Essay No. 1 ~ WHAT CAN YOU DO WITH A NEW IDEA? Discovery, invention, creation: what do these terms mean, and what does it mean to invent something?

Introduction

This article[1] explores the nature of ideas as discoveries and inventions, of discovering or creating something new, what distinguishes discovery from invention, and briefly analyzes how these activities are viewed under the provisions of the copyright and patent laws to protect or acknowledge the rights of the author, discoverer, and inventor.

The terms "discovery," "invention," and "creation" are all forms of human mental or intellectual activity, sometimes accidental but often intentional. It is activity that adds to the store of human knowledge, and very often enhances our lives, either in practical ways or simply in new understanding of some thing or idea.

Sometimes when we engage in some activity our minds will become conscious of a new thought, often while working on a problem such as trying to improve a product or service in our business or in our home. Or, while engaged in some activity we experience a new thought or insight into something familiar, or while looking at or examining a thing some new aspect is revealed to us.

These new thoughts are new ideas – some new product of the imagination. If the idea or thought is a new awareness of something that existed but was unknown, the act of becoming conscious of it is an act of discovery. For example, when a researcher examines a sample of tissue from a living thing and identifies a protein not previously known, that is one type of discovery. This type of discovery may be called a "*knowledge discovery*" because it is discovery of new knowledge or facts. The living tissue containing the protein existed all along until it was discovered. Another type of discovery is finding a new way to solve a problem – a way that is novel or original. Since this type of discovery possesses utility, we may call this type of discovery a "*utility discovery*."

If the utility discovery is creation of a new solution to a problem that was unknown and did not exist before, or at least was unknown to the discoverer, the act of becoming conscious of it and conceiving or creating it may be an act of invention. Often the solution is a new thing that results from combining two or more things to form a new combination. For example, when a person seeks a way to detect tampering with a lock, and creates a feature of the lock that indicates tampering, that is an invention. Before the invention, the feature did not exist in the lock, so to create that previously non-existent feature is an act of invention.

Notice one distinction between discovery and invention – whether the idea was about a unit of knowledge about something that *existed* before anyone became aware of or discovered it,

[1] The sole purpose of this article is to provide general information. It should not be relied on for legal advice. Readers with specific questions should confer with their independent legal counsel.

or whether the idea was about something that *did not exist* before becoming aware of or inventing it, in other words, before originating, conceiving, or creating it. Another characteristic of invention is that an invention almost always has the quality of utility – it is useful for some purpose, often such as solving a problem encountered by the inventor.

Protection by Copyright or by Patent

Things discovered and things invented can have value and should be protected . . . or at least, the originator should be acknowledged. The United States Constitution recognized this in Article 1, Section 8, Paragraph 8, which states that one of the powers of Congress is: "To promote the progress of science and the useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." Notice the parallel association of the phrases (a) "authors and their writings," and (b) "inventors and their useful discoveries." This passage clearly applies to works of authorship, discoveries, and inventions because both the copyright laws and the patent laws are authorized by this passage. Notice also that both "knowledge" and "useful" discoveries are encompassed by this clause of the Constitution, and that inventions include "useful discoveries."

Knowledge Discoveries

Discoveries of the "knowledge" type most often add to the store of human knowledge. Therefore it is wise policy to not foreclose the use of that knowledge by other persons. The copyright laws permit a discoverer of new knowledge to write about it and make it known by publishing it to all who wish to read about it, while protecting that author's written work from unauthorized copying by others.

Thus an article written by a scholar about a new discovery is one example of a work of authorship that can be protected under the copyright law. In addition to marking the published work with the notice of copyright, the copyright for the work may be registered in an application to the Library of Congress of the United States.

"Copyright protection subsists . . . in original works of authorship fixed in any tangible medium of expression, now known or later developed, from which they can be perceived, reproduced or otherwise communicated, either directly or with the aid of a machine or device." 17 U. S. Code §102. Works of authorship that may be copyrighted include literary, musical, and dramatic works; pantomimes and choreographic works; pictorial, graphic and sculptural works; motion pictures and other audiovisual works; sound recordings, and architectural works. The category of literary works includes computer programs.

Utility Discoveries

Similarly, inventions, including "useful discoveries," contribute to the progress of the useful arts – for example improvements in products, services, and processes – thereby advancing

the progress of human activity. The patent laws therefore grant special but limited rights to inventors of something useful for a particular purpose, by disclosing the invention in a patent (a form of publication) as long as it does not preempt applying the concept or principle of the invention for purposes other than the particular one disclosed in the patent.

Patent Eligibility

Inventions that are eligible for patenting are generally defined by 35 U. S. Code §101 as follows: "Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title." Note how the phrasing of this statutory provision uses the term "discovers" in the sense of "useful discoveries."

Computer code, which is defined as a literary work, is an example of both a work of authorship that can often (but not always) include or be part of an invention. For example, newly created computer code that improves the operation of a computer may be a work of authorship that is published and copyrighted and also be subject matter that is properly disclosed in a patent. The author or inventor may apply for a patent in an application for patent to the United States Patent and Trademark Office.

Section 101 of the Patent Statute (35 U.S. Code) states that patents can be obtained for "any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof." One of these four categories of subject matter that may be patented, "processes," deserves elaboration. This is because some processes that contain so-called "abstract ideas" receive special scrutiny under the statute and the applicable case law.

The case law referred to above defines certain "judicial exceptions" to the permitted processes – kinds of processes that cannot be patented because they are considered to be an abstract idea. Examples include a mathematical formula, an algorithm, a law of nature or a natural process. These are exceptions because abstract ideas and algorithms are considered purely mental concepts that do not fit within the categories of "new and useful" *things* as defined in the statute. Further, a law of nature and a natural process are not eligible for patenting because they only become known by discovery, not by invention.

Computer Software

One particular type of subject matter of inventions that occurs very often as inventors seek solutions to problems – in developing new products or materials, more efficient ways to manufacture something or control a machine, for example – is the principal role computer software plays in so many innovations. Because of their versatility, computers are frequently programmed to perform some useful process. Inventions for such processes necessarily include the software as part of their "structure." This can be problematic because software, a sequence of steps for accomplishing something, is often considered to be little more than a series of mental

steps, especially when the steps involve calculations, as so many computer operations have when broken down to their most elemental form.

Recently, the U. S. Patent and Trademark Office ("PTO") has developed the "*July 2015 Update: Subject Matter Eligibility"* ("*2015 Guidelines*") to assist examiners in reviewing inventions for compliance with the statutory requirements for "subject matter eligibility" under Section 101 of the Patent Statute. (See: 80 Fed. Reg. 45429 (7/30/2015)) The *2015 Guidelines* are an update of a previous "*2014 Interim Guidance*" issued by the PTO following the U. S. Supreme Court decision in *Alice Corp. v. CLS Bank International*, 134 S. Ct. 2347 (2014) (hereinafter, *Alice*).

These patent eligibility guidelines for examiners are adapted from recent cases decided by the U. S. Supreme Court and the Court of Appeals for the Federal Circuit. The guidelines – which enable the "special scrutiny" noted above – tend to be broadly interpreted by PTO examiners. For example, any claim for an invention that includes software may be deemed ineligible; *even if* the software comprises only part of the combination of process steps or structural features recited in the claim.

Under the *2015 Guidelines* a claim that recites a computer controlled by software is reviewed for "something more" than a "generic computer" that performs only "routine" operations. One test the examiner uses is to look for an "inventive step" that supplies the "something more" and suggests that the recited invention is truly eligible for patenting. The "something more" may be an "improvement in a technical field," a solution to a "technological problem," or an improvement to "the functioning of the computer itself." In recent case law, improvements to the functioning of the computer have had some success in passing muster under Section 101 of the Patent Statute.

Patent Eligible Examples

A recent District Court case, *Gonzalez v. Infostream Group*, (E.D. Texas, Feb. 6, 2016), held that when *a claim as a whole* is directed to an "inventive concept" that recited a "specific implementation of the abstract idea" embodied in the claimed invention, then the invention is eligible for patenting. Thus, to be eligible for patenting, it appears that an invention that includes a computer controlled by software is limited to a specific implementation or must at least be a machine that is no longer generic because it is particularly configured to perform the claimed invention without employing merely routine computer operations.

The most concrete example cited in the *2015 Guidelines* of a patent eligible invention that uses a computer is the invention claimed in *Diamond v. Diehr*, 450 U.S. 175 (1981). In a process for curing rubber, an algorithmic step of that process recited the calculation of an "Arrhenius" equation. Thus, one part of the invention involved an abstract idea – a mathematical formula – and also contained the "something more" required under the guidelines. Here, the Court found the claim *as a whole* eligible under Section 101 because the algorithmic step was

part of a process that involved additional concrete steps. The other steps included physical operations, such that the entire claimed combination provided an improved solution to a technical field.

Most inventions, at some level, originate as abstract ideas to solve a problem or accomplish a useful purpose. The foregoing case is an example of invention – the application of a fundamental *engineering* practice to devise a combination of structural and/or process/functional components or steps to accomplish a useful objective or to solve a problem. The result of invention, if it is novel and not an obvious combination, is usually an advancement in the state of the art in the field of the invention.

To extend this idea broadly, a fundamental engineering practice is the process of solving a technical problem by applying the principles of science and engineering. Sometimes the conception or insight occurs intuitively. More often the insight emerges systematically through design, testing, and refinement. These same methods can be applied to solve problems in many fields, even non-technical ones. The field of business, for example, which may be defined as the activity of engaging in transactions for some productive purpose, is a field of numerous opportunities for finding useful ways to enable, facilitate, or improve the efficiency of the transaction, very often through the application of technology to it.

Ineligible Inventions

The *2015 Guidelines* also provide examples of subject matter that is not eligible for patenting. One such example is from the *Alice* case involving a "computer-implemented scheme for mitigating 'settlement risk' (i.e., the risk that only one party to a financial transaction will pay what it owes) by using a third party intermediary." The Court found the claims of U. S. Patent No. 5,970,479 ineligible because, first, the claims were "directed to a patent-ineligible concept . . .the abstract idea of intermediated settlement," which the Court also concluded was an example of a "*fundamental economic practice*," broadly found ineligible under an earlier case, *Bilski v. Kappos*, 561 U.S. 593 (2010). Second, the Court also found that the claims of the '479 patent "merely require generic computer implementation [which fails] to transform that abstract idea into a patent-eligible invention."

Thus, the *2015 guidelines* adopt a policy that in substantial effect (a) excludes any invention containing an abstract idea that is implemented by a software-controlled computer found to perform nothing more than generic steps – a policy conveniently (to patent examiners) applicable to virtually any computer process; and (b) defines a fundamental economic practice ineligible for patenting because any such practice or activity is nothing more than an abstract idea – a mere product of the imagination, a mental step – i.e., an abstract idea – that itself lacks physical reality and transforms nothing. These policies thus act to foreclose virtually any innovation in economic fields that involves a software controlled computer to facilitate a decision or perform a service in the commercial, business, and economic field.

Conclusion

These issues of the eligibility of software-based inventions and the ineligibility of fundamental economic practices, both relevant to a so-called "Computer Business Method" ("CBM"), are far from settled and thus are subjects for a different discussion. However, innovation continually occurs in business – which is largely about engaging in and facilitating commercial and non-commercial transactions – i.e., "commerce with foreign nations, and among the several states, and with the Indian Tribes." See: The United States Constitution, Article I, Section 8, Clause 3. Thus, there exists an ongoing justification for ways to protect innovation in the business arena. In the largest sense, there will be demand for ways to protect the rights to new ideas in these fields.

For now, any software developed to improve efficiency and productivity or provide functionality not heretofore available should include a copyright notice in its source code and be further protected by registering the copyrights of its author in the Library of Congress. If the software is part of a system – a combination of software and a computer, a network, a machine, etc. – then a patent attorney should be consulted to consider whether patent protection should be sought.

In an essay to follow, we will explore some concrete steps for protecting your invention.

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