5 Tex. Intell. Prop. L.J. 27

Texas Intellectual Property Law Journal
Fall, 1996

Note

A COMPARISON OF THE PTO'S COMPUTER-IMPLEMENTED GUIDELINES WITH THE CURRENT CASE LAW

Ruben Bains[a]

Table of Contents

I. Introduction

Patentability of software inventions that include mathematical algorithms has been a controversial topic for many years.[1] Nevertheless, more and more software patents are granted each year, and the numbers continue to grow. The need for patent protection for software inventions has emerged primarily because of inadequacies offered by the traditional methods of protection: copyright and trade secret laws. For example, trade secrets are only protectable if the subject matter itself is a secret, and with the continuously evolving computer industry, it is easier and easier to destroy trade secret protection by reverse engineering software ***28** inventions. Copyright laws are also inadequate since they offer protection primarily for the artistic expression, whereas the patent laws protect the functionality of, or the idea behind, the invention. As the popularity of

patenting software inventions has emerged, several courts, including the United States Supreme Court, as well as the Patent and Trademark Office (PTO), have struggled with defining a standard procedure for determining the patentability of computer-related inventions.[2] Recent court decisions have not only been inconsistent with earlier court decisions, but also in conflict with positions taken by the PTO.[3] The courts' inconsistent scrutiny regarding the patentability of software has left many in the field of intellectual property law frustrated and confused.

In order to clarify what it considers to be the present law, the PTO, on June 2, 1995, presented a set of guidelines for computer-implemented inventions.[4] Since then, the PTO has released a final version of these guidelines along with a legal analysis (the *Guidelines*).[5] These *Guidelines* are intended to be used by patent examiners in determining whether an applicant's computer invention is deserving of a patent. Given the significance of the *Guidelines*, it is necessary that those interested in seeking to obtain a patent for a computer-related invention have a clear understanding of the *Guidelines*. The purpose of this paper is to compare the PTO's new stance regarding the computer-related inventions with the current case law.

II. Brief Analysis of Case Law

In 1994, the United States Court of Appeals for the Federal Circuit decided five key cases that have had a profound impact on the patentability of computer-related inventions.[6] These cases, however, failed to articulate a cohesive set of rules that could be generally applied to computer-related inventions. In fact, the disparity among the five decisions has been one of the major instigating factors that prompted the PTO to issue the *Guidelines* in the hopes of reconciling the wide range of decisions.

*29 An analysis of these five cases reveals that the disparity of the outcomes has been largely attributed to personal views of the judges in regards to the patentability of software-related inventions. These diverse views have been classified by some commentators into three distinct categories--a restricted view, a middle view, and an expansive view.[7] The most restricted view emerged in 1972 with the Supreme Court's decision in *Gottschalk v. Benson*,[8] which held that subject matter involving a mathematical algorithm was non-statutory because the claim fell within the laws of nature exclusion.[9] In other words, if a patent applicant was prohibited from patenting the quadratic equation, then he should similarly be prohibited from obtaining a patent for a computer program that calculates the quadratic equation.

The proponents of the restricted view argue that patentable subject matter should have some minimum interaction with objects or processes external to the computer on which the program is executing.[10] An example of the restricted view is illustrated in the majority's opinion in *In re Schrader*, where the court held that the claimed method for computing the optimum bid price for a plurality of related items, such as contiguous tracts of land, at an auction was non-statutory because there was no transformation or reduction of the subject matter.[11] Although the popularity of the restricted view has declined, there are still a few judges on the Federal Circuit, such as Mayer and Archer, who still favor the conservative view.[12]

The middle view encompasses the literal meaning of the specifically enumerated categories under 35 U.S.C. § 101, which means that as long as the claims are directed to a "machine," they should be patentable subject matter.[13] This means, for example, that even a general purpose computer that is programmed to perform an algorithm would be patentable subject matter.[14] On the other hand, if a method or process involving mathematical algorithms is claimed, then it should be ***30** subjected to the *Freeman-Walter-Abele*[15] test, which seeks to identify claims that wholly preempt a mathematical algorithm from claims that do not.[16]

The *Guidelines*, in some ways, have adopted the middle view. For example, the *Guidelines* classify patentable computer-related subject matter as either machine, article of manufacture, or process. In other words, the *Guidelines* attempt to classify the claimed invention into one of the enumerated categories under Section 101, as is proposed under the middle view. The middle view was illustrated in *In re Warmerdam*,[17] where the court found a machine claim[18] to be statutory, but held that a method claim[19] and a data structure claim[20] are non-statutory. Federal Circuit Justices Lourie, Plager, Michel, and Clevinger favor the middle view.[21]

The expansive view falls on the opposite end of the spectrum from the restrictive view. The expansionists believe the Supreme Court erred in deciding that subject matter containing mathematical algorithms is non-statutory.[22] An illustration of the expansive view is witnessed in *In re Musgrave*,[23] where Justice Rich reasoned ***31** that as long as an invention was a technical application or had some technologically useful effect, it was patentable subject matter.[24]

After close analysis, it appears that the *Guidelines* are more aligned with the expansive view and the middle view than the restricted view. For instance, consistent with an expansionist's view, the *Guidelines* classify process claims with algorithms as statutory subject matter, as long as the claims have a practical technical application.[25] Several judges, such as Rader, Rich, and Newman, support the expansive view.[26] For example, in *Alappat*, Judge Rich stated:

> A close analysis of *Diehr, Flook* and *Benson* reveals that the Supreme Court never intended to create an overly broad, fourth category of subject matter excluded from section 101. Rather, ... certain types of mathematical subject matter, standing alone, represent nothing more than *abstract ideas* until reduced to some type of practical application, and thus that subject matter is not, in and of itself, entitled to patent protection.[27]

Even though Judge Rich's language is dicta, it nevertheless expresses the approach taken by expansionists. The expansive view is gaining momentum, while the restrictive view of the *Benson* era seems to be on the decline. The composition of the judges on the federal courts in the future will determine if the more liberal trend of allowing a wider range of subject matter to be patented continues.

In order to resolve the confusion regarding the patentability of computer-related inventions, the *Guidelines* attempt to take on the difficult task of reconciling the three different prevailing views.[28] It is worth noting that while the *Guidelines* are persuasive in nature, they are not the law and therefore are not legally binding on the courts. This means that the success of the *Guidelines* ultimately rests in the hands of the judges. If the *Guidelines* reflect a common ground for the majority of the judges to agree upon, then the PTO may have succeeded in its task of defining a cohesive set of rules for determining the patentability of computer-related inventions.[29]

*32 III. Computer-Related *Guidelines*

Every invention, including a computer-related invention, must first comply with 35 U.S.C. § 101, which has been broadly interpreted by the Supreme Court to include "anything under the sun that is made by man."[30] In part, Section 101 allows a patent to " w hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter."[31] Accordingly, the *Guidelines* use 35 U.S.C. § 101 as an initial step to determine patentability.[32]

A. Non-Statutory Subject Matter

At the outset, the *Guidelines* define several broad categories of subject matter that are considered to be non-statutory--natural phenomena, laws of nature, abstract ideas, functional descriptive material per se, and non-functional descriptive material.[33] These categories are not defined in any statutes, but are simply a product of what the PTO considers to be the judicially created doctrines.

The last two categories, the functional descriptive material per se and the non-functional descriptive material, are nothing more than a subset of the "abstract idea" category. The *Guidelines* enumerate these last two categories to illustrate, at least in the context of computer-related inventions, the types of subject matter that are deserving of only copyright protection, and not patent protection.

1. Natural Phenomena, Laws of Nature, and Abstract Ideas

In general, there have been several judicially created exceptions to what constitutes section 101 statutory subject matter, such as natural phenomena, laws of nature, and abstract ideas. For example, the Court in *O'Reilly v. Morse*[34] held that natural phenomena, such as electricity and magnetism per se, are non-statutory.[35] The Court, however, stated that a claim involving practical application of a natural phenomenon may be statutory.[36] For example, the defendant, Morse, was entitled to a patent for his invention of using electricity for the use of communications, but was ***33** not entitled to the exclusive use of the electricity itself.[37] Thus, barring patents for a natural phenomena is not a novel issue in patent law. The *Guidelines* illustrate that such a bar is also applicable to the computer-implemented inventions.[38]

Courts have consistently held that ideas by themselves, in the abstract, are not patentable.[39] However, an idea that is applied in a practically useful manner may be statutory and thus eligible for patent protection.[40] Additionally, claims that contain

mathematical algorithms only, and do not recite any practical utility, fall under the abstract idea, natural phenomenon, or law of nature exclusion.[41] In other words, mathematical algorithms do not themselves constitute a fourth category of exclusion. For example, claims containing mathematical algorithms have been rejected by the Supreme Court in *Diehr* as a law of nature and in *Benson* as an abstract idea.[42] While claims containing mathematical algorithms per se may be non-statutory, it shall be seen that claims consisting of mathematical algorithms, but reciting a practical utility and causing a physical transformation of the subject matter, can qualify as statutory subject matter.

2. Functional Descriptive Material--per se

Functional descriptive material, in contrast to non-functional descriptive material, is defined as "data structures and computer programs which impart functionality when encoded on a computer-readable medium," such as, computer memory or even a floppy disk.[43] Before *In re Beauregard,* the PTO regarded functional descriptive material, even if recorded on a computer-readable medium, to be non-statutory.[44] However, the PTO later changed its stance and indicated that computer programs or data structures stored on a computer-readable medium are deemed to be statutory since they are interrelated to a physical structure, such as, a ***34** computer-readable medium.[45] Thus, the *Guidelines* reflect the PTO's new stance regarding computer programs or data structures recorded on computer-readable medium. Of course, functional descriptive material, such as a computer program, that is recorded on a computer-readable medium does not automatically qualify for a patent. The claims must additionally meet the novelty and non-obviousness thresholds, just like any other patentable subject matter.[46]

While the *Guidelines* declare functional descriptive material recorded on computer-readable medium to be statutory, they deem functional descriptive material per se, such as a listing of a computer program, to be non-statutory.[47] The PTO's position in the *Guidelines* is consistent with the *In re Warmerdam* decision, where the court stated that functional descriptive material per se is non-statutory, because any compilation or arrangement of data, independent of any physical element, is non-statutory.[48] A listing of a computer program, as opposed to a computer program recorded on a computer-readable medium, is not statutory because there is no interrelation between the computer program and a physical element. Additionally, functional descriptive material per se could also be rejected as non-statutory subject matter under one of the several judicially created exclusions, namely the printed matter, the abstract ideas, the natural phenomenon or the law of nature doctrine.

3. Non-functional Descriptive Material

The *Guidelines'* third major category of non-statutory subject matter includes non-functional descriptive material.[49] The term "non-functional" refers to information stored on a computer-readable medium that has no functional purpose or interrelation to any physical structure.[50] The rationale for holding such subject matter non-patentable stems from a prior decision by the Board of Patent Appeals,[51] where the Board held that there was no "non-obvious relationship between the known substrate and the new recorded sound patterns stored in the substrate ," therefore, the substrate served no other purpose than a simple storage medium.[52] Such things as "data representing creative or artistic expression" would be construed ***35** as non-functional descriptive material.[53] Thus, the *Guidelines*, consistent with the jurisprudence, hold non-functional descriptive material to be non-statutory.

There are two justifications for holding non-functional descriptive material as non-statutory. First, the requirement of the interrelation of the recorded "information" with the physical element is not present. That is, unlike a computer program stored on a disk, which can direct the computer to perform certain tasks and thereby allow its functionality to be realized, information per se stored on a computer readable device cannot cause the computer to act such that its functionality can be realized. Second, since the information is simply a collection of knowledge, it is nothing more than expression of a non-patentable abstract idea.[54] Moreover, creative or artistic expression such as art, literature, or music are already adequately protected under the copyright laws. Giving these works additional protection would cause tension between copyright law and patent law, which would run contrary to public policy. For example, safe harbors available under copyright law, such as the "fair use" defense or the "independent creation" defense, would no longer be applicable if patent protection is extended to creative and artistic expressions that would ordinarily be protected only under copyright law.

B. Statutory Subject Matter

When examining the patentability of computer-related invention claims, the *Guidelines*, in accordance with the case law, recognize that the proposed claims may fall within the following categories of statutory subject matter:

(i) A computer or other programmable apparatus whose actions are directed by a computer program or other form of "software" is a statutory "machine."

(ii) A computer readable memory that can be used to direct a computer to function in a particular manner when used by the computer is a statutory "article of manufacture."

(iii) A series of specific operational steps to be performed on or with the aid of a computer is a statutory "process."[55]

The *Guidelines* attempt to reconcile the "middle view" and "expansive view" by arriving at a procedure for determining the patentability of computer-related inventions. The *Guidelines* parallel the "middle view" approach by classifying claims under Section 101, namely as a machine, article of manufacture, or process.[56] But in determining whether method or process claims are statutory, the *Guidelines* ***36** take an expansionist approach by allowing claims that recite an algorithm per se to be statutory, so long as the invention has a practical utility.[57]

The *Guidelines'* categorization of the claims may seem simple at first, especially if the claimed invention is exclusively a "machine," an "article of manufacture," or even a "process." However, patent examination becomes complicated if the claimed invention is a combination of one or more of the categorical elements (i.e. a known computer programmed to act in new and useful ways). The *Guidelines* seek to resolve this dilemma by providing a set of procedural steps for the examiner to follow when examining inventions that involve both hardware and software aspects.

1. Statutory Processes

a) Case Law

The Supreme Court defined a statutory process as:
> [A] mode of treatment of certain materials to produce a given result. It is an act, or a series of acts, performed upon the subject matter to be transformed and reduced to a different state or thing .... The process requires that certain things should be done with certain substances, and in a certain order; but the tools to be used in doing this may be of secondary consequence.[58]

Thus, to qualify as a statutory process, the acts must transform the appropriate subject matter such that there is a change in the physical characteristics or properties of the manipulated subject matter. In *Arrhythmia Research Tech., Inc. v. Corazonix Corp.*,[59] the Federal Circuit elaborated that the manipulation may involve intangible matter embodied in electrical signals which represent physical activity.[60] Conversely, courts have also stated that acts that simply manipulate numbers or abstract ideas are deemed not to be statutory.[61]

Today, in the technological age, it is common to have method or process claims that also recite the existence of a computer. There are two distinct uses of computers in process claims. Either the process is statutory independent of the existence of the computer and simply uses the computer to perform a specific function, or the process exists and functions exclusively within the computer. In *Diehr*, the Court held that if the use of the computer is incidental to an otherwise ***37** statutory process, the process is nevertheless statutory.[62] Thus, so long as the claimed process transforms the appropriate subject matter, independent of the computer, such that there is a change in the physical characteristics or properties of the manipulated subject matter, the existence of the computer in the claim does not make the process non-statutory.

If, on the other hand, the claimed process is implemented entirely within the computer, then the focus is on the data being manipulated by the process and on the nature and effects of the manipulation of that data. In general, a process that reconfigures the computer in whole or in part into a special purpose computer which operates in a different and useful way is deemed statutory.[63] Almost all computer processes that run exclusively within the computer can qualify as statutory subject matter by satisfying this broad definition, so long as the computer processes reconfigure the machine in a different and *useful* manner. However, qualifying as statutory subject matter is only the initial step. To be patentable, such processes must also be nonobvious, novel and fully enabled. Several cases have stated that a process that transforms and reduces intangible representations of physical objects or activities is also statutory.[64] If the representations are not of physical objects but rather are abstractions or manipulation of mathematical algorithms, then the process is non-statutory.[65]

b) Comparison of the Case Law and the *Guidelines*

The PTO's analysis of the *Guidelines*, consistent with the case law, recognizes two distinct uses of computers in process claims: either the practical application or process is solely confined to the internal operations of the computer, or the process results in a physical transformation outside the computer.[66] According to the *Guidelines*, a process falling under the latter classification is "clearly statutory if the process results in a physical transformation outside the computer."[67] A process that is solely confined to the internal operations may be statutory if the claim has a practical application and is more than manipulation of an abstract idea or an algorithm.[68]

*38 To clarify what process claims may be statutory, the PTO, in its analysis of the *Guidelines*, methodically defines what it construes to be "safe harbors" and offers several examples that are statutory.[69] For process claims that result in a physical transformation outside the computer, the *Guidelines* define two safe harbors: independent physical acts (post-computer process activity) and manipulation of data representing physical objects or activities (pre-computer process activity).[70] The *Guidelines* cite *Diehr*,[71] where the Court reasoned that acts that manipulate tangible physical objects and thus give the object a different physical attribute or structure are statutory,[72] as the basis for justifying that independent physical acts performed by the claimed process are deemed to be statutory. To illustrate a claim that would qualify under this section, the analysis of the *Guidelines* provides the following example:

> A method of curing rubber in a mold which relies upon updating process parameters, using a computer processor to determine a time period for curing the rubber, using the computer processor to determine when the time period has been reached in the curing process and then opening the mold at that stage.[73]

The second type of safe harbor identified by the PTO, the manipulation of data representing physical objects or activities, is one that involves measurements of "physical objects or activities to be transformed outside of the computer into computer data, where the data comprises signals corresponding" to physical transformation of signals "which are intangible representations of the physical objects or activities."[74] The PTO offers an example and an explanation of a claim that falls under this safe harbor:

> A method of using a computer processor to conduct seismic exploration, by imparting spherical seismic energy waves into the earth from a seismic source, generating a plurality of reflected signals in response to the seismic energy waves at a set of receiver positions in an array, and summing the reflection signals to produce a signal simulating the reflection response of the earth to the seismic energy. In this example, the electrical signals processed by the computer represent reflected seismic energy. The transformation occurs by converting the spherical seismic energy waves into electrical signals which provide a geophysical representation of formations below the earth's surface. Geophysical exploration of formations below the surface of the earth has real world value.[75]

*39 The *Guidelines* reiterate the Federal Circuit's stance by recognizing that process claims comprising manipulation of data representing physical objects or activities are statutory subject matter, as opposed to abstract ideas or mathematical functions, which are not.[76] While this rule is easily stated, some practitioners believe the real challenge is in determining whether the electrical signals or data signals represent physical objects, activities, or some abstract concepts.[77] This point is illustrated by the following example. Assume electrical signals received after monitoring a human brain are transformed by a computer program into numeric values representing a relative measure of a particular brain function such as short term memory or pattern recognition ability.[78] It is difficult to ascertain whether this transformation process would qualify as statutory subject matter. Unfortunately, the *Guidelines* do not provide any additional insight to the types of activities that would qualify as manipulation of data representing "physical" objects or activities. Instead, the *Guidelines* merely advise the patent drafter to prepare claims so that there is clearly a transformation of a physical object into a different form, where signals can be intangible representations of the physical objects or activities.

Finally, for claims in which processes exist solely within the computer, the *Guidelines* state that it is not significant how the computer performs the process, but rather what the computer does to achieve a practical application.[79] Thus, so long as the process claim has a practical application, it will be deemed statutory. To illustrate this point, the *Guidelines* state that "a computer process that simply calculates a mathematical algorithm that models noise is non-statutory." However, "a claimed process for digitally filtering noise employing the mathematical algorithm is statutory."[80] An example of a statutory process

executing within a computer is:

> A method of making a word processor by storing an executable word processing application program in a general purpose digital computer's memory, and executing the stored program to impart word processing functionality to the general purpose digital computer by changing the state of the computer's arithmetic logic unit when program instructions of the word processing program are executed.[81]

To illustrate the consistency between the *Guidelines* and the case law, it helps to apply the Guidelines to an actual case and compare the outcomes. In *In re Schrader*, the invention was a method for competitively bidding on plurality of ***40** related items, such as contiguous tracts of land.[82] The court held the method to be unpatentable for lack of statutory subject matter.[83] Under the *Guidelines*, Schrader's claim would fall within the "process" category since there is no mention of a machine or an article of manufacture. Thus, for this claim to be statutory under the *Guidelines*, the process must result in a physical transformation.[84] Here, no such physical transformation occurs. In essence, Schrader's method simply calculates and identifies the most lucrative bids; it is nothing more than a mathematical algorithm of an abstract idea. So, even under the *Guidelines*, Schrader's claim would fail to meet the statutory subject matter requirement.

2. Statutory Machines

a) Case Law

In 1863, the Court in *Burr v. Duryee*[85] defined a statutory machine to be "a concrete thing, consisting of parts, or of certain devices and combinations of devices."[86] Computers qualify under the definition of machine, whether they operate under the direction of software or other forms of instruction sets. The court in *In re Bernhart* stated that a general-purpose digital computer executing a program was deemed to become a special purpose computer.[87] Similarly in *In re Alappat*, a recent en banc decision from the Federal Circuit, the majority's opinion, though in dicta, stated that "a general purpose computer in effect becomes a special purpose computer once it is programmed to perform particular functions pursuant to instructions from program software."[88] This means that for the purpose of determining whether the claimed machine is statutory, it does not suffice to simply differentiate between a computer comprising of solely hardware elements and a general purpose computer operating under the direction of new software.

The process of determining statutory subject matter differs when analyzing a programmed digital computer versus a computer consisting solely of new hardware elements. A computer that consists exclusively of new hardware elements is deemed ***41** statutory simply because it consists of physical elements and thus naturally qualifies as a machine under Section 101. However, in analyzing whether a programmed general-purpose computer qualifies as statutory subject matter, it is necessary to determine what the computer does and the significance of the data and its manipulation.[89] This means that the underlying process performed by the computer must be analyzed to determine whether the computer-related invention is statutory. Thus, if the underlying process is statutory, so is the machine that performs the process. In determining whether the process is statutory, the procedure described above in the Statutory Process section applies.

b) Comparison of the Case Law and the *Guidelines*

The *Guidelines* are in accordance with the case law regarding the patentability of claimed inventions that encompass a machine. The PTO's analysis of the *Guidelines* define two types of machine claims.[90] A claim that defines a specific machine, as opposed to a claim that recites a general-purpose computer performing the underlying process, is statutory subject matter according to the *Guidelines* so long as the claim defines the physical structure of the machine in terms of its hardware and software.[91] On the other hand, the patentability of claimed inventions that encompass any and every machine for performing the underlying process will hinge on whether the underlying process itself is statutory. If the process is statutory, then so is the machine. Thus, the procedure set forth by the *Guidelines* for evaluating machine-claims is consistent with the case law. Additionally, the *Guidelines* describe the procedure for identifying product claims that encompass *any and every* computer implementation of a process.

The PTO's analysis indicates that a claim that encompasses any machine implementation of a process can be recognized because such a claim will "[d]efine the physical characteristics of a computer or computer component exclusively as functions or steps to be performed on or by a computer," and "[e]ncompass *any and every* product in the stated class (e.g.,

computer, computer-readable memory) *configured in any manner* to perform that process."[92] The analysis of the *Guidelines* further specifies that classification of a product claim as encompassing any and every product embodiment of a process invention does not automatically render the ***42** underlying process statutory.[93] The process has to pass muster as being statutory subject matter independent of any hardware claimed in the invention.

To illustrate the consistency between the *Guidelines* and the case law, it helps to apply the *Guidelines* to the facts of a prior case, and compare the outcomes. In *Alappat*, the invention was a rasterizer, an electronic device that converted magnitude data into intensity data usable to produce a smooth waveform display on the oscilloscope screen.[94] Alappat disclosed the structure of the claims to include: (a) an arithmetic logic circuit needed to calculate absolute value, (b) another arithmetic logic circuit to perform the absolute value function, (c) a pair of barrel shifters, and (d) a read only memory containing the intensity data.[95]

Under the *Guidelines*, since a structure of a machine is recited, the analysis begins by classifying Alappat's invention as "machine" claim. Further, the claims seem to encompass *any and every* product in the stated class; the structures recited in the claims are so broad that the conversion of the data could also be deemed to be calculated by a general purpose computer. Therefore, for claims that encompass *any and every* machine, the *Guidelines* require that the underlying process to be statutory in order for the machine to be a patentable subject matter.[96] Furthermore, for the process to be statutory, it must have a practical application. Here, the practical application is that the process converts waveform magnitude data into intensity data in order to create a smooth waveform display on the oscilloscope screen. Since prior to this invention the waveforms on the oscilloscope were discontinuous or not as smooth, Alappat's invention provided for a much needed improvement for displaying undistorted waveforms on the oscilloscope. Hence, just as the court held in *Alappat*, the *Guidelines* would also construe the invention as statutory subject matter.

3. Statutory Articles of Manufacture

a) Case Law

In *American Fruit Growers, Inc. v. Brogdex Co*,[97] the Supreme Court defined the term manufacture as "the production of articles for use from raw or prepared materials by giving to these materials new forms, qualities, properties, or ***43** combinations, whether by hand-labor or by machinery."[98] The court in *In re Lowry* stated that a computer readable medium encoded with a data structure or information may be statutory if the information encoded gives the memory a new form or structure or causes the computer to function in a practically useful manner.[99]

The analysis for determining whether computer-related claims comprising articles of manufacture are statutory is very similar to computer-related claims comprising machines. The information stored on the computer readable medium must be examined to determine whether it is statutory. Thus, to qualify as a statutory process, the encoded program must transform the appropriate subject matter in such a way that there is a change in the physical characteristics or properties of the manipulated subject matter.[100]

b) Comparison of the Case Law and the *Guidelines*

The *Guidelines* are consistent with the case law regarding the patentability of claims that encompass articles of manufacture.[101] In general, the process of determining patentability of inventions involving articles of manufacture is very similar to that involving machines. In fact, because of the similarity in assessing the patentability of both types of claims, the *Guidelines* group articles of manufacture and machines under one section labeled "Statutory Product Claims."[102]

The *Guidelines* seek to classify the claimed article of manufacture invention as a specific invention or as a product claim that "encompasses *any and every* computer implementation of a process".[103] Once again, following the same analysis as for claims that recite machines, the claims that are identified as specific articles of manufacture should define the physical structure of the manufacture in terms of its hardware or software.[104] Furthermore, in regards to a claim involving specific computer memory, the *Guidelines* require that the claim "identify a general or specific memory and the specific software which provides the functionality stored in the memory."[105]

*44 The consistency between the *Guidelines* and the case law can be illustrated by examining the facts of a prior case, *In re*

Lowry, under the *Guidelines'* rationale. Lowry's invention was a data structure that provided an efficient and more flexible method of organizing stored data in a computer memory.[106] Under the *Guidelines*, Lowry's invention would be categorized as an article of manufacture that encompasses *any and every* computer implementation of a process, which means that for the invention to qualify as a statutory subject matter, the underlying data structure must be limited to a practical application. And since the data structure in *Lowry* makes memory management more efficient and flexible during the execution of computer programs, it would be considered statutory even under the *Guidelines*. The court in *Lowry* reached the same result with similar reasoning:

> Lowry's data structures, while including data resident in a database, depend only functionally on information content. While the information content affects the exact sequence of bits stored in accordance with Lowry's data structures, the claims require specific electronic structural elements which impart a physical organization on the information stored in memory. Lowry's invention manages information. As Lowry notes, the data structures provide increased computing efficiency.[107]

C. Compliance with 35 U.S.C. §§ 102, 103 and 112

The majority of this Note has been dedicated to determining whether the computer-related inventions qualify as statutory subject matter as required by 35 U.S.C. § 101. But satisfying Section 101 is only the initial step in determining whether the invention is patentable. Sections 102, 103 and 112, which related to novelty, obviousness and enablement, respectively, also have to be satisfied. The requirements set forth in the *Guidelines* for complying with these sections do not vary much from the usual application of these sections to other inventions.[108] Below is a brief synopsis of what the *Guidelines* require of computer-related inventions to pass muster under Sections 102, 103 and 112.

Once it has been determined that the claimed invention is statutory subject matter, the *Guidelines* first require compliance with the second paragraph of 35 U.S.C. § 112, which contains two separate and distinct requirements:[109] First, the claim(s) must set forth the subject matter applicants consider as the invention.[110] Second, the claim(s) must particularly point out and distinctly claim the invention.[111] ***45** According to the *Guidelines*, a patent application will be deficient under Section 112 if there is evidence that indicates that the applicant has indicated that he considers the invention to be different from what is claimed, or if the scope of the claims is vague.[112] If the application complies with the second paragraph of Section 112, the *Guidelines* next require compliance with the first paragraph of Section 112, which has three separate and distinct requirements: an adequate written description, enablement, and disclosure of best mode.[113] If the application fails to meet any of these requirements, it will be considered deficient under Section 112, first paragraph.[114]

If the claimed computer-related invention complies with all the requirements of Section 112, the next threshold is compliance with Sections 102 and 103, novelty and obviousness, respectively.[115] The *Guidelines* acknowledge that the analysis for compliance with these sections is the same as for inventions in any field of technology.[116] In essence, if no difference is found between the claimed invention and the prior art, the claim will be rejected under Section 102 for lack of novelty.[117] It is worth noting that because the PTO has very little history of patented computer programs (i.e. prior art) in its repository, it is unclear how the PTO can adequately analyze novelty of new computer software inventions. For Section 103 compliance, one must determine whether the invention would have been obvious to a person of ordinary skill in the art.[118] If not, the claim will be rejected under Section 103.[119] The *Guidelines* iterate that "factors and considerations dictated by law governing Section 103 apply without modification to computer-related inventions."[120] Since this test is subjective, often times it is one of the major grounds for denying patents.

IV. Conclusion and Perspective

The PTO submitted a set of *Guidelines* for computer-related inventions as a means of clarifying its position on the patentability of computer-related inventions, and in the hopes of offering a common ground for the federal judges to agree upon regarding the patentability of computer-related inventions. In most respects, the ***46** *Guidelines* are consistent with current case law in that they require the invention to first meet the statutory subject requirement of Section 101, then the requirements of Section 112, and finally the requirements set forth in Sections 102 and 103. The *Guidelines* have characteristics that are representative of both the "expansive" view and the "middle" view in determining the patentability of computer-related inventions. The existence of the "middle" view perspective is apparent when the *Guidelines* attempt to classify the claimed invention as a machine, article of manufacture, or a process, as prescribed by Section 101. The

Guidelines reflect the "expansive" view in that they allow processes that recite algorithms to be statutory so long as they have a practical utility. Whether this attempt to reconcile the views will be embraced by the courts will determine the ultimate success of the *Guidelines*.

Footnotes

a   J.D. candidate, The University of Texas School of Law, May 1997.

1   Jeffrey Blatt, *Software Patents: Myth vs. Virtual Reality*, 17 HASTINGS COMM. & ENT. L.J. 795, 799 (1995) (citing 1 RICHARD L. BERNACHI ET AL., BERNACCHI ON COMPUTER LAW § 3.7 (1993)).

2   *See, e.g.*, Ronald S. Laurie and Joseph K. Siino, *A Bridge Over Troubled Waters? The PTO's Proposed Examination Guidelines For Computer-Implemented Inventions And The Federal Circuit's View(s) on Software Patentability*, 415 Patents, Copyrights, Trademarks, and Literary Property Course Handbook Series (PLI). 103, September, 1995.

3   Nellie Fischer, Comment, *The Patent Eligibility of Computer Implemented Processes in the Wake of In Re Alappat: The Diehr Standard Resurrected*, 32 HOUS. L. REV. 517, 518-19 (1995).

4   *PTO Proposed Examination Guidelines For Computer-Implemented Inventions*, 50 Pat. Trademark & Copyright J. (BNA) 164 (June 8, 1995).

5   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. 7478 (1996).

6   *In re* Schrader, 22 F.3d 290, 30 U.S.P.Q.2d (BNA) 1455 (Fed. Cir. 1994); *In re* Alappat, 33 F.3d 1526, 31 U.S.P.Q.2d (BNA) 1545 (Fed. Cir. 1994) (en banc); *In re* Warmerdam, 33 F.3d 1354, 31 U.S.P.Q.2d (BNA) 1754 (Fed. Cir. 1994); *In re* Trovato, 42 F.3d 1376, 33 U.S.P.Q.2d (BNA) 1194 (Fed. Cir. 1994); and *In re* Lowry, 32 F.3d 1579, 32 U.S.P.Q.2d (BNA) 1031 (Fed. Cir. 1994).

7   Laurie & Siino, *supra* note 2, at 105.

8   409 U.S. 63, 175 U.S.P.Q. (BNA) 673 (1972).

9   *Id.* at 67-68, 175 U.S.P.Q. at 675.

10   Laurie & Siino, *supra* note 2, at 105.

11   *Schrader*, 22 F.3d at 293-94, 30 U.S.P.Q.2d at 1458.

12   Laurie & Siino, *supra* note 2, at 138.

13   *Id.* at 106.

14   *Id.*

15   *In re* Abele, 684 F.2d 902, 905-07, 214 U.S.P.Q. (BNA) 682, 685-87 (C.C.P.A. 1982); *In re* Walter, 618 F.2d 758, 767, 205

U.S.P.Q. (BNA) 397, 406-07 (C.C.P.A. 1980); *In re* Freeman, 573 F.2d 1237, 1245, 197 U.S.P.Q. (BNA) 464, 471 (C.C.P.A. 1978).

16 *Schrader*, 22 F.3d at 292, 30 U.S.P.Q.2d at 1457. The court summarized the "two-part" test by quoting an earlier decision:
It is first determined whether a mathematical algorithm is recited directly or indirectly in the claim. If so, it is next determined whether the claimed invention as a whole is no more than the algorithm itself; that is, whether the claim is directed to a mathematical algorithm that is not applied to or limited by physical elements or process steps. ... However, when the mathematical algorithm is applied to one or more elements of an otherwise statutory process claim, ... the requirements of § 101 are met.
Arrythmia Research Tech., Inc. v. Corazonix Corp., 958 F.2d 1053, 1058, 22 U.S.P.Q.2d (BNA) 1033, 1037 (Fed. Cir. 1992).

17 *Warmerdam*, 33 F.3d at 1355, 31 U.S.P.Q.2d at 1755 (involving a method and apparatus for controlling the motion of objects such as robots to prevent collisions with other moving or stationary objects).

18 *Id.* at 1360, 31 U.S.P.Q.2d at 1759 (finding that a machine containing a "bubble hierarchy" used for controlling the motion of objects is patentable subject matter).

19 *Id.*, 31 U.S.P.Q.2d at 1758 (stating that steps for locating a medial axis and retaining a bubble hierarchy are nothing more than the manipulation of abstract idea).

20 *Id.* at 1361, 31 U.S.P.Q.2d at 1760 (holding that the data structure generated from the process of making the "bubble hierarchy" was not statutory subject matter because the data structure did not imply a physical arrangement of the contents of the memory).

21 Laurie & Siino, *supra* note 2, at 138.

22 Laurie & Siino, *supra* note 2, at 106.

23 431 F.2d 882, 167 U.S.P.Q. (BNA) 280 (C.C.P.A. 1970).

24 *Id.* at 893, 167 U.S.P.Q. at 289-90.

25 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7484 ("For such subject matter to be statutory, the claimed process must be limited to a practical application of the abstract idea or mathematical algorithm in the technological arts.").

26 Laurie & Siino, *supra* note 2, at 138.

27 *Alappat*, 33 F.3d at 1543, 31 U.S.P.Q.2d at 1556-57.

28 Laurie & Siino, *supra* note 2, at 131.

29 *Id.*

30 *Warmerdam*, 33 F.3d at 1358, 31 U.S.P.Q.2d at 1757 (citing S.REP. NO. 82-1979, at 5 (1952), *reprinted in*, 1952 U.S.C.C.A.N. 2394, 2399; H.R. REP. NO. 82-1923, at 6 (1952)).

[31]   35 U.S.C. § 101 (1994).

[32]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7481.

[33]   *Id.*

[34]   56 U.S. (15 How.) 62 (1854).

[35]   *Id.* at 112-22.

[36]   *Id.* at 114.

[37]   *Id.*

[38]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7482.

[39]   *See, e.g.*, Diamond v. Diehr, 450 U.S. 175, 185, 209 U.S.P.Q. (BNA) 1, 7 (1981); Parker v. Flook, 437 U.S. 584, 589, 198 U.S.P.Q. (BNA) 193, 197 (1978); Gottschalk v. Benson, 409 U.S. 63, 67, 175 U.S.P.Q. (BNA) 673, 675 (1973).

[40]   *Walter*, 618 F.2d at 765 ("Since a statutory invention may *employ* a scientific truth, a decision as to whether the invention utilizing such truth is statutory must necessarily rest on the relationship which the truth or principle bears to the remainder of the substance of the invention as claimed.").

[41]   *Alappat*, 33 F.3d at 1543-44.

[42]   *See Diehr*, 450 U.S. at 186, 209 U.S.P.Q. at 8; *Benson*, 409 U.S. at 71-72, 175 U.S.P.Q. at 676-77.

[43]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7481.

[44]   Steven W. Lundberg and Russell D. Slifer, *Program Product Patents: Savior or Blunder?*, 12 No. 8 COMPUTER LAW 1, 2, Aug. 1995, *available in* Westlaw, JLR database.

[45]   *Id.* at 3.

[46]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7481.

[47]   *Id.*

[48]   *Warmerdam*, 33 F.3d at 1361-62, 31 U.S.P.Q.2d at 1760.

[49]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7481-82.

50 *Id.*

51 *Ex Parte* Carver, 227 U.S.P.Q. 465 (B.P.A.I 1985).

52 *Id.* at 468 (Lindquist, C.E., concurring).

53 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7481-82.

54 *Warmerdam*, 33 F.3d at 1360, 31 U.S.P.Q.2d at 1759 (stating that the manipulation and addition of ideas does not make the idea itself patentable).

55 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 82-84.

56 *Id.* at 7482-83.

57 *Id.* at 7484.

58 *Diehr*, 450 U.S. at 183-84, 209 U.S.P.Q. at 6 (quoting Cochrane v. Deener, 94 U.S. 780, 787-88 (1877)).

59 958 F.2d 1053, 22 U.S.P.Q.2d (BNA) 1033 (Fed. Cir. 1992).

60 *Id.* at 1058-59, 22 U.S.P.Q.2d at 1037-38.

61 *Id.* at 1056-57, 22 U.S.P.Q.2d at 1035-36.

62 *Diehr*, 450 U.S. at 188, 209 U.S.P.Q. at 8.

63 *In re* Bernhart, 417 F.2d 1395, 1400, 163 U.S.P.Q. (BNA) 611, 616 (C.C.P.A. 1969).

64 *See Arrhythmia*, 958 F.2d 1053, 22 U.S.P.Q.2d 1033; *In re* Sherwood, 613 F.2d 809, 204 U.S.P.Q. (BNA) 537 (C.C.P.A. 1980).

65 *Schrader*, 22 F.3d at 292, 30 U.S.P.Q.2d at 1457.

66 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7483.

67 *Id.*

68 *Id.* at 7484.

69 *Id.* at 7483.

70 *Id.* at 7483-84.

71 *Diehr*, 450 U.S. at 187, 209 U.S.P.Q. at 8.

72 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7483.

73 *Id.*

74 *Id.* at 7484.

75 *Id.*

76 *Id.*

77 *See* Laurie & Siino, *supra* note 2, at 108.

78 *Id.*

79 Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7484.

80 *Id.*

81 *Id.*

82 *Schrader*, 22 F.3d at 291, 30 U.S.P.Q.2d at 1456.

83 *Id.* at 296, 30 U.S.P.Q.2d at 1460.

84 Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. at 7483.

85 68 U.S. (1 Wall.) 531 (1863).

86 *Id.* at 570.

87 *Bernhart*, 417 F.2d at 1400, 163 U.S.P.Q. at 616. A machine programmed in a certain new and unobvious way is physically different from the machine without that program because its memory elements are arranged differently. The fact that these physical changes are invisible to the eye does not mean that the machine has not been changed. *Id.*

88 *Alappat*, 33 F.3d at 1545, 31 U.S.P.Q.2d at 1558.

89   Arrhythmia Research Tech., Inc. v Corazonix Corp., 958 F.2d 1053, 1057, 22 U.S.P.Q.2d (BNA) 1033, 1036 (quoting *In re* Bradley, 600 F.2d 807, 811-812, 202 U.S.P.Q. (BNA) 480, 485 (C.C.P.A. 1979)).

90   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7482 (stating claims can either be directed to specific machines or the claims could encompasses any and every machine for performing the underlying process).

91   *Id.* at 7483.

92   *Id.* at 7482 (emphasis added).

93   *Id.*

94   *Alappat*, 33 F.3d at 1537, 31 U.S.P.Q.2d at 1551-52.

95   *Id.* at 1539, 31 U.S.P.Q.2d at 1553.

96   Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. at 7482.

97   283 U.S. 1 (1931).

98   *Id.* at 11.

99   *Lowry*, 32 F.3d at 1583-84, 32 U.S.P.Q.2d at 1035.

100   *See Carver*, 227 U.S.P.Q. at 468 (Lindquist, C.E. concurring).

101   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7482.

102   *Id.*

103   *Id.* (emphasis added).

104   *Id.* at 7483.

105   *Id.*

106   *Lowry*, 32 F.3d at 1580, 32 U.S.P.Q.2d at 1032.

107   *Id.* at 1583, 32 U.S.P.Q.2d at 1032.

108   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7481-87.

[109]   *Id.* at 7486.

[110]   35 U.S.C. § 112 (1994).

[111]   *Id.*

[112]   Examination Guidelines For Computer-Related Inventions, 61 Fed. Reg. at 7478, 7485.

[113]   35 U.S.C. § 112 (1994).

[114]   *Id.*

[115]   *Id.* at 7487.

[116]   *Id.*

[117]   *Id.*

[118]   35 U.S.C. § 103 (1994).

[119]   *Id.*

[120]   Examination Guidelines for Computer-Related Inventions, 61 Fed. Reg. at 7478, 7487.