Patenting of Software and Electronic Technologies in the United States

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Legal Foundation for Patents in the U.S. is Broad and Strong

[Congress shall have Power] To promote the Progress of Science and useful Arts, by securing for limited Times to Authors and Inventors the exclusive Right to their respective Writings and Discoveries... U.S. Constitution, Article I, Section 8

Policy: Encourage innovation and advancement of technology by offering a limited monopoly in exchange for a disclosure of their invention so that the invention may be made, used and improved upon by others

Therefore, inventors from around the world can obtain U.S. patents on ...
“everything under the sun made by man”

Whoever **invents** or discovers **any** **process, machine, manufacture or composition of matter**, or any new and useful improvement thereof, may obtain a patent therefor... 35 U.S.C. Section 101

Section 101 is the first threshold to be met for patentability

Section 101 is a separate consideration for patentability apart from issues of novelty (Section 102) and non-obviousness (Section 103)
“everything under the sun made by man” (... almost)

The following do qualify for patents:
- Business methods and operational methods and improvements
- Apparatus (electronic devices) performing business methods
- Applications of laws of nature or mathematical formulae
- Media encoded with software
- Methods for transforming signals representative of physical measurements
- Methods for using signals to control or improve a process
- Non-naturally occurring living organisms (composition)

The following do not qualify for patent protection
- Principles
- Laws of nature
- Mental processes/Abstract ideas
- Natural phenomenon
- Mathematical formulae
- Software (per se)
Most current law on patentable methods – Bilski

An applicant may show that a process claim satisfies 35 U.S.C. § 101 by showing

that the claim is tied to a particular machine

OR

that the claim transforms a (physical) article into a different state or thing
Bilski rendered prior tests for patentability inapplicable

- It is insufficient for a claim to merely have “a useful, concrete and tangible result.”

- To the extent that the Federal Circuit decisions in State Street Bank and AT&T rely solely on the “useful, concrete and tangible result” test, such decisions should not be relied upon.

- Federal Circuit did not make a general prohibition against “business method” patents. However, such business method patents often refer to abstractions, which may be difficult to satisfy the “transformation” branch of the machine-transformation test for patent-eligibility under 35 U.S.C. § 101.

- Purported transformations or manipulations simply of public or private legal obligations or relationships, business risks, or other such abstractions cannot meet the test because they are not physical objects or substances.
Discussion of *In re Bilski – Claim language*

A method for managing the consumption risk costs of a commodity sold by a commodity provider at a fixed price comprising the steps of:

(a) initiating a series of transactions between said commodity provider and consumers of said commodity wherein said consumers purchase said commodity at a fixed price based upon historical averages, said fixed rate corresponding to a risk position of said consumer;

(b) identifying market participants for said commodity having a counter-risk to said consumers; and

(c) initiating a series of transactions between said commodity provider and said market participants at a second fixed rate such that said series of market participant transactions balances the risk position of said series of consumer transactions.
Discussion of *In re Bilski*

Source of commodity → Intermediary → User of commodity

**Market participant**

**Commodity Provider**

**Consumer**

Sell commodity at Price 2 to balance risk against consumer price variations

Sell commodity at Price 1, based on historical average

**Example:**

Consumer is an electric company that needs to buy coal (commodity). If Price 1 increases, consumer takes bulk of risk.

Market participant is the coal provider. If Price 2 decreases, market participant takes bulk of risk.

The intermediate “commodity provider” moderates the risk by setting Price 1 and Price 2 to thereby “hedging” risk.

Invention also pertained to sale of “options”, i.e. rights to buy or sell at particular price in particular timeframe.
The Examiner rejected the claims because “the invention is [admittedly] not implemented on a specific apparatus and merely manipulates an abstract idea and solves a mathematical problem without any limitation to a practical application, therefore the invention is not directed to the technological arts.”

The Board of Appeals did not accept the “no technological art” basis of the rejection but acknowledged that even if a claim is not directed to a specific apparatus, the claim may still be directed to statutory subject matter “if there is a transformation of physical subject from one state to another.”

The Board concluded that transformation of “non-physical financial risks and legal liabilities of the commodity provider, the consumer and market participants” is not patent-eligible subject matter.
Background of Analysis

35 U.S.C. §101: In 1952, Congress amended §101 to include processes, the ordinary meaning being “[a] procedure ... [a] series of actions, motions or operations definitely conducing to an end, whether voluntary or involuntary.”

General statutory definition narrowed by Supreme Court precedent: a process is not patent-eligible if it claims “laws of nature, natural phenomenon, [or] abstract ideas.”

Laws of nature, natural phenomenon and abstract ideas are basic tools of scientific and technological work. One must look to the scope of the exclusion sought by the claims to see if process is patent-eligible.
Examples used in *Bilski* Analysis

*Diamond v. Diehr*: Patent application for claim using a standard known equation (Arrhenius equation) and applying to process for curing synthetic rubber was held to be statutory.

The process included several specific steps to control the curing of rubber more precisely: “These include installing rubber in a press, closing the mold, constantly determining the temperature of the mold, constantly recalculating the appropriate cure time through the use of the formula and a digital computer, and automatically opening the press at a proper time.”

The Supreme Court drew a distinction between claims that seek to pre-empt the use of a fundamental principle and claims that seek only to foreclose others from using a particular application of the fundamental principle.
Examples used in *Bilski* Analysis

*Gottschalk v. Benson:* Claims drawn to a process of converting data in binary coded decimal (BCD) format to pure binary format via an algorithm programmed into a digital computer was held to be patent-ineligible.

Though tied to a machine (computer), the recitations were not limiting because the fundamental principle at issue, the BCD to binary conversion, had no utility other than operating on a digital computer. Thus, the claim’s tie to a digital computer did not reduce the pre-emptive footprint of the claim since all uses of the algorithm (the general computer art) were still covered by the claim.
Corollary results from the basic “pre-emption” considerations

A “field of use” limitation does not sufficiently limit the claim to reduce its pre-emptive footprint, since it still purportedly pre-empts all applications in a field, rather than particular ones.

Insignificant post solution activity (or extra-solution) activity will not be sufficient to render non-patent-eligible subject matter statutory.

Data gathering is not sufficient “physical” step.

Display of a mere number resulting from calculation is not sufficient.
Examples of the Physical Transformation Requirement

A claim reciting a process of graphically displaying variances of data from an average value is not patent eligible. Such claim does not specify any particular type or nature of data or how or from where the data was obtained or what the data represented. Abele

A claim reciting x-ray attenuation data produced in two-dimensional form by a computed tomography scanner is patent-eligible. This data clearly represented physical and tangible objects, namely the structure of bones, organs and other body tissues. Abele

A claim limited to visual depiction that represents specific physical objects or substances does not pre-empt all uses of the principle.

A claimed method of conducting an auction of multiple items in which total bids maximized the price of the items is not statutory. In re Schrader
Conclusions NOT to draw from *Bilski*

Bilski does not preclude patentability of business methods as a category.

Bilski does not require a “technological” arts test to be applied to the claimed subject matter.

Bilski does not re-instate the Freeman-Walter-Abele test regarding recitation of algorithms in claims (e.g. determination of presence of algorithm and whether algorithm is applied to any physical steps).
Summary of Conclusion

An applicant may show that a process claim satisfies 35 U.S.C. § 101 by showing

that the claim is tied to a particular machine

OR

that the claim transforms a (physical) article into a different state or thing
USPTO practice in view of Bilski – Early cases

U.S. Examiners are requiring each computer-implemented method to be tied to a particular machine
- Risks of complying with “tied to machine” requirement – the patent holder may be left with unduly narrow patent rights (for example, certain single processor or multiple processor configurations may be required).

U.S. Examiners are effectively ignoring any transformation tests and transformation arguments
- Over-cautious action on part of examining corps
- May result from the holding that ‘field of use’ and ‘insignificant post solution activity’ will not remedy a claimed method that otherwise fails the ‘tied to machine’ test
- Examiners are requiring recitation of a processor in the body of method claims
USPTO practice in view of Bilski – Interim Guidance

U.S. Examiners must consider whether the claimed method will essentially pre-empt the entire application of a methodology (e.g. BCD to pure binary conversion on a computer) – Not patent eligible

or

the claimed method is drawn to a particular application of the method (Patent eligible)

U.S. Examiners are instructed to find that the “transformation” test is met in cases where transformation of electronic data is such that the data has been changed such that it has a different function or is suitable for different use

U.S. Examiners must also consider whether claim language includes the excluded areas of “abstract ideas, laws of nature, natural phenomenon”
USPTO Interim Guidelines for Subject-matter patent eligibility (Part I) – Effective Autumn 2009
Method Claim Analysis “A” Interim Guidelines Part II

A method of evaluating search results comprising:

- sorting results into groups based on a first characteristic;
- ranking results based on a second characteristic;
- comparing the ranked results to a reference to evaluate success of search.

No machine, no transform NOT eligible for patent
Method Claim Analysis “B” Interim Guidelines Part II

A method of evaluating search results comprising:
- sorting results into groups based on a first characteristic;
- ranking results based on a second characteristic;
- comparing the ranked results, using a computer, to a reference to evaluate success of search.

Recites machine, but no transform - IS eligible for patent
Method Claim Analysis “C” Interim Guidelines Part II

A method of evaluating search results comprising:

- obtaining results by download from database
- sorting results into groups based on a first characteristic;
- ranking results based on a second characteristic;
- comparing the ranked results to a reference to evaluate success of search.

No machine, no transform - NOT eligible for patent
A method, comprising:
normalizing by a processor operands $a$, $b$, $c$ for a floating-point operation;
predicting by the processor whether result $d$ of said floating-point operation on said $a$, $b$, $c$ might be tiny;
if so, then scaling by the processor said $a$, $b$, $c$ to form $a'$, $b'$, $c'$;
calculating by the processor result $d'$ of said floating-point operation on said $a'$, $b'$, $c'$;
determining by the processor whether said $d$ is tiny based on said result $d'$;
if so, then calculating by the processor said $d$ using software; and
if not, then calculating by the processor said $d$ using floating-point hardware.
Board of Appeal Examples – Cornea-Hasegan

A method, comprising:
normalizing by a processor operands \( a, b, c \) for a floating-point operation;
(Board indicated that the processor was not a particular processor and thus could not pass “machine” prong of the machine-or-transformation test)...
predicting by the processor whether result \( d \) of said floating-point operation on said \( a, b, c \) might be tiny; (Result \( d \) is just an abstract number)
if so, then scaling by the processor said \( a, b, c \) to form \( a', b', c' \);
calculating by the processor result \( d' \) of said floating-point operation on said \( a', b', c' \);
determining by the processor whether said \( d \) is tiny based on said result \( d' \);
if so, then calculating by the processor said \( d \) using software; and
if not, then calculating by the processor said \( d \) using floating-point hardware. (Calculations of \( d \) (by either software or hardware) or insignificant post-solution activities).

Claim is not patent-eligible subject matter under Section 101
Board of Appeal Examples -- Noguchi

A transmission control method of a request message generated according to a form of a web page, the method comprising the steps of:

- inspecting whether the request message includes a code that is dependent on a source file of the Web page;
- analyzing the code using related portions of the code described in the source file when the request message includes the code; and
- determining whether or not to allow transmission of the request message depending on whether an analysis result of the code corresponds to the restricted information that is used to restrict the transmission.

Examiner believed that claim satisfied Section 101, but not non-obviousness (Section 103) requirements.

The Board reversed the Section 103 rejection. Claim satisfied all requirements of non-obviousness.
A transmission control method of a request message generated according to a form of a web page, the method comprising the steps of:

- inspecting whether the request message includes a code that is dependent on a source file of the Web page;
- analyzing the code using related portions of the code described in the source file when the request message includes the code; and
- determining whether or not to allow transmission of the request message depending on whether an analysis result of the code corresponds to the restricted information that is used to restrict the transmission (Board appeared to be willing to admit that this last step was a transformation).

However, Board applied new Section 101 rejection because the claim was not tied to a particular machine.

New rejection under Section 101 seems inappropriate since even under Bilski, the test is a “machine – or – transformation”
A method of representing information, said method comprising:
generating a first software object comprising a first node;
generating a second software object comprising a second node;
generating a third software object comprising a nexus that connects said first node and said second node; and
performing at least one of the following:
generating a fourth software object as a third node, said third node comprising said first node, said second node and said nexus; and
generating a fifth software object as a fourth node, said fourth node comprising said nexus.
Claiming Strategies – Physical operations

Include step of generating or obtaining a signal that represents a physical entity (a light quantity, an ink quantity, a biological condition or event)

Output the signal as a viewable format (display or print)

Transform the signal and/or

Make an adjustment or provide a course of action based on that signal

Incrementally combine one or more of the above transformations to clearly indicate the physical transformation sought to be protected

Incrementally limit the process to particular types of signal representations to gradually narrow the pre-emptive field

Relate the process to a recited (particular) machine
Claiming Strategies – Business or Operational Methods

Include step of generating or obtaining a signal that represents personal data or financial data

Transform the signal and/or
Make an adjustment or provide a course of action based on that signal

- Allow a transaction
- Prohibit or terminate a transaction
- Convert the data to a form of a different type
  - Data storable in format A is changed to data storable in format B
- Improve data processing of data in one format over data of another format
  - Process is faster in one format versus another
  - Process is less burdensome on resources in one format versus another
- Analyze stored data to provide a suggested course of action

Incrementally limit the process to particular types of signal representations to gradually narrow the pre-emptive field

Relate the process to a recited (particular) machine
A few words on the Supreme Court hearing

Questions Presented:

1) Whether the Federal Circuit erred by holding that a process must be tied to a machine or apparatus, or must transform an article to a different state or thing (“machine or transformation test”) to be eligible for a patent under Section 101, despite the Supreme Court’s precedent declining to limit the broad statutory grant of patent eligibility for “any” new and useful process, beyond excluding patents for laws of nature, abstract ideas and natural phenomenon.

2) Whether the Federal Circuit’s “machine or transformation” test for patent eligibility effectively forecloses meaningful patent protection for any business methods is in contradiction to Congress’ clear intent that patents protect method of doing business (under Section 273 of the U.S. Patent code).
Neither the Supreme Court Justices nor the U.S. Patent Office showed any interest in removing “business methods” from patent-eligible subject matter. Therefore, patents for “business methods” and “operational methods” should remain patent-eligible.

Both the Supreme Court Justices and The USPTO were focused on attempting to determine any kind of “transformation” in the Bilski claim. Any patent-ineligibility is likely to be limited to the narrow facts raised by the Bilski claim recitations.
Questions?

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Thank you.