Form*, 1984 DUKE L.J. 663, 678-79 & n.55.

71. A decade ago, hardware manufacturers supplied almost all computer programs. Today, independent software houses account for one-third of the software market and that share is expected to increase to one-half by 1988. See Bender, *supra* note 11, at 410 n.7.

72. In response to this growing market, programs today typically cost between \$50 and \$800 and they are increasingly being marketed over-the-counter as a mass-marketed commodity. Bender, *supra* note 11, at 438-39. See also Note, 14 CONN. L. REV. 71, *supra* note 3, at 107 & n.186 (computer hardware vendors usually provide canned software today in lieu of custom programming a computer for a customer).

73. The recognition of software as a distinct entity separate from computer hardware is inevitable in view of the decreasing cost of hardware. Today hardware costs amount to no more than thirty to forty percent of the total cost of a computer system. Note, 14 CONN. L. REV. 71, *supra* note 3, at 108 & n.187.

74. See *supra* note 57 with regard to how software is created. See also D. BENDER, *supra* note 1, sections 2.06(1) to 2.06(4) at 2-112.4 to 2-145 (background discussion of how software is created); Grogan, *supra* note 57, at 6-8 (discussion of the software development process).

75. See *supra* note 34.

76. See *supra* note 35.

77. Courts have found numerous things that embody intellectual property rights to be goods under article 2. For example, books, which contain intellectual property protected by copyright law, were found to be goods under article 2. *Cardozo v. True*, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App. 1977). Magazines, which also include intellectual property protected by copyright, have been found to be goods. *Gross Valentino Printing Co. v. Clarke*, 120 Ill. App. 3d 907, 458 N.E.2d 1027 (1983). Likewise, video games which utilize internal computer programs that may embody intellectual property in the form of either trade secrets or copyrighted software were held to be goods. *Capital Assoc., Inc. v. Hudgens*, 455 So. 2d 651 (Fla. Dist. Ct. App. 1984).

78. See *supra* note 57. See also D. BENDER, *supra* note 1, sections 2.06(3)(c) to 2.06(3)(d) at 2-125 to 2-143 (discussion of various computer languages).

79. See *supra* note 66 (discussion of mediums than can embody information such as software).

80. See generally U.C.C. section 9-109 (1972) (for purposes of secured transactions the same good can be classified as 'consumer goods,' 'equipment,' 'farm products' or 'inventory' with its treatment depending on the classification).

81. Under article 2 lumber and other building supplies stacked on the shelf of a retail store are movable things and therefore goods when a customer buys them to build a house. See U.C.C. section 2-105. However, if the house is sold after it has been built, it is treated as realty covered by the law of real property and not by article 2 of the U.C.C.

82. See *Cardozo v. True*, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App. 1977) (books are goods). Cf. *Citizens & Southern Sys., Inc. v. South Carolina Tax Comm'n*, 280 S.Ct. 138, 311 S.E.2d 717 (1984). In *South Carolina Tax Comm'n* the court stated that under the state sales tax law, which only applied to tangible personal property: 'If a professor were to convey knowledge or information to students in person, a sales tax would not be assessed upon the fees charged; however, if the professor published that knowledge or information in a book or recorded it on a phonograph disc, a sales tax would be assessed upon the sale of the book or record.' *Id.* at 718.

83. See *supra* note 48 and accompanying text.

84. See generally, *supra* note 77 and accompanying text.

85. 457 F. Supp. 765 (E.D.N.Y. 1978), modified, 604 F.2d 737 (2d Cir. 1979) (reversed in part because district court did not properly apply the statute of limitations).

86. 457 F. Supp. at 769.

87. For example, an electronic device such as a microprocessor which contains a computer program comprises both intangible intellectual property and tangible property. The law recognizes the existence of both of these types of property and provides independent protection for each type of property. Under copyright law the intangible form of expression is considered a literary work protected by copyright law. 17 U.S.C. section 101 (1982). Copyright protects the form of expression of the program against reproduction, among other things, without permission of the copyright owner. 17 U.S.C. section 106(1) (1982). The tangible electronic device, however, which is not protectable by copyright, is subject to protection under a different statute. Semi-Conductor Chip Protection Act, Pub. L. 98-260, Title III, 98 Stat. 3348 (1984) (codified at 17 U.S.C. sections 901-904) (grants creator of new microprocessor the right to control use and production of the microprocessor for a limited time). Additionally, the legislative history of the Copyright Act of 1976 states that it is a fundamental principle under the Act 'that copyright ownership and ownership of a material object in which the work is embodied are entirely separate things.' H.R. Rep. No. 1476, 94th Cong., 2d Sess. 124, reprinted in 1976 U.S. CODE CONG. & ADMIN. NEWS 5659, 5739. See also 17 U.S.C. s 202 (1982) (stating 'ownership of a copyright . . . is distinct from ownership of any material object in which the [copyrighted work is embodied]'); *Comptroller of the Treasury v. Equitable Trust Co.*, 296 Md. 459, 464 A.2d 248, 252, n.5 (1983) (noting that sale of copyrighted software embodied in a tangible medium, such as a tape, is not a transfer of any intangible rights arising under the copyright law).

88. 714 F.2d 1240 (3d Cir. 1983), cert. dismissed 464 U.S. 1033 (1984).

89. 714 F.2d at 1249.

90. *Id.*

91. Note, 59 WASH. L. REV. 511, *supra* note 8, at 511 (software is an intangible collection of ideas). Additionally, in the tax area some jurisdictions have held that computer programs are intangible personal property. *Commerce Union Bank v. Tidwell*, 538 S.W.2d 405 (Tenn. 1976), involved the determination that the sale of computer software did not involve the sale of tangible personal property subject to state tax levied on such sales. *Tidwell* focused on the low value of the medium containing the software as compared to the value of the medium once it contained software. See *James v. Tres Computer Sys., Inc.*, 642 S.W.2d 347, 348 (Mo. 1982) (blank magnetic tapes worth \$50 became worth \$135,000 once encoded with software). Also, the software contained on a tape or diskette could be input into a computer and then the medium which held the software could be discarded. *Id.* at 349. Alternatively, in *First National Bank of Fort Worth v. Bullock*, 584 S.W.2d 548 (Tex. Civ. App. 1979), a case involving the same issue as *Tidwell*, the court said that the computer could be programmed by hand by a programmer sitting at a keyboard or by transmitting the software over a telephone line in the form of digital data and therefore the medium containing the software was unnecessary for completing the software sale. *Id.* at 550. *Tidwell* and *Bullock* thus concluded that the intangible information comprising the software, rather than the tangible medium embodying the software, was the thing being sold. See also *District of Columbia v. Universal Computer Associates, Inc.*, 465 F.2d 615, 618 (D.C. Cir. 1972) (software embodied in tangible medium is intangible intellectual property). But see *Citizens & Southern Systems, Inc. v. South Carolina Tax Comm'n*, 280 S.C. 138, 311 S.E.2d 717 (1984) (software contained on magnetic tape taxable at its full value as software); *Comptroller v. Equitable Trust Co.*, 296 Md. 459, 464 A.2d 248 (1983) (canned software taxable); *Chittenden Trust Co. v. King*, 465 A.2d 1100 (Vt. 1983) (software purchased on magnetic tapes taxable at its full value even though the tapes were worth only about \$15 blank). However, the reasoning of *Tidwell* and *Bullock* is seriously flawed especially in view of the determination by those courts that motion pictures and phonograph records are subject to taxation as tangible personal property. See *Comptroller v. Equitable Trust Co.*, 296 Md. 459, 464 A.2d 248, 258, 261 (1983) (the court rejected, for state tax purposes, distinctions between canned software and phonograph records and movie films); *James v.*

Tres Computer Serv., Inc., 642 S.W.2d 347, 351-53 (Mo. 1982) (Rendlen, J., dissenting) (treating software differently than phonograph records and motion pictures does not make sense). A copy of a motion picture is worth significantly more than blank film. Also, a blank record or tape is worth significantly more if it contains a recording of a live concert, for example. A motion picture or music on a record could easily be transferred to a video cassette recorder or a tape recorder respectively, and the film or record can then be discarded. *Id.* at 351-52. Finally, a motion picture or music could be recreated from scratch from an original script or musical score respectively. Application of the logic employed in Tidwell and Bullock would change the treatment of some tangible goods which have traditionally been subject to sales tax at their full sale price. For example, a book can be discarded once it is read and the information it contains is fully understood. 642 S.W.2d at 351. The information in the book could also be conveyed by other mediums such as by having someone read the information onto a tape and therefore the book is not a necessary medium of conveying the information in the book. See *id.* at 352. Finally, the information contained in a book is an intangible which is separable from the book itself which is merely a tangible medium of conveying the intangible information. *Id.* Therefore, the value of a book for sales tax purposes, based on the reasoning of Tidwell and Bullock, would be the value of the paper, glue, ink, and binding without regard to the writing contained in the book. See *James v. Tres Computer Serv., Inc.*, 642 S.W.2d 347 (Mo. 1982) (taxable value of software on magnetic tapes was the value of the tapes if they were blank). This approach could apply equally to many other types of property although it has been limited to software. Although the reasoning utilized by Tidwell and Bullock applied to determining if software was tangible property under state tax law, it is analogous to the question of whether software is a good under article 2. This reasoning probably underlies the conclusion by some commentators that software is an intangible collection of ideas. Additionally, it probably provides some of the confusion which has caused courts to avoid definitive determination of whether software is a good under article 2.

92. *Cardozo v. True*, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App. 1977).

93. 17 U.S.C. section 106(1) (1982).

94. *Id.* at section 106.

95. *Id.* at section 109(a).

96. See *supra* note 92. See also H.R. Rep., *supra* note 87.

97. *In re R & R Contracting, Inc.*, 4 Bankr. 626, 628 (Bankr. E.D. Wash. 1980); *Peckham v. Larsen Chevrolet-Buick-Oldsmobile*, 99 Idaho 675, 587 P.2d 816, 819 (1978); *Gillespie v. American Motors Corp.*, 51 N.C. App. 535, 277 S.E.2d 100, 102 (1981).

98. 35 U.S.C. section 154 (1982).

99. In *James v. Tres Computer Services, Inc.*, 642 S.W.2d 347 (Mo. 1982), the purchaser of software paid \$135,000 for software on magnetic tapes but claimed only a \$50 value of the transaction (the value of the blank tapes) for purposes of state use taxes which applied to tangible personal property. *Id.* at 347-48. The court found that the software was intangible property separable from the tapes embodying it which were tangible personal property. Based on this distinction, tax was only due on the value of the blank tapes. *Id.* at 350.

100. See *id.* at 351-53 (Rendlen, J., dissenting), where Judge Rendlen noted that phonograph records, tapes, books, and films are all valued, for purposes of state use tax, based on the intangible information they contain. Therefore, it is illogical to separate the intangible aspects of software from the tangible medium embodying it for purposes of the use tax due.

101. See *Citizens & Southern Sys., Inc. v. South Carolina Tax Comm'n*, 280 S.C. 138, 141, 311 S.E.2d 717, 718 (1984) ('generally, the value of books and records is the matter which is contained in them, an intangible; the value is not in the paper, binding, or printer's ink.').

102. See *supra* note 57. See also *supra* note 66 for a discussion of the various memory devices for containing software.

103. See *supra* note 82 and accompanying text.

104. See *supra* note 48 and accompanying text.

105. See *supra* notes 100-01 and accompanying text.

106. See *supra* note 100.

107. 187 Tenn. 112, 213 S.W.2d 27 (1948).

108. *Id.* at 29.

109. Over four million United States patents have been issued to date. These cover everything from new forms of life (*Diamond v. Chakrabarty*, 447 U.S. 303 (1980)) and a computerized method of curing rubber (*Diamond v. Diehr*, 450 U.S. 175 (1981)), to a pump top sprayer for a bottle (U.S. Patent 2,870,943 issued on January 27, 1959, reprinted in R. CHOATE AND W. FRANCIS, *CASES AND MATERIALS ON PATENT LAW 89-92* (2d ed. 1981)). Under the patent law 'any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof' may be patentable. 35 U.S.C. section 101 (1982).

110. Trade secret law is a highly developed body of law that protects almost any information or knowledge that is kept secret and used to conduct a business. See *Smith v. Dravo Corp.*, 203 F.2d 369, 373 (7th Cir. 1953). Trade secret law is primarily state common law. See 12A R. MILGRIM, BUSINESS ORGANIZATIONS, Milgrim on Trade Secrets, 9.03(1) at 9-65 (1986). However, some states have adopted statutes to deal with trade secrets. See e.g., Uniform Trade Secrets Act sections 1-11, 14 U.L.A. 541 (1980) (adopted by California, Connecticut, Delaware, Indiana, Kansas, Louisiana, Minnesota, Montana, North Dakota, and Washington). For a discussion of the application of trade secret law to computer software, see Bender, *supra* note 6.

111. Despite the fact that Coca-Cola results from a secret process (see *infra* note 112 and accompanying text), it is a food which has been held to be a good under article 2 of the U.C.C. See *Guaranteed Foods of Neb., Inc. v. Rison*, 207 Neb. 400, 406, 299 N.W.2d 507, 511 (1980). See also *Spiering v. Fairmont Foods Co.*, 424 F.2d 337, 339 (7th Cir. 1970) (milk is a good under article 2).

112. See W. KONOID, B. TITTEL, D. FREI, & D. STALLARD, WHAT EVERY ENGINEER SHOULD KNOW ABOUT PATENTS 81 (1979); 12A R. MILGRIM, *supra* note 110, section 5.04(2) at 5-115 n.12.

113. See *supra* note 101. Despite this, both books and magazines have been held to be goods under article 2 of the U.C.C. See *Cardozo v. True*, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App. 1977) (books are goods); *Gross Valentino Printing Co. v. Clarks*, 120 Ill. App. 3d 907, 458 N.E.2d 1027 (1983) (magazines are goods).

114. Trademarks, which can have enormous value in our consumer-oriented economy, are protectable under federal law. See The Lanham Act, 15 U.S.C. sections 1051-1127 (1982). Numerous state laws also exist for protecting trademarks. See, e.g., N.J. Stat. Ann. sections 56:3-13.1 to 56:3-13.14 (West Supp. 1986). See generally J. McCARTHY, TRADEMARKS AND UNFAIR COMPETITION (2d ed. 1984) (general discussion of trademark law).

115. See *supra* notes 111, 113 and accompanying text.

116. Some commentators would disagree with this statement. See, e.g., Note, 59 WASH. L. REV. 511, *supra* note 9 (author concludes judicial treatment of software transactions has been inconsistent).

117. 772 F.2d 543 (9th Cir. 1985).

118. *Id.* at 546.

119. *Id.*

120. This predominant feature test is the most widely used test by courts to classify a hybrid contract involving both goods and services as either a sales contract or a service contract. See *infra* notes 278-79 and accompanying text.

121. *Id.*

122. No. 83 Civ. 8729 (S.D.N.Y. Aug. 30, 1984) (available on LEXIS, Genfed Library, Dist. file).

123. Section 2-607(3)(a) requires that once a buyer has accepted the tender of goods 'the buyer must within a reasonable time after he discovers or should have discovered any breach notify the seller of breach or be barred from any remedy.' U.C.C. section 2-607(3)(a) (1978).

124. Section 2-719(2) states: 'Where circumstances cause an exclusive remedy or limited remedy to fail of its essential purpose, remedy may be had as provided in this Act [U.C.C.].' U.C.C. section 2-719(2) (1978).

125. 580 S.W.2d 76 (Tex. Civ. App. 1979).

126. *Id.* at 81.

127. Section 2-725 provides a four year statute of limitations which can be reduced by agreement of the parties but not extended.

128. Section 2-316 provides specific rules that govern when a warranty disclaimer in a contract is valid.

129. See *W. R. Weaver Co.*, 580 S.W.2d at 80-81.

130. 492 F. Supp. 823 (N.D. Fla. 1980).

131. Section 2-719 generally allows the parties to a transaction to shape their own remedies by limiting damages or by other means as long as those means are reasonable.

132. See *supra* note 128.

133. *Hi Neighbor Enterprises v. Burroughs Corp.*, 492 F. Supp. 823, 826-27 (N.D. Fla. 1980).

134. 33 U.C.C. Rep. 954 (D. Mass. 1981).

135. *Id.* at 962.

136. *Id.*

137. *Id.*

138. 579 F. Supp. 135 (D. Md. 1984).

139. *Id.* at 138.

140. *Id.*

141. Additional support for the proposition that software is a good under article 2 can be found in cases in which article 2 is applied to transactions involving both hardware and software without any distinction being made between hardware and software. See *Jaskey Finance & Leasing v. Display Data Corp.*, 564 F. Supp. 160 (E.D. Pa. 1983) (buyer of a computer with software to operate the computer unsuccessfully sued the seller for breach of warranty when the computer allegedly failed to operate as warranted; the court applied article 2 warranty disclaimer without any distinction between the hardware and software); *Applications, Inc. v. Hewlett-Packard Co.*, 501 F. Supp. 129 (S.D.N.Y. 1980), *aff'd* 672 F.2d 1076 (2d Cir. 1982) (plaintiff purchased computer programmed with new computer language that did not perform as warranted; warranty questions were determined under article 2 without any discussion of the applicability of article 2 or any discussion of a distinction between hardware and software for purposes of article 2); *Carl Beasley Ford, Inc. v. Burroughs Corp.*, 361 F. Supp. 325 (E.D. Pa. 1973), *aff'd* without opinion, 493 F.2d 1400 (3d Cir. 1974) (bundled sale of computer with 13 programs resulted in a contract suit for the purchase price when some of the programs were delivered late and others performed improperly; court applied article 2 to the transaction without any distinction between hardware and software); *Schatz Distrib. Co. v. Olivetti Corp.*, 7 Kan.2d 676, 647 P.2d 820 (1982) (court applied article 2 warranty provisions in awarding damages for a computer system that failed to operate, without distinguishing between the hardware and software, and without determining if the computer failed to work because of hardware or software defects). See also *U.S. Welding v. Burroughs Corp.*, 587 F. Supp. 49 (D. Colo. 1984) (in an action denying a motion to dismiss claim of negligent misrepresentation for the lease of a computer and operating software, the court inferred that action was also available under article 2 warranty provisions); *Kalil Bottling Co. v. Burroughs Corp.*, 127 Az. 278, 619 P.2d 1055 (Ariz. Ct. App. 1980) (court applied A.R.S. 44-2398, which is the Arizona codification of U.C.C. s 2-719, in a breach of warranty suit for a lease of computer hardware and software without explanation or distinction between hardware and software).

142. See *Hartford Mutual Ins. Co. v. Seibels, Bruce & Co.*, 579 F. Supp. 135, 138 (D. Md. 1984) (court noted that application of article 2 to licensed software depended upon two issues: (1) was a license a contract for sale; (2) was software a good or service).

143. See, e.g., *Hertz Commercial Leasing Corp. v. Joseph*, 641 S.W.2d 753, 757 (Ky. Ct. App. 1982) (U.C.C. applicable to lease transactions); *Mieske v. Bartell Drug Co.*, 92 Wash.2d 40, 593 P.2d 1308 (1979) (article 2 applicable to bailment). But see, e.g., *W. R. Weaver Co. v. Burroughs Corp.*, 580 S.W.2d 76, 81 (Tex. Civ. App. 1979) (article 2 does not apply to lease); *Bona v. Graefe*, 264 Md. 60, 61-62, 285 A.2d 607, 609 (1972) (article 2 does not apply to bailment). See also *infra* text accompanying notes 177-95 with regard to extension of article 2 to lease and bailment transactions and text accompanying notes 266-90 with regard to article 2 treatment of hybrid sale/service transactions.

144. Regardless of the form in which software is provided, it is usually not sold to users. Instead, most users are merely given a right to use the software under a license. R. BERNACCHI & G. LARSEN, *supra* note 9, at 368-69 (software usually licensed not sold); J. AUER & C. HARRIS *COMPUTER CONTRACT NEGOTIATIONS* 290-91 (1981) (computer programs usually licensed instead of being sold). But see D. BENDER, *supra* note 1, section 3.02[4] at 3-9 to 3-10 (noting that although most software is licensed, one exception is custom software which is usually sold). Specialized software which is both costly and intended for a limited market is typically maintained as a trade secret. See, e.g., *Management Science Am., Inc. v. Cyborg Sys., Inc.*, 6 Computer L. Serv. Rep. (Callaghan) 921, 922-23 (N.D. Ill. 1978) (specialized software confidentially licensed to customers). To protect this trade secret status, the software creator often enters into explicit license agreements with a limited number of users who promise to maintain the software as proprietary information and to pay either a one-time license fee or periodic fees during the license term. Such agreements may be carefully negotiated or merely form agreements provided by the software licensor. However, in either case they are individually executed by both parties to the transaction so that the licensee or software user is aware that only a right to confidential use of software has been obtained. Additionally, the license may limit the number of copies of software that can be made, specify the computer that can run the software, list the particular persons who will have access to the software, and require return of the software and all related materials at the termination of the license. See Conley & Bryan, *Software Escrow in Bankruptcy: An International Perspective*, 10 N.C.J. INT'L L. & COM. REG. 579, 581 n.10 (1985) (license usually restricts time, place and manner of use of software). Mass-marketed or canned software which is widely distributed to the public via retail and mail order outlets is also usually licensed. However, it is impractical from a marketing perspective to require purchasers of mass-marketed software to individually negotiate or sign license agreements or to pay periodic license fees. See Scott, *Market Analysis & Software Licensing Restrictions*, 1 *COMPUTER L. & PRAC.* 48, 49 (1984) (no opportunity for negotiating or tailoring terms in sale of low-priced, mass-marketed software); Note, 38 *STAN. L. REV.* 497, *supra* note 57, at 505 (impractical to negotiate individual licenses with all prospective users of mass-marketed software). To overcome these impediments, software producers insert a license agreement, usually called a shrink-wrap or tear-me-open license, in the software packaging. See Bender, *supra* note 11, at 438-40 (discussion of shrink-wrap licenses); see also Sherman, *Shrink-wrap Licensing of Computer Programs*, 1985 *COMPUTER LAW L. INST.* at 563-80 (copies of licenses used by different companies); Note, 59 *WASH. L. REV.* 511, *supra* note 9, at 518 n.40 (copy of Radio Shack license). Typically this license states that opening the package or using the software indicates acceptance of the licensing agreement. A license of this type makes it clear that the software producer retains title and ownership of the software, with the purchaser only being granted a right to use the software on a single computer. The license is generally a perpetual paid-up license since in return for a single payment the licensee has a perpetual right to use the software provided the licensee adheres to the license terms. Transfer of the software to someone else or use of the software by the purchaser on more than one computer

without payment of an additional license fee violates the license agreement. The software purchaser is also not permitted to make copies of the software except for backup copies for the purchaser's personal use. Additionally, the underlying algorithms or processes employed by the software may be declared trade secrets which the purchaser of the software is required to protect. Finally, violation of any terms of the license by the software licensee allows the software producer to terminate the license and the licensee must then return the software and any copies to the software producer. Another type of licensing transaction that is being used more frequently for business users of mass-marketed software is site licenses. A site license is similar to a shrink-wrap license because it only grants the user a limited right to use the licensed software in return for a one-time license fee. However, unlike a shrink-wrap license, the site license allows the licensee to make unlimited copies of the software provided the copies are used only at a particular location specified in the license. See Vale & Harding, *Practical and Legal Issues Relating to The Marketing of Microprocessor Software by Means of Site Licenses*, *COMPUTER LAW*. 1 (Aug. 1985) (discussion of site licenses).

145. Commentators disagree on whether the U.C.C. is a code or a statute. See, e.g., Hawkland, *Uniform Commercial 'Code' Methodology*, 1962 *U. ILL. L.F.* 291 (arguing U.C.C. is a true code). But see, e.g., Murray, *The Article 2 Prism: The Underlying Philosophy of Article 2 of the Uniform Commercial Code*, 21 *WASHBURN L.J.* 1, 1 (1981) (article 2 is a group of statutes, not a true code). See generally Leary & Frisch, *Uniform Commercial Code Annual Survey: General Provisions, Sales, Bulk Transfer, and Documents of Title*, 39 *BUS. LAW*. 1851, 1856 (1984) (concluding that courts treat particular sections of article 2 as statutes).

146. See, e.g., *Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392 (Civ. Ct. 1969), rev'd on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970) (court appears to view U.C.C. as code and therefore extended coverage of article 2 to equipment lease). But see *Bona v. Graefe*, 264 Md. 60, 61-62, 285 A.2d 607, 609 (1972) (court appears to view U.C.C. as a statute since it said express wording of article 2 limits its application to sales and therefore domain of article 2 does not extend beyond sales). See also *infra* note 148 and accompanying text. See generally R. SPEIDEL, R. SUMMERS & J. WHITE, *COMMERCIAL AND CONSUMER LAW* 5-16 (3d ed. 1981) (comparative discussion of code law versus common law).

147. Hawkland, *supra* note 145, at 291-92.

148. Gilmore, *Legal Realism: Its Cause and Cure*, 70 *YALE L.J.* 1037, 1043 (1961); See also Hawkland, *supra* note 145, at 292, where another authority stated: A 'code' is a pre-emptive, systematic, and comprehensive enactment of a whole field of law. It is pre-emptive in that it displaces all other law in its subject area save only that which the code excepts. It is systematic in that all of its parts, arranged in an orderly fashion and stated with a consistent terminology, form an interlocking, integrated body, revealing its own plan and containing its own methodology. It is comprehensive in that it is sufficiently inclusive and independent to enable it to be administered in accordance with its own basic policies.

149. See Hawkland, *supra* note 145, at 293-99. See also Paul, *The Code and the Illinois Statutes--A Problem of Accommodation*, 1962 *U. ILL. L.F.* 333, 334 (intent of U.C.C. was to be supreme law in areas it covers). But see R. SPEIDEL, R. SUMMERS & J. WHITE, *supra* note 146, at 22-24 (noting areas of commercial law not covered by U.C.C.).

150. Article 1 of the U.C.C., which is generally applicable to the entire U.C.C., states that the U.C.C. is designed, 'to simplify, clarify and modernize the law controlling commercial transactions.' Additionally, it states that the U.C.C. seeks to bring about uniformity in the law and to allow commercial practices to develop under the auspices of the U.C.C. U.C.C. section 1-102. See also Hawkland, *supra* note 145, at 299-300 (systematic organization of provisions with consistent terminology that provide means to handle conflicting rules, fill gaps, and mitigate harshness of rigid rules when appropriate are attributes of a true code exhibited by the U.C.C.). It should be noted, however, that even if the U.C.C. is a true code, enactment of such legislation by state legislatures is somewhat anomalous in view of the fact that the states, with the exception of Louisiana, are common law jurisdictions. The common law places high value on case law as precedent, while a true code relegates case law to a much less exalted position. Consequently, a built in tension may exist between these competing interests and the underlying rationales of the common law and code approaches. See Hawkland, *supra* note 145, at 318-20 (discussion of interaction of precedent and U.C.C.).

151. Official comment to U.C.C. section 1-104 (supports conclusion that U.C.C. is a code).

152. U.C.C. sections 1-102(1) and 1-102(2)(b) (1978).

153. Official comment 1 to U.C.C. section 1-102, reprinted in *Uniform Commercial Code*, 1 *U.L.A.* 11-12 (1976).

154. See, e.g., Official comment 2 to U.C.C. section 2-313, reprinted in *Uniform Commercial Code*, 1 *U.L.A.* 312 (1976) (suggesting section, although limited by its express wording to sales, may be applicable to bailments). Accord Farnsworth, *Implied Warranties of Quality in Non-sale Cases*, 57 *COLUM. L. REV.* 653, 653 (1957); Miller, *A 'Sale of Goods' as a Prerequisite for Warranty Protection*, 24 *BUS. LAW* 847, 855 (1969); Skelton v. *Druid City Hosp. Bd.*, 459 So. 2d 818, 820 (Ala. 1984). But see *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 957, 428 S.W.2d 46, 55 (1968) (Fogleman, J., dissenting) (comment 2 does not indicate that section 2-313 is not limited to sales; means only that article 2 does not prevent court from applying case law warranty doctrines to non-sale transactions).

155. Providing a method of filling gaps is an attribute of a true code. Hawkland, *supra* note 145, at 292.

156. Section 1-103 states: 'Unless displaced by the particular provisions of this Act [U.C.C., the principles of law and equity, including the law merchant and the law relative to capacity to contract, principal and agent, estoppel, fraud, misrepresentation, duress, coercion, mistake, bankruptcy, or other validating or invalidating cause shall supplement its provisions.' U.C.C. section 1-103 (1978).

157 U.C.C. section 1-103 specifically states that the common law is only available to supplement the U.C.C. and therefore the

U.C.C. predominates. U.C.C. section 1-103 (1978). See also Hawkland, *supra* note 145, at 312-13 (so long as an act provides the general law, to be supplemented by external rules, it can rise to the level of a code).

158. See H. JONES, J. KERNOCHAN & A. MURPHY, *LEGAL METHOD* 746-59 (1980); Gilmore, *supra* note 148, at 1040.

159. See *supra* note 148 and accompanying text. *Bona v. Graefe*, 264 Md. 60, 285 A.2d 607 (1972), exemplifies such narrow statutory construction. In *Bona*, the court found sections 2-313 and 2-315 of article 2 to be limited to sale transactions since the express language of these sections only referred to sales. The court concluded that extension of these sections to bailment or lease transactions would amount to improper judicial legislation. *Id.* at 609.

160. See *supra* note 148 and accompanying text.

161. See H. JONES, J. KERNOCHAN & A. MURPHY, *supra* note 158, at 5-7 (under principle of 'Stare Decisis' prior judicial decisions are generally binding in subsequent factually similar controversies).

162. R. SPEIDEL, R. SUMMERS & J. WHITE, *supra* note 146, at 9.

163. U.C.C. section 2-106(1)(1978). Article 2 defines 'buyer' as 'a person who buys or contracts to buy goods.' U.C.C. section 2-103(1)(a)(1978). 'Seller' is defined as 'a person who sells or contracts to sell goods.' U.C.C. section 2-103(1)(a)(1978). But see *In re Vaillancourt*, 7 U.C.C. Rep. 748, 770 (D. Me. 1970) (court rejects suggestion that use of terms 'buyer,' 'seller,' and 'contract of sale' in article 2 provision automatically precludes its application to lease of goods).

164. See U.C.C. section 2-202 (1978) (parol evidence rule); section 2-209 (contract modification); section 2-302 (unconscionability); section 2-303 (allocation of risks); section 2-309 (absence of time provisions); section 2-317 (warranties); section 2-514 (delivery of documents); section 2-515 (preserving evidence); section 2-611 (retraction of anticipatory repudiation); section 2-720 (cancellation or rescission of contract).

165. See U.C.C. section 2-202 (1978) (refers to agreement); section 2-209 (refers to both contract and agreement); section 2-302 (refers to contract); section 2-303 (refers to agreement); section 2-309 (refers to both contract and agreement); section 2-611 (refers to contract); section 2-720 (refers to contract).

166. See U.C.C. section 2-317 (1978) (warranties); section 2-514 (delivery of documents); section 2-515 (preserving evidence). But see U.C.C. sections 2-106(1) and 2-103(1) (1978) (definition of 'buyer,' 'seller,' 'contract,' and 'agreement' include the prefatory phrase 'unless the context otherwise requires' and therefore the language of article 2 may not arguably be limited to sale transactions); see also U.C.C. section 2-102 (1978) (states article 2 applies, in general, to 'transactions in goods,' which is broader than sale of goods).

167. Typical software license transactions do not involve a transfer of title to the software and therefore they are not sales as required by U.C.C. section 2-106(1). See *supra* note 144 and accompanying text.

168. See *Wells v. 10-X Mfg. Co.*, 609 F.2d 248, 254 n.3 (6th Cir. 1979) ('the use of the term transaction rather than sale in U.C.C. s 2-102 is significant in that it makes clear that the reach of article 2 goes beyond those transactions where there is a transfer of title'); *In re Beck*, 25 Bankr. 947, 951 (N.D. Ohio 1982) (article 2 applies to transactions in goods unless the context requires otherwise); *Skelton v. Druid City Hosp. Bd.*, 459 So.2d 818, 821 (Ala. 1984) (article 2 applies to transactions in goods which is broader than sale of goods); *Mieske v. Bartell Drugs Co.*, 92 Wash. 2d 40, 593 P.2d 1308, 1312 (1979) ('transactions in goods' in section 2-102 is clearly broader than sale of goods); *Hertz Commercial Leasing v. Transp. Credit Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392, 396-97 (Civ. Ct. 1969), *rev'd* on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970) (wording of U.C.C. section 1-102 makes it clear that scope of article 2 is broader than sales).

169. See Note, 12 TULSA L.J. 556, *supra* note 49, at 564-65. See also Taylor, *supra* note 22, at 352 (wording of section 2-102 represents imprecise drafting resulting from drafting mishap). But see *Mieske v. Bartell Drug Co.*, 92 Wash. 2d 40, 593 P.2d 1308, 1312 (1979) (reference to transactions in goods in section 2-102 sets perimeter of article 2 as being broader than sales; '[had the drafters of the code intended to limit article 2 to sales they could have easily so stated.']; *Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House*, 298 N.Y.S.2d 392, 396 (Civ. Ct. 1969) ('clearly, a 'transaction' encompasses a far wider area of activity than a 'sale', and it cannot be assumed that the word was carelessly chosen.'), *rev'd* on other grounds, 316 N.Y.S.2d 585 (App. Div. 1970).

170. But see *Skelton v. Druid City Hosp. Bd.*, 459 So. 2d 818, 821 (Ala. 1984) (court applied U.C.C. section 2-315 despite finding no sale and despite express reference in section 2-315 to 'seller' and 'buyer' based, in part, on broad scope of section 2-102).

171. See, e.g., U.C.C. section 2-104 (deals with rights of creditors of a seller).

172. 641 S.W.2d 753 (Ky. Ct. App. 1982).

173. *Id.* at 756.

174. *Id.* at 756-57.

175. *DeKalb A G Research, Inc. v. Abbott*, 391 F. Supp. 152, 153-54 (N.D. Ala. 1974), (lease of hens not covered by article 2 since article 2 applies to sales not leases), *aff'd per curiam* 511 F.2d 1162 (5th Cir. 1975); *Bona v. Graefe*, 264 Md. 60, 285 A.2d 607

(1972) (article 2 limited to sales so lease of golf cart not covered); *O J & C Co. v. General Hosp. Leasing*, 578 S.W.2d 877, 878 (Tex. Civ. App. 1979) (article 2 not applicable to contract to lease computers since article 2 is expressly limited to sales); *W. R. Weaver Co. v. Burroughs Corp.*, 580 S.W.2d 76, 81 (Tex. Civ. App. 1979) (article 2 applicable to purchase of software but not to lease of computer since article 2 covers sales but not leases). See also *Mays v. Citizens & Southern Nat'l Bank*, 132 Ga. App. 602, 208 S.E.2d 614, 619 (1974) (U.C.C. s 2-316 not applicable to a twenty-four month car lease because wording of section 2-316 explicitly limits application to sales), rev'd on other grounds, 153 Ga. App. 124, 264 S.E.2d 694 (1980); *Thompson Farms, Inc. v. Corno Feed Prod.*, 366 N.E.2d 3, 14 (Ind. Ct. App. 1977) ('the warranty provisions of Article II of the Uniform Commercial Code are clearly limited to the sale of goods'). Some commentators have also supported this view. See, e.g., Murray, supra note 145; Leary & Frisch, supra note 145.

176. *Glenn Dick Equip. Co. v. Galey Constr., Inc.*, 97 Idaho 216, 541 P.2d 1184, 1188-89 (1975), noted that courts have used three theories to apply article 2 to a lease; (1) article 2 is directly applicable because a lease is a transaction in goods which is within the scope of article 2; (2) a lease is found analogous to a sale; or (3) economic considerations require that certain article 2 sections be applied to leases. See also *In re Community Medical Center*, 623 F.2d 864, 868 n.4 (3d Cir. 1980) (bankruptcy case in which court noted that although leases are not automatically within article 2 some leasing arrangements have been found equivalent to sales and therefore within article 2); *Vitex Mfg. Corp. v. Caribtex Corp.*, 377 F.2d 795 (3d Cir. 1967) (in a breach of contract action, the court noted that even though the U.C.C. did not control the action it was persuasive authority); *Westmont Tractor Co. v. Viking Exploration, Inc.*, 543 F. Supp. 1314, 1317 n.3 (D. Mont. 1982) (lease of business equipment which gave lessee option to purchase equipment at end of lease was a sale under article 2); *In re Vaillancourt*, 7 U.C.C. Rep. Serv. (Callaghan) 748, 770 (D. Me. 1970) (lease containing options to purchase made lease a contract to sell goods in the future which is within article 2); *Skelton v. Druid City Hosp. Bd.*, 459 So. 2d 818, 820-21 (Ala. 1984) (article 2 applied despite court determination that sale was not involved in transaction); *M. & W. Farm Serv. Co. v. Callison*, 285 N.W.2d 271, 274 n.1 (Iowa 1979) (true lease not within article 2 but lease which is equivalent to sale or which is really a sale may be within article 2); *Mieske v. Bartell Drug Co.*, 92 Wash. 2d 40, 593 P.2d 1308 (1979) (article 2 applied to bailment transaction involving photographic film brought to retail store for processing); *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 428 S.W.2d 46 (1968) (article 2 provision applicable to lease where provision of lease analogous to sale); *Capitol Assoc., Inc. v. Hudgens*, 455 So. 2d 651 (Fla. Dist. Ct. App. 1984) (equipment lease that gave lessee no right to purchase or acquire title to equipment was within article 2 even though article 2 does not expressly apply to leases); *Owens v. Patent Scaffolding Co.*, 77 Misc. 2d 992, 354 N.Y.S.2d 778 (Sup. Ct. 1974) (article 2 applicable to lease in this case even though a true lease, not equivalent or analogous to a sale, was involved), rev'd on other grounds, 50 A.D.2d 866, 376 N.Y.S.2d 951 (App. Div. 1975); *Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392 (Civ. Ct. 1969) (article 2 applied to an equipment lease which in this case was analogous to sale), rev'd on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970). Some commentators have also supported this view. See, e.g., Hawkland, supra note 145.

177. See supra note 46 and accompanying text. See generally Abrams, *The Diminishing Difference Between Selling and Leasing Tangible Personal Property*, 24 VILL. L. REV. 706, 708-12 (1979) (discusses the advantages of leasing); Landis, *Tax Aspects of Leasing*, 79 COMM. L.J. 8 (1974) (discussion of tax advantages and consequences of leasing).

178. 264 Md. 69, 285 A.2d 607 (1972). 179. *Id.* at 609.

180. *Id.* Accord *Mays v. Citizens & Southern Nat'l Bank*, 132 Ga. App. 602, 208 S.E.2d 614, 619 (1974), rev'd on other grounds, 153 Ga. App. 124, 264 S.E.2d 494 (1980).

181. 580 S.W.2d 76 (Tex. Civ. App. 1979).

182. *Id.* at 80-81.

183. 59 Misc. 2d 226, 298 N.Y.S.2d 392 (Civ. App. 1969), rev'd on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970).

184. 298 N.Y.S.2d at 395-97.

185. 298 N.Y.S.2d at 395.

186. *Id.*

187. 92 Wash. 2d 40, 593 P.2d 1308 (1979).

188. *Id.* at 1312. But see *Mason v. General Motors Corp.*, 397 Mass. 183, 490 N.E.2d 437 (1986) (article 2 not applicable to bailment transaction arising from car dealer lending customer automobile for test drive).

189. 593 P.2d at 1312.

190. *Id.*

191. See *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 428 S.W.2d 46 (1968); *M & W Farm Serv. Co. v. Callison*, 285 N.W.2d 271, 274 n.1 (Iowa 1979); *Hertz Commercial Leasing Corp. v. Transportation Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392 (Civ. Ct. 1969), rev'd on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970). See also *Briscoe's Foodland, Inc. v. Capitol Assoc., Inc.*, 42 U.C.C. Rep. Serv. (Callaghan) 1234, 1239 (Miss. 1986) (Robertson, J., concurring) (arguing article 2 should only apply to equipment leases that are the functional equivalent of sale). See generally Boss, *Panacea or Nightmare? Leases in Article 2*, 64 B.U.L. REV. 39 (1984) (examines both advantages and problems resulting from extension of article 2 to leases); Note,

12 TULSA L.J. 556, supra note 49, at 564-71 (discussion of judicial methods used to apply article 2 to leases); Note, Warranties in the Leasing of Goods, 31 OHIO ST. L.J. 140 (1970) (author examines the extension of article 2 warranty provisions to leases and concludes such provisions should only apply to leasing transactions analogous or equivalent to sale transactions).

192. See Note, 12 TULSA L.J. 556, supra note 49, at 561 (because the questions of extending article 2 to leases has arisen in a judicial context, extension has only been considered with regard to particular sections of article 2); Note, 31 OHIO ST. L.J. 140, supra note 191, at 140 (many courts have applied pertinent sections of article 2 to certain types of lease transactions); Boss, supra note 191, at 48-49 nn.50-62 (catalogs cases applying particular sections of article 2 to leases). See also *Bank of Indiana v. Holyfield*, 476 F. Supp. 104 (S.D. Miss. 1979) (court found the lease transaction unconscionable and refused to enforce the lease pursuant to section 2-302 of article 2); *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 428 S.W.2d 46, 54 (1968) (court held that only section 2-316(2) of article 2 was applicable to a lease and only when the lease provisions are analogous to a sale); *Glenn Dick Equip. Co. v. Galey Constr., Inc.*, 97 Idaho 216, 541 P.2d 1184, 1190 (1975) (court concluded that article 2 should be applied to leases by analogy on a section-by-section basis only); *Heller v. Convalescent Home*, 49 Ill. App. 3d 213, 365 N.E.2d 1285 (1977) (court rejected the application of article 2 in its entirety to equipment leases and stated that article 2 would be applied by analogy on a section-by-section basis); *Owens v. Patent Scaffolding Co.*, 50 A.D.2d 866, 376 N.Y.S.2d 948 (App. Div. 1975) (article 2's section 2-725 was not applicable to the lease even though warranty provisions of article 2 were applicable to the lease). But see *Hertz Commercial Leasing Corp. v. Joseph*, 641 S.W.2d 753, 757 (Ky. Ct. App. 1982) (court held U.C.C. applicable in its entirety to lease transactions).

193. See *Heller v. Convalescent Home*, 49 Ill. App. 3d 213, 365 N.E.2d 1285, 1289 (1977) ('we will analogize the provision of article 2 to equipment leases only when the case involves the same considerations which gave rise to the Code's provisions and the analogy is not rebutted by the specific circumstances of the case.')

194. *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 428 S.W.2d 46, 54 (1968) (Fogleman, J., dissenting) (criticizing extension of article 2 on a piecemeal basis because of the resulting uncertainty and lack of guidance for business community).

195. *Id.* at 961, 428 S.W.2d at 56.

196. See *RRX Indus. v. Lab-Con Inc.*, 772 F.2d 543 (9th Cir. 1985) (software sold with accompanying services held to be a good subject to article 2); see also *W. R. Weaver Co. v. Burroughs Corp.*, 580 S.W.2d 76, 80-81 (Tex. Civ. App. 1979) (sale of custom software subject to warranty disclaimer provision of article 2).

197. 604 F.2d 737 (2d Cir. 1979).

198. *Id.* at 739.

199. *Id.* at 741.

200. 538 F. Supp. 776 (E.D. Wis. 1982).

201. *Id.* at 778 n.1.

202. *Id.* at 778 n.1 and 780.

203. 587 F. Supp. 49 (D. Colo. 1984).

204. It is interesting to note that courts differ on the extension of article 2 to the lease of a computer. For example, in *Heller v. Convalescent Home*, 49 Ill. App. 3d 213, 365 N.E.2d 1285, 1289 (1977), the court found specific sections of article 2 applicable by analogy to a computer lease transaction. Also, in *Earman Oil Co. v. Burroughs Corp.*, 625 F.2d 1291 (5th Cir. 1980), article 2 was applied without a determination of whether a three party sale/leaseback arrangement was a true lease or a sale because the court said commercial transactions should be subject to the same rules without regard to whether a lease or sale transaction is utilized. *Id.* at 1297. However, other courts have rejected the extension of article 2 to computer leases. See, e.g., *In re Community Medical Center*, 623 F.2d 864, 868 n.4 (3d Cir. 1980) (lessee was not given the opportunity to purchase the computer at the end of lease for a nominal charge so the transaction was not equivalent to a sale and therefore the U.C.C. did not apply); *W. R. Weaver Co. v. Burroughs Corp.*, 580 S.W.2d 76 (Tex. Civ. App. 1979) (article 2 was not applicable to a lease of a computer although it did apply to the purchase of software to run on the leased computer); *O J & C Co. v. General Hosp. Leasing*, 578 S.W.2d 877 (Tex. Civ. App. 1979) (lease of computer was not governed by article 2 since article 2 is limited to sales).

205. See supra notes 178-82 and accompanying text with regard to judicial decisions that have limited the scope of article 2 to sales.

206. See supra notes 163-67 and accompanying text.

207. See supra note 183 and accompanying text for a discussion of *Hertz Commercial Leasing Corp.* which extended article 2 to equipment leases, and note 187 and accompanying text for a discussion of *Mieske* which extended article 2 to a bailment. See also 298 N.Y.S.2d at 395. See generally *Hertz Commercial Leasing Corp. v. Joseph*, 641 S.W.2d 753, 756-57 (Ky. Ct. App. 1982) (uniformity in commercial law requires bringing lease transactions within the scope of article 2).

208. See supra note 187 and accompanying text for a discussion of the *Mieske* decision.

209. See U.C.C. sections 1-102 and 1-104. See also supra notes 22, 26, and 149.

210. See, e.g., Hertz, 298 N.Y.S.2d at 395.

211. Id.; see Note, 37 OKLA. L. REV. 317, supra note 46, at 317-19. See generally Abrams, supra note 177, Landis, supra note 177.

212. See, e.g., Westmont Tractor Co. v. Viking Exploration, Inc., 543 F. Supp. 1314, 1317 n.3 (D. Mont. 1982) (equipment lease which gave the lessee an option to purchase the equipment at the end of the lease was a sale under article 2). 213. See supra note 144 for a general discussion of software licensing.

214. For example, the cost of creating and marketing electronic chips can be tens of millions of dollars, while others can copy these chips at a fraction of those costs. 29 PAT. TRADEMARK & COPYRIGHT J. (BNA) No. 705 at 28 (Nov. 15, 1984). See also Final Report of the National Commission on New Technological Uses of Copyrighted Works, reprinted in 3 COMPUTER L.J. 53, 58 (1981-82) (cost of developing computer programs greatly exceeds the cost of their duplication); Bender, Licensing and Protecting Computer Software via Patents and Trade Secrets, 1 SOFTWARE PROTECTION & MARKETING 619, 630 (1983) (even if it costs over a million dollars to create a program, a copy of the program can be created for less than one hundred dollars).

215. The use of trade secret law, if possible, is often very desirable in light of the extent of foreign counterfeiting of United States products protected by patents, copyrights, or trademarks. Such counterfeiting is estimated to cost the United States twenty billion dollars in lost sales each year. Time (Business Notes) at 67 (April 21, 1986). See generally Hofer, Business Warfare Over Trade Secrets, 9 LITIGATION 9 (Summer 1983) (cost of stolen technology to private business in the United States is estimated at twenty billion dollars a year).

216. See, e.g., Data General Corp. v. Digital Computer Controls, Inc., 357 A.2d 105, 113 (Del. Ch. 1975) (dissemination of diagrams in confidence does not destroy secret nature of the diagrams). See also Management Science Am., Inc. v. Cyborg Sys., Inc., 6 Computer L. Serv. Rep. (Callaghan) 921, 923 (N.D. Ill. 1978) (disclosure of payroll software, subject to a confidential agreement, to approximately 600 customers did not destroy secret status of the software). See generally Chicago Bd. of Trade v. Christie Grain & Stock Co., 198 U.S. 236, 250-51 (1904) (secrecy can be maintained despite dissemination of trade secrets provided such secrets are disclosed in confidence).

217. 35 U.S.C. section 154 (1982) (under patent law, a patent owner can exclude others from making, using, or selling a patented invention in the United States); 17 U.S.C. section 106(1) (1982) (under copyright law, a copyright owner can restrict the reproduction of a copyrighted work).

218. Bender, supra note 214, at 634. See also Freed, Legal Interests Related to Software Programs, 25 JURIMETRICS J. 347, 362 (1985).

219. Patents typically cost at least several thousand dollars to obtain. See Smith, Patent and Trade Secret Protection of Software, 1 COMPUTER SOFTWARE & CHIPS, 551, 555 (1985). In some cases, however, the cost can be as high as one hundred thousand dollars.

220. See Bender, supra note 214, at 638 (it typically takes three years to obtain a patent). See generally Conference Reviews: PTO Rule Changes, 26 PAT. TRADEMARK & COPYRIGHT J. (BNA) No. 649, at 507 (Oct. 6, 1983) (despite the modernization of the Patent and Trademark Office and resulting increases in efficiency, Donald J. Quigg, Deputy Commissioner of Patents and Trademarks, has indicated that the goal of the office is only to achieve, by 1987, an eighteen month pendency for a patent application); 32 Pat. Trademark & Copyright J. (BNA) No. 793, at 423 (Aug. 21, 1986) (Commissioner Quigg has modified his earlier goal so that it is now to achieve an eighteen month pendency as soon as possible, but not later than 1989).

221. C. Tapper, supra note 13, at 10. See also Bender, supra note 214, at 638 (the three years which is typical to obtain a patent represents a significant portion of the lifespan of a program); Smith, supra note 219 (because patents typically take at least three years to obtain, patent protection is most desirable for inventions with long potential market life).

222. See Bender, supra note 6, at 909.

223. See, e.g., Management Science Am., Inc. v. Cyborg Sys., Inc., 6 Computer L. Serv. Rep. (Callaghan) 921, 922 (N.D. Ill. 1978) (specialized software was maintained as trade secret by confidentially licensing it to a limited number of users). See generally Freed, supra note 218, at 363 (trade secret protection ideal for software suppliers that deal directly with customers and have opportunity to enter genuine licenses).

224. See Gilburne and Johnston, Trade Secret Protection for Software Generally and in the Mass Market, 3 COMPUTER L.J. 211, 227-37 (1982) (discussion of inherent problems with extending trade secret protection to mass-marketed software). Nevertheless, canned software is typically provided via a license which often attempts to protect trade secrets in the software by imposing confidential obligations on the user. The validity and enforceability of such licenses is unclear. See Sherman, supra note 23, at 543, 546-51. See also Grogan, supra note 57, at 10-12 (questioning validity of mass-marketed software licenses). But see LA. REV. STAT. ANN. sections 54:1961 to 51:1966 (West. Cum. Supp. 1986) and Software License Enforcement Act, ILL. REV. STAT. ch.29, sections 801-08 (1986) (both statutes validate and enforce above licenses used to sell mass-marketed software).

225. Underwater Storage, Inc. v. United States Rubber Co., 371 F.2d 950, 954 (D.C. Cir. 1966) (once trade secret disclosed to whole world it loses its protected status), cert. denied, 386 U.S. 911 (1967). See also Packard Instrument Co. v. Reich, 213 U.S.P.Q. 322, 327 (Ill. Ct. App. 1980) (Even though a process is kept secret, it is not a trade secret if the process is known and used by the outside world).

226. 'One of the truisms about software is that, while a good program is hard to write and requires a great deal of effort to do properly, it is generally very easy to copy.' T. HARRIS, *supra* note 33, at 190. See generally Saltzberg, Legal and Technical Protection Through Software Locks, 5 *COMPUTER L.J.* 163, 166 (1984) (estimating that forty percent of software in use is unauthorized). 227. See C. Tapper, *supra* note 13, at 13 (copyright is the most appropriate form of protection for software). See also Baumgarten, Copyright and Computer Software, Data Bases and Chip Technology, in 1 *COMPUTER SOFTWARE 1984: PROTECTION AND MARKETING*, 11, 17 (mass-marketing of software has focused attention on copyright as a means of protecting software).
228. See Bender, *supra* note 11, at 439 (discussion of copyright limitations).
229. 17 U.S.C. section 106(1) (1982).
230. *Id.* at section 109(a).
231. *Id.* at section 102(b). See also *Apple Computer, Inc. v. Franklin Computer Corp.*, 714 F.2d 1240, 1252-53 (3d Cir. 1983) (copyright protects the form or the means of expression of an idea but not the underlying idea itself); Comment, Software: A Legislative Solution to the Problem of User's and Producer's Rights in Computer Software, 44 *LA. L. REV.* 1413, 1448 (1984) (copyright does not extend to ideas, algorithms, or the logic contained in the software).
232. Bender, *supra* note 11, at 439 (copyright will not restrict use of software to a particular computer or terminal). In response to this limitation, Illinois has enacted legislation which allows software to be licensed with a provision limiting the use of the software. See Software License Enforcement Act, *ILL. REV. STAT. ch. 29, section 804(5)* (Supp. 1986).
233. See E. KEET, *supra* note 13, at 119-25, for a discussion of the various technical means employed to prevent unauthorized duplication of software. The author concludes that the various methods are of limited utility due to their high cost and the ability of a determined user to defeat such protective schemes. See also Saltzberg, *supra* note 226 (discussion of software locks which are technical measures to prevent unauthorized software use):
234. See Bender, *supra* note 11, at 439.
235. 17 U.S.C. sections 106(1), 106(3) (1982).
236. *Id.* at section 109(a).
237. See 40 *THE RECORD* 754, 771-72 (1985). It should be noted, however, that the first sale doctrine does not affect the prohibition against unauthorized copying of copyrighted software. See also 17 U.S.C. section 109 (1982).
- 238 17 U.S.C. section 109(d) (1982).
239. Rice, Computer Products and the Federal Warranty Act, 1985 *COMPUTER L. ANN.* 265, 269.
240. See Note, 59 *WASH. L. REV.* 511, *supra* note 9, at 519 n.41 (licenses allow the software producer to maintain tight control over the software which is necessary to preserve its commercial value).
241. An algorithm is a rigidly defined procedure for solving a specific problem in a finite number of steps which always yields a solution to the problem. Bender, *supra* note 214, at 626 n.1.
242. See *National Cash Register Corp. v. Arnett*, 554 F. Supp. 1176, 1176 (D. Colo. 1983) (software license prohibited licensee from disclosing any aspect of the software).
243. *Comptroller v. Equitable Trust Co.*, 296 Md. 459, 467, 464 A.2d 248, 252 (1983) (one purpose of a license agreement is to use trade secret law to protect certain interests in software). See also 40 *THE RECORD* 754, 770 (1985) (license agreements are used by software developers to protect trade secrets in programs).
244. 'Shrink-wrap' or 'tear-me-open' licenses are standard printed licenses that are enclosed or attached to mass-marketed software in such a manner that they are visible through the software packaging. Typically, these licenses tell the software purchaser that opening the software packaging amounts to consent to the conditions contained in the license. Sherman, *supra* note 23, at 543.
245. See Sherman, *supra* note 23, at 545.
246. See *supra* note 224 and accompanying text. See also Stern, Shrink-wrap Licenses of Mass Marketed Software: Enforceable Contracts or Whistling in the Dark?, 7 *RUTGERS J. COMPUTER TECH. & L.* 51, 55 (1985) (author questions validity of shrink-wrap licenses).
247. See *LA. REV. STAT. ANN. s 51:1964(3)* (West Cum. Supp. 1986) and Software License Enforcement Act, *ILL. REV. STAT. ch.29, section 804(3)* (Supp. 1986) (both statutes allow shrink-wrap licenses to prohibit reverse engineering, decompiling, and disassembling of software which would prevent discovery of underlying algorithm or process employed by the software).

248. See *supra* notes 240, 243.

249. See U.C.C. section 2-106(1) (1985) (sale requires passing of title from seller to buyer). See also Sherman, *supra* note 23, at 566 (a typical software license states explicitly that licensor retains exclusive ownership in the software); Note, 59 WASH. L. REV. 511, *supra* note 9, at 518 ('Software contracts rarely involve the passage of title of the software').

250. See Sherman, *supra* note 23, at 563-80 (copies of typical shrink-wrap software license); see also, Note, 59 WASH. L. REV. 511, *supra* note 9, at 518 n.40 (Radio Shack shrink-wrap license).

251. See *Insuring Your Satisfaction When Buying Software*, PERSONAL COMPUTING, Sept. 1983, at 153 (author argues that a typical software transaction, which involves a perpetual license for a one-time fee, is close enough to a sale for article 2 to apply). See also D. Rice, *Computer Products and the Federal Warranty Act*, COMPUTER L. ANN. 265 (1985) (mass-marketed software is obtained by consumer for a single fee without return of the software expected).

252. See, e.g., *Hertz Commercial Leasing Corp. v. Transp. Credit Clearing House*, 59 Misc. 2d 226, 298 N.Y.S.2d 392, 395 (Civ. Ct. 1969), *rev'd on other grounds*, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Term 1970). See also *Sawyer v. Pioneer Leasing Corp.*, 244 Ark. 943, 428 S.W.2d 46 (1968) (article 2 provision applicable to lease that is analogous to sale).

253. See *supra* note 239 and accompanying text.

254. See *supra* note 243 and accompanying text.

255. 665 P.2d 635 (Colo. Ct. App. 1983).

256. *Id.* at 637.

257. 349 So. 2d 1160 (Ala. 1977).

258. *Id.* at 1161.

259. See *supra* note 221 and accompanying text.

260. See, e.g., *supra* note 176.

261. See, e.g., *supra* note 175.

262. 298 N.Y.S.2d at 395.

263. See *supra* notes 239 and 243.

264. See, e.g., *supra* note 252. See also *supra* note 260.

265. See U.C.C. sections 1-102(2)(c), 1-104 (1985).

266. See, e.g., *RRX Indus. v. Lab-Con., Inc.*, 772 F.2d 543, 546 (9th Cir. 1985) (software provided with employee training, repair services, and system upgrading). See also *Chatlos Sys. Inc. v. Nat'l Cash Register Corp.*, 479 F. Supp. 738 (D.N.J. 1979), *aff'd and remanded*, 635 F.2d 1081 (3d Cir. 1980) (seller of computer system provided the services necessary to install the software provided to the user).

267. See, e.g., *In re Community Medical Center*, 623 F.2d 864 (3d Cir. 1980) (buyer entered contract for data processing services under which seller provided training, programming services, and maintenance for computer terminals installed on buyer's premises which were connected to seller's central computer, located elsewhere, that serviced the needs of the buyer and other customers). See also *Liberty Financial Mgmt. v. Beneficial Data*, 670 S.W.2d 40 (Mo. Ct. App. 1984) (computer hardware and software was used to provide data processing services).

268. See R. BERNACCHI & G. LARSEN, *supra* note 9, at 138 (U.C.C. does not cover contracts solely for services); Note, *The Goods/Services Dichotomy and The U.C.C.: Unweaving the Tangled Web*, 59 NOTRE DAME L. REV. 717, 717 n.3 (1984) (article 2 does not apply to contracts solely for services); Blottner, *Derrico, Weiss & Hoffman v. Fier*, 420 N.Y.S.2d 999, 1002 (N.Y. Civ. Ct. 1979) (providing of services is not covered by U.C.C.). See also R. ALDERMAN, *A TRANSACTIONAL GUIDE TO THE UNIFORM COMMERCIAL CODE* 7 (1983) (article 2 is not expressly applicable to service contracts); A. FARNSWORTH, *CONTRACTS* 33 (1982) (article 2 not applicable to service contract).

269. *Wivagg v. Duquesne Light Co.*, 73 Pa. D. & C.2d 694, 697 (1975).

270. G. WALLACH, *THE LAW OF SALES UNDER THE UNIFORM COMMERCIAL CODE* 11-27 to 11-28 (1981). See also R. Alderman, *supra* note 268 (many service contracts involve the sale of goods); *Wivagg v. Duquesne Light Co.*, 73 Pa. D. & C.2d 694, 697 (1975) (few sales of goods are pure sales not involving any services).

271. 459 So. 2d 818 (Ala. 1984).

272. *Id.* at 820-21. See also Note, Contracts for Goods and Services and Article 2 of The Uniform Commercial Code, 9 RUT.-CAM. L.J. 303, 303 (1978) (hybrid transactions involving both sale of goods and services common).

273. In Skelton, 459 So. 2d at 820-21, the court applied U.C.C. section 2-315 to a transaction which the court determined did not involve a sale. The court's application of this section to a non-sale transaction implies that the court views the U.C.C. as a true code since section 2-315 is expressly limited to sales by its explicit references to 'buyer' and 'seller.' Additionally, this conclusion is supported by the court's reliance on the underlying purpose of the U.C.C., stated in section 1-102, to find section 2-315 applicable. *Id.*

274. 381 F.2d 222 (10th Cir. 1967).

275. *Id.* at 226.

276. *Id.*

277. The lack of uniformity in commercial law which would result from application of different bodies of law to different transactions has compelled some courts to broadly apply article 2 to both sale and non-sale transactions. See, e.g., Hertz Commercial Leasing Corp. v. Commercial Credit Clearing House, 59 Misc. 2d 226, 230, 298 N.Y.S.2d 392, 395 (Civ. Ct. 1969), *rev'd* on other grounds, 64 Misc. 2d 910, 316 N.Y.S.2d 585 (App. Div. 1970); Hertz Commercial Leasing Corp. v. Joseph, 641 S.W.2d 753, 756-57 (Ky. Ct. App. 1982); Owens v. Patent Scaffolding-Div. of Harsco, 77 Misc. 2d 992, 354 N.Y.S.2d 778 (Sup. Ct. 1974), *rev'd* on other grounds, 50 A.D.2d 866, 376 N.Y.S.2d 948 (App. Div. 1975). 278. See Note, *supra* note 272, at 303-04 & nn.5-6.

279. *Id.*

280. See *Id.*; Note, *supra* note 268, at 719 n.14. See also R. ALDERMAN, *supra* note 268, at 8 (predominant feature test is majority rule).

281. See RRX Indus. v. Lab-Con, Inc., 772 F.2d 543, 546 (9th Cir. 1985) (in applying the predominant feature analysis to a software transaction involving both sale of goods and services the court noted that software packages vary and therefore analysis would have to be applied on a case by case basis).

282. See Note, *supra* note 268, for a discussion of the various tests applied to hybrid transactions involving both the sale of goods and the performance of services.

283. 499 F.2d 951 (8th Cir. 1974).

284. *Id.* at 960. See also Republic Steel Corp. v. Penn. Eng'g Corp., 785 F.2d 174, 181-82 (7th Cir. 1986) (contract to design, sell and assemble two steel furnaces was a hybrid sale/service agreement within the domain of article 2 because the contract was predominately for the sale of furnaces).

285. 335 So. 2d 335 (Fla. Dist. Ct. App. 1976).

286. *Id.* at 336. See also Gross Valentiono Printing v. Clarke, 120 Ill. App. 3d 907, 458 N.E.2d 1027 (Ill. App. Ct. 1983) (contract to print magazines was within scope of article 2 since the primary object of the contract was the resulting magazines which are goods under article 2).

287. 73 Pa. D. & C.2d 694 (1975).

288. *Id.* at 701-02.

289. See Note, *supra* note 268, at 718 n.10 (use of different analyses has led to inconsistent application of article 2 to hybrid transactions).

290. See *supra* note 22 and accompanying text.

291. See *supra* note 266.

292. See Cardozo v. True, 342 So. 2d 1053, 1055 (Fla. Dist. Ct. App.), *cert. denied*, 353 So. 2d 674 (Fla. 1977) (book is a good).

293. 'Debugging' software means, in computer jargon, eliminating programming errors in software. See Bender, *supra* note 11, at 409.

294. See Note, 77 MICH. L. REV. 1149, *supra* note 9, at 1158-61 (discussion of typical software support services).

295. See R. ALDERMAN, *supra* note 268, at 8. See, e.g., RRX Indus. v. Lab-Con, Inc., 772 F.2d 543 (9th Cir. 1985) (hybrid

sale/service contract involving software determined to be contract for sale of goods within article 2 since court found sale of goods to be predominant feature).

296. 772 F.2d at 546.

297. *Id.*

298. *Id.*

299. *Id.*

300. *Id.*

301. See *supra* note 283 and accompanying text.

302. See *supra* note 285 and accompanying text.

303. See *supra* note 287 and accompanying text.

304. See *supra* note 274 and accompanying text.

305. See *supra* note 271 and accompanying text.

306. See *supra* note 285 and accompanying text.

307. See *supra* note 271 and accompanying text.

308. See *supra* note 283 and accompanying text. See also U.C.C. section 2- 105(1) (1978) ('goods' under article 2 includes specially manufactured goods).

309. See *supra* note 287 and accompanying text.

310. See *supra* note 274 and accompanying text.

311. M. MASON, *supra* note 57, at 43-44.

312. Holmes, *supra* note 8, at 21; Note, 77 MICH. L. REV. 1149, *supra* note 9, at 1163. See also M. MASON, *supra* note 57, at 42-43 (brief discussion of service bureaus with regard to attorneys).

313. See, e.g., *Matter of Community Medical Center*, 623 F.2d 864, 868 n.4 (3d Cir. 1980); *Computer Servicers, Inc. v. Beacon Manufacturing Co.*, 328 F. Supp. 653 (D.S.C. 1970), *aff'd*, 443 F.2d 906 (4th Cir. 1971); *Liberty Financial Management v. Beneficial Data*, 670 S.W.2d 40, 49 (Mo. Ct. App. 1984).

314 See *supra* note 271 and accompanying text.

315. See *supra* note 285 and accompanying text.

316. See *supra* note 274 and accompanying text.

317. See *supra* note 287 and accompanying text.

318. See *supra* note 283 and accompanying text.

319. See *supra* note 279 and accompanying text.

320. See, e.g., *Westmont Tractor Co. v. Viking Exploration, Inc.*, 543 F. Supp. 1314 (D. Mont. 1982) (lease of business equipment within article 2); *Capitol Assoc., Inc. v. Hudgens*, 455 So. 2d 651 (Fla. Dist. Ct. App. 1984) (equipment lease within article 2); *Mieske v. Bartell Drug Co.*, 92 Wash. 2d 40, 593 P.2d 1308 (1979) (article 2 applied to bailment).