Patent Law

- Slides for Module 2
- Patent Eligibility

The first element of Patentability – Patent eligibility

- ***Patentable subject matter***, i.e., patent "eligibility"
  - ***Useful/utility*** (operable and provides a tangible benefit)
  - ***New*** (statutory bar, novelty, anticipation)
  - ***Nonobvious*** (not readily within the skills of a PHOSITA at the time the invention was made)
  - ***Specification & claiming requirements***

Utility Patents vs. Other forms of IP Protection

Utility Patents	**Copyrights**
• Processes • Manufactures • Machines • Compositions of Matter •Must have "utility" • No category for "raw data" • Does not protect: abstract ideas, laws of nature, natural phenomena	• "Works of Authorship": writings, musical compositions and recorded music, paintings, sculpture, movies, architecture • Does not protect: "ideas" (includes raw data), useful features of products/innovations (but cf. software) • May overlap with "design patent"
Trademarks	**Trade Secrets**
• Words, phrases or symbols that represents the origin of a product (e.g., logos, brand names) • But also representational forms of packaging, scents, etc. (e.g., blue Tiffany box) • May overlap with "design patent"	• All subject matter covered by patents (any types) and copyrights plus abstract ideas, laws of nature, natural phenomena, and raw data/information • "formula, pattern, compilation, program, device, method, technique, or process." UTSA § 1(4).

Claims

- Claims are the heart of the patent system
- Inventors are those who thought of something covered by the claims (may not know who they are until claims are drafted)
- Claims define the scope of coverage of the right to exclude
- Those who operate within the language of the claim are subject to an infringement action

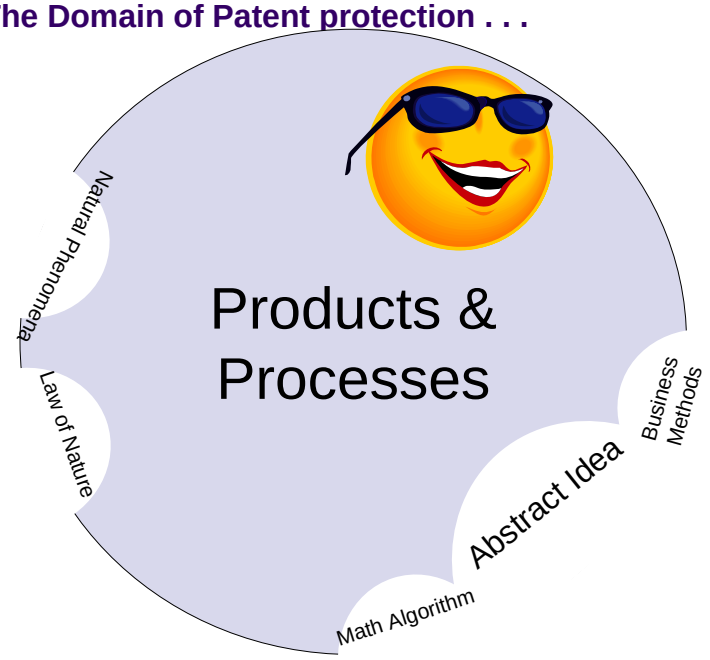
35 USC §101

> 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

35 USC §101

- Traditionally, discoveries in three areas do not qualify:
  - natural laws
  - phenomena of nature
    - But note “isolated and purified” exception
  - abstract principles
- The statutory terms refine and define “useful arts”
  - A “process” is a series of acts which are performed upon subject matter to produce a given result
  - A “machine” means any apparatus
  - A “composition of matter” means synthesized chemical compounds and composite articles
  - An article of “manufacture” is a broad term that can capture almost any useful technology

The Domain of Patent protection . . .



Chakrabarty

- Patent application for genetically engineered bacteria
  - It had the property of breaking down multiple components of crude oil
  - Its intended application was to treat oil spills (never field tested or applied)
- Claim to the bacteria itself:
  - "a bacterium from the genus *Pseudomonas* containing therein at least two stable energy-generating plasmids, each of said plasmids providing a separate hydrocarbon degradative pathway."
- Various other claims in other claim formats
- Issue – is the bacteria a “manufacture” or “composition of matter” within the meaning of those terms as they apply from 35 U.S.C. §101?

Chakrabarty

- Mode of analysis (in essence common to all of the patent eligibility cases)
  - First, determine whether the claim is "within" the meaning of one of the four statutory terms
    - Apply statutory interpretation "argument categories"
      - Meaning of the words (statutory definitions, plain meaning, canons of construction, past court opinions on the meaning)
      - Inferences from the provisions or structural characteristics of the statute or other related statutes (same word used in other places in the statute, significance of sectioning, divisions, cross-references, etc.)
      - Legislative History (a number of principles and "canons" are sometimes used to structure use of legislative history; for example, the sometimes employed doctrine that the legislative history should only be authoritative if the statutory language is ambiguous)
      - Policy and/or historical arguments
  - Second, even if the analysis from the first step seems to indicate that the claim is within one of the terms, evaluate whether the claim fits into one of the three remaining exceptions to patent eligibility
    - These exceptions are judicially created, so the mode of analysis looks more like the common law than like statutory interpretation (for example, the line of cases dealing with the now mostly defunct "mathematical algorithm" exception)
  - One always needs the first step; even if its dubious whether an exception applies courts often (and it is advisable) to at least mention that

Chakrabarty

- PTO rejection
  - Examiner rejected bacterial claims on two grounds
    - micro-organisms are "products of nature"
    - that as ***living things micro-organisms are not patentable subject matter under § 101***.
      - A new "proposed" exception, or does it fit within one of the three exceptions? (natural phenomenon? but, human-made)
- Meanings of terms
  - Manufacture
    - produce articles for use from raw or prepared materials by giving these materials new forms, qualities, properties, or combinations
  - Composition of matter
    - all compositions of two or more, all composite articles – whether chemical or mechanical union/mixture, whether gases, fluids, powers or solids
  - Both "wide scope" terms

Chakrabarty

- Legislative History
  - Language of 101 tracks closely with Jefferson's originally authored 1793 patent act
  - Embodies Jefferson's philosophy that "ingenuity should receive a liberal encouragement"
  - Congress intended patentable subject matter to include "anything under the sun that is made by man" [legislative history]
- Exceptions - Physical phenomena?
  - Compare to Funk (US 1948):
    - Applicant discovered certain bacteria whose characteristics where such that when mixed together they assisted the process of nitrogen fixation in plant roots
    - In rejecting the application the court said that the "use in combination does not improve in any way their natural functioning"
    - "they perform in their natural way"
  - Chakrabarty's bacteria has "markedly different characteristics" from those in nature
  - Charkabarty ***transformed*** the natural bacteria into his own handiwork

Chakrabarty

- First counter argument
  - 1930 Plant Patent Act (seedless "asexual" reproduction)
  - 1970 PVPA (sexual reproduction, excluded bacteria)
  - Passage of both acts evidences congressional understanding that "manufacture" or "composition of matter" do not include living things – if they did, neither act necessary
    - Only one specific PPA legislative history provision stating that "the patent laws . . . at the present time are understood to cover only . . . inanimate nature"
- Not persuasive because there were other reasons to pass both acts
  - PPA – work of the breeder "in aid of nature" was patentable
    - Prior to 1930, even artificially bred plants considered "products of nature" (an instance of "natural phenomena")
    - Written description problem for plant patent (may differ only by color or perfume) (relaxed by PPA)
    - ***Relevant distinction is not between living and inanimate things, but between products of nature, whether living or not, and human-made inventions***
  - PVPA – sexually reproduced plants not included in PPA because new varieties could not be reproduced true-to-type through seedlings in 1930
    - PVPA excluded bacteria (i) simply in agreement with a court case that held that bacteria were not plants under PPA, or (ii) because prior to 1970 the PTO had granted some patents on bacteria

Chakrabarty

- Second counter argument – need Congress to authorize patents on micro-organisms, genetic technology unforeseen when §101 enacted
  - Flook: the judiciary "must proceed cautiously when . . . asked to extend patent rights into areas wholly unforeseen by Congress"
  - Congress has spoken, court says it is simply doing its Marbury duty to say what the law is – high policy choice is not for the court and has already been made by congress
    - Congress is free to amend to exclude these inventions, and has similarly done so for nuclear weapons technology

Ethical Issues in Patenting "Life"

- Amicus briefs in Chakrabarty
  - Environmental consequences
    - Genetically altered organisms will "pollute" non-genetically altered organisms and reduce genetic diversity.
    - This has now occurred.
    - Hypo: Patented genetically engineered fish escape from the "farm" and "pollute" the "natural" species so that in a given lake there are no more natural fish. Do all fisherman who catch fish and sell them infringe the patent?
  - Ethical/religious consequences
    - Patenting of life "depreciates the value" of human life
    - Cf. trading in body parts, etc.
    - But is a patent the same thing a traditional property?

Court's Response

- In addition to Congressional argument, Court remarks: "The grant or denial of patents on micro-organisms is not likely to put an end to genetic research or to its attendant risks. . . . Whether respondent's claims are patentable may determine whether research efforts are accelerated by the hope of reward or slowed by want of incentives, but that is all."
- But the classical theory of patents is not just about "accelerating" research, but also concerns whether research occurs whatsoever.

"Anything Under the Sun Made by Man"

"This quote is inaccurate as it is used. The full quote reads, 'A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled.' Thus, 'anything' in the legislative history involves a machine or manufacture, not a process."

"Congress did not intend such a distinction …. Rather, the main point of the relevant section of legislative history is simply to say that 101 sets forth what 'can be patented,' as opposed what shall be patented, and that all patentable subject matter is 'subject to the [other] conditions and requirements of' Title 35."

"The definition of 'process' has been added in section 100 to make it clear that 'process or method' is meant, and also to clarify the present law as to the patentability of certain types of processes or methods as to which some insubstantial doubts have been expressed. Section 101 sets forth the subject matter that can be patented, 'subject to the conditions and requirements of this title.' The conditions under which a patent may be obtained follow, and section 102 covers the conditions relating to novelty. A person may have 'invented' a machine or a manufacture, which may include anything under the sun that is made by man, but it is not necessarily patentable under section 101 unless the conditions of the title are fulfilled."

But is "the anything under the sun" language anything more than an off-hand remark?

Labcorp v. Metabolite (not precedential)

- Court dismissed case as "improvidently granted," because parties had not sufficiently briefed the issue below
- Breyer dissents and provides non-precedential opinion (joined by Stevens and Souter)
- Researchers discover a link between homocysteine (naturally occurring chemical in the body) and vitamins (folate and cobalamin)
- As a "natural law" or "natural phenomenon," that link is not patentable itself

Labcorp v. Metabolite

- What happens if that relationship is embodied in an "unpatentable" diagnostic test?
- Breyer states that one cannot patent a "law of nature"
  - E.g., $E = mc^2$ or gravitational laws
  - Question: How would one patent a "law of nature" anyway? It's not a process, composition of matter, etc.
  - Can easily turn into a process: E.g., "A process whereby matter is converted into energy such that …."
- If "laws of nature" were patentable in this manner, then arguably the "Progress of the …. useful Arts" would be impeded by foreclosing basic scientific material from other researchers.

Labcorp v. Metabolite

- Claim at issue:
  - A method for detecting a deficiency of cobalamin [B-12] or folate in warm-blooded animals comprising the steps of: [1] assaying a body fluid for an elevated level of total homocysteine; and [2] correlating an elevated level of total homocysteine in said body fluid with a deficiency of cobalamin or folate.
- Patentees claimed that a "physician's recognizing that a test that shows an elevated homocysteine …." meets step 2.
  - Often known as a "mental step"
- Breyer: This claim covers "every homocysteine test" that a doctor might review.

Labcorp v. Metabolite

- "Here, aside from the unpatentable test, [the steps of the claim] embody only the correlation between homocysteine and vitamin deficiency that the researchers uncovered. In my view, that correlation is an unpatentable 'natural phenomenon.'"
- But why should whether the test is "patentable" make a difference?
- In Diamond v. Diehr, the Court stated: "It has been urged that novelty is an appropriate consideration under 101. . . . The question . . . of whether a particular invention is novel is 'wholly apart from whether the invention falls into a category of statutory subject matter.'"

Labcorp v. Metabolite

- Rather, if the underlying test meets the eligibility criterion, if there is no "points of novelty" test under 101, then the claim should arguably be eligible for patenting regardless of the patentability of the test itself.
- However, in effect, Breyer is applying a "preemption" test, whereby if the claim "wholly preempts" use of a natural phenomena, then the claim is invalid.
  - This judicially crafted test appears in other cases.

Labcorp v. Metabolite

- Breyer also notes the potential costs of patenting to physicians
  - E.g., inhibiting medical judgment, force doctors into licensing agreements, etc.
  - But shouldn't Congress make these determinations?
    - Cf. 35 USC 287(a): Provides immunity to physicians from infringement suits for "performance of medical or surgical procedure on a body"
    - Note exclusions for medical devices, drugs, etc.

Patent Eligibility – Software & Biz Methods

- 35 U.S.C. 100(b): “Process”
  - The term "process" means process, art or method, and includes a new use of a known process, machine, manufacture, composition of matter, or material.
  - Is this meaningful or not?
- Modern test of the bounds of the broad term “process” has been in relation to computer software
  - Is software more like abstract principles and mental steps or like implemented electronic circuits?

Gottschalk v. Benson

- “claims are not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use”
- Paraphrasing denied Morse claim 8:
  - Use of magnetism for printing or marking characters/symbols at any distance
    - Not applied to any particular process
- A scientific truth, mathematical expression is not patentable, but a novel and useful structure created with the aid and knowledge of scientific truth is
  - “Idea itself is not patentable”
  - A principle in the abstract cannot be patented
  - A process is 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 [an article] to be transformed and reduced to a different state or thing

Gottschalk v. Benson – Difference between "BCD" & binary

Eight "bits" interpreted via "binary"	Eight "bits" interpreted via BCD
1001 1001 Eight "Spots": 2^7 2^6 2^5 2^4 2^3 2^2 2^1 2^0	1001 1001 Two Decimal "Spots": 2d Decimal | 1st Decimal
(1) * 2^7 + (1) * 2^4 + (1) * 2^3 + (1) * 2^0 = 128 + 16 + 8 + 1 =	1^{st}: 2^3 + (1) * 2^0 = 9 2d: 2^3 + (1) * 2^0 = 9
153	99

Gottschalk v. Benson

- In practical effect, granting patent on this claim would be granting a patent on the formula/algorithm itself
  - Formula has no application outside of digital computers
  - Claim is so abstract and sweeping as to cover both known and unknown uses of the BDC to binary conversion
  - Essentially, the issue is whether the claim "wholly preempts" all use of the formula/algorithm

Diamond v. Diehr

- Claimed method for operating a rubber molding press with a digital computer such that articles are in the press for the proper amount of time
- Examiner rejected claims as nonstatutory subject matter under §101
- PTO Board affirmed, CCPA (Rich, J.) reversed, concluding that the claims were not directed to a mathematical algorithm, but to an improved process for molding rubber articles

Diamond v. Diehr

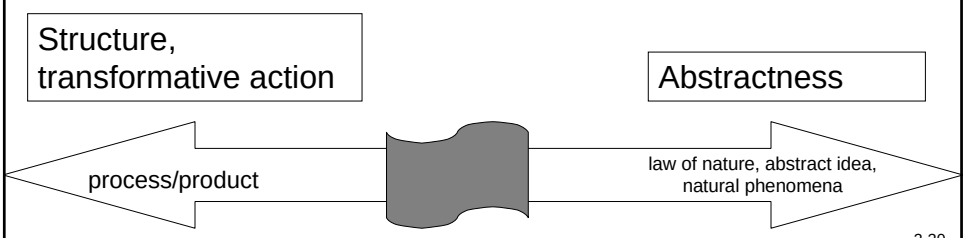
1. A method of operating a rubber-molding press for precision molded compounds with the aid of a digital computer, comprising:	
"providing said computer with a data base for said press including at least,	A
"natural logarithm conversion data (ln),	A.1
"the activation energy constant (C) unique to each batch of said compound being molded, and	A.2
"a constant (x) dependent upon the geometry of the particular mold of the press,	A.3
"initiating an interval timer in said computer upon the closure of the press for monitoring the elapsed time of said closure,	***B***
"constantly determining the temperature (Z) of the mold at a location closely adjacent to the mold cavity in the press during molding,	***C***
"constantly providing the computer with the temperature (Z),	***D***
"repetitively calculating in the computer, at frequent intervals during each cure, the Arrhenius equation for reaction time during the cure, which is	***E***
"ln v = CZ + x	***E.1***
"where *v* is the total required cure time,	***E.2***
"repetitively comparing in the computer at said frequent intervals during the cure each said calculation of the total required cure time calculated with the Arrhenius equation and said elapsed time, and	***F***
"opening the press automatically when a said comparison indicates equivalence.	***G***

Diamond v. Diehr

- Is this claimed process patentable subject matter?
- Background statutory arguments
  - Give statute's words plain, broad meaning
  - Legislative history: "anything under the sun that is made by man"
  - History: this type of industrial process is historically patentable subject matter
- How to analyze a claim for §101 analysis
  - consider claim as a whole – inappropriate to dissect for purposes of §101 patent eligibility analysis
    - New process may be patentable even if all steps known and in common use before the combination is made
    - Word "new" in "new and useful" does not mean that the novelty analysis is a part of §101 and patent eligibility

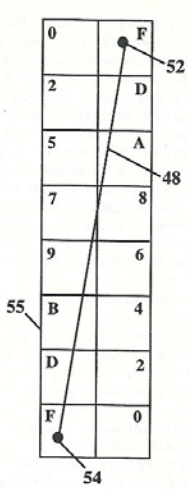
Diamond v. Diehr

- Holding(s)
  - a mathematical formula as such is not protectable, Benson
  - this principle cannot be circumvented by attempting to limit the use of the formula to a particular technological environment, Flook
  - when a claim containing a mathematical formula implements or applies that formula in a structure or process which, when considered as a whole, is performing a function which the patent laws were designed to protect (*e. g.*, transforming or reducing an article to a different state or thing), then the claim satisfies the requirements of § 101



Alappat (Fed. Cir. 1994) (en banc)

- Claimed invention is to a method of calculating a "more smooth" display pattern for showing a curved signal line in a pixel display such as that in an oscilloscope
- Holding(s)
  - Is the "mathematical algorithm" nothing more than a "disembodied mathematical concept"
    - Does it represent nothing more than "law of nature" "natural phenomena" or "abstract idea"
  - This claim is to a machine
    - many, or even all elements of the claim are circuitry that performs calculations (true of all circuits)
    - The claimed invention as a whole is a combination that is a machine – it gives a useful, concrete and tangible result



useful, ***concrete and tangible result***
(Alappat, State Street)

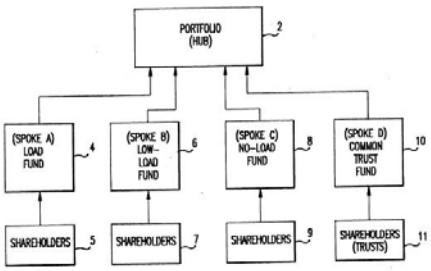
Abstractness

process/product

law of nature, abstract idea, natural phenomena

State Street Bank (Fed. Cir. 1998) (Rich, J.)

- Mutual funds (spokes) pooled into a single portfolio (hub, a partnership)
- System of '056 patent allows for daily allocation and balancing of assets amounts
- Needs computing power to operate because of deadlines to recalculate share prices under securities regulations



State Street Bank

- Business methods exception
  - "lay this ill-conceived exception to rest"
  - Since the 1952 patent act, business methods should be analyzed under the same standards as any other process
  - Never used
    - Source case for the exception was really a novelty case
  - District court's concern with the claim rings of novelty, not patent eligibility
  - PTO de-emphasis of business methods exception in MPEP and Examination Guidelines for Computer Related Inventions
    - Deleted it from the MPEP as a listed basis for rejection
  - Reinforces the "useful, concrete, and tangible" result test from In re Alappat

"Step Change" in Patent Law - Abstract Ideas & Business Methods

- Eligible Subject Matter
- Utility
- Statutory Bars, Novelty
- Non-obvious
- Disclosure Requirements

Bus. Methods!

???

Increasingly abstract software claims but no adjustment of disclosure requirements

1985 2000 2010

State Street

UNITED STATES COURT OF APPEALS FOR THE FEDERAL CIRCUIT

Bilski

In re Bilski (Fed. Cir. 2008) (en banc)

- Method of hedging risk in field of commodities trading
- Claim is fairly abstract and essentially covers a "business method"
- Court asks whether the applicants seek to claim a "fundamental principle (such as an abstract idea) or a mental process"
  - Implicitly assumes that a "mental process" is effectively an "abstract idea." Is this right?
- Court reads Supreme Court case law as implementing a "wholly preempts" test
  - Notes that this means "substantially all uses"
- Says cannot easily determine what "wholly preempts" means, because of "twenty-first century" technology
  - But if 21st century technology is not "plainly corporeal" than why limit the test to "physical" machines and transformations?

Bilski claim 1: 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 rate 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 position 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

In re Bilski (Fed. Cir. 2008) (en banc)

- Court states test as follows:
  - Process is patent-eligible if: "(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing."
- Court cites various Supreme Court cases and various quotations
  - Arguably, the Court strings together phrases from opinions without fully examining their context
    - E.g., Gottschalk states: "We do not hold that no process patent could ever qualify if it did not meet" the M-or-T test.
    - Also, The Court makes much of "the clue" vs. "a clue." But was the Supreme Court being so careful?

In re Bilski (Fed. Cir. 2008) (en banc)

- Important wrinkles
  - "Mere field-of-use limitations" are insufficient to meet the "particular" requirement
  - "Insignificant" extra-solution activity is also insufficient to meet the M-or-T prongs
  - Claim "must impose meaningful limits"
    - Mere manipulation of information and "abstract constructs such last legal obligations, organizational relationships, and business risks" does not seem to meet the T prong
    - However, Court cites Abele, stating that "transformation of … raw data into a particular visual depiction of a physical object is enough"
      - Note "representation" of physical objects

In re Bilski – Rader Dissent

- Does this test make any sense if "raw materials … of information-age processes are electronic signals and electronically-manipulated data" as the majority states?
  - Why does the Court "read[] the fine print of Supreme Court decisions from the Industrial Age"?
  - Just focus on the three exclusions.
- The test leaves open many questions
- What amount of "transformation" suffices?
- Does a computer qualify as a specific machine?
- What constitutes "extra-solution" activity?
- Me: What is a "field-of-use" restriction?

In re Bilski – Newman & Mayer Dissents

- Like Rader, Newman focuses on the "knowledge economy"
  - But also like Rader, she mistakenly assumes that patent protection will only lead to "incentive[s] to invest in and work in new directions."
  - But as Mayer points out, patents can impede the "progress of the useful Arts," since they can foreclose fundamental research
- So is Mayer correct?
  - No, since he pretty much overlooks Newman's point that patents can provide these incentives
  - Plus, why should we be originalists when it comes to statutory subject matter?

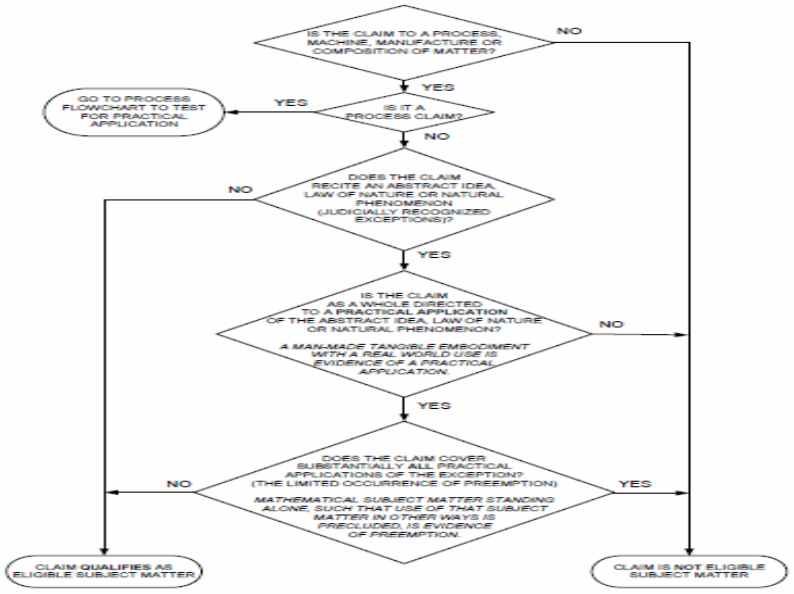
What if's?

- The claim had been limited to transactions in "specific commodities" instead of "legal rights"
  - Court seems to make much of this but would limitation to specific commodities just be a "field of use" limitation? How to determine "field of use" limitation?
- The claim required use of a "general purpose computer"
  - As part of a system claim?
- The claim recited particular physical conditions under which risk played a role
  - E.g., changing weather conditions, wars, etc.

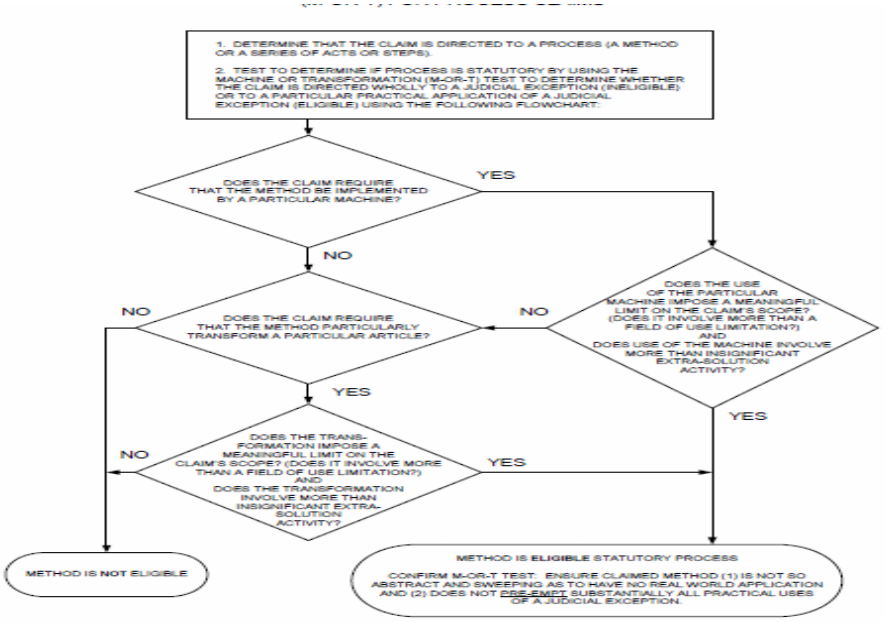
And what about 35 USC 273(b)?

- "It shall be a defense to an action for infringement . . . with respect to any subject matter that would otherwise infringe one or more claims for a [business] method in the patent being asserted against a person, if such person had, acting in good faith, actually reduced the subject matter to practice at least 1 year before the effective filing date of such patent, and commercially used the subject matter before the effective filing date of such patent."
- Does this show a Congressional belief that 101 encompasses biz methods?

PTO Flow Chart (Non-Process)



PTO Flow Chart (Process)



Comments on USPTO Flowcharts

- Generally follow the case law, but as with Bilski, it is unclear from Supreme Court precedent what is sufficient vs. what is necessary for 101
- Also, on process, didn't the Bilski opinion use the M-or-T test as a replacement for the "wholly preempts" test?
  - If so, then why does preemption get examined at the end of the chart?
  - Is this consistent with Bilski?

Statutory Subject Matter Exercises

1. A three-dimensional cube-shaped puzzle. Each face of the puzzle consists of eight smaller cubelets of differing colors. The user attempts to solve the puzzle by rotating rows of cubelets around one of several internal axes until a preselected pattern is obtained.

2. A technique for counting playing cards that supposedly makes its user an unbeatable blackjack player.

3. As the menu at a local restaurant proudly proclaims, "Every dish comes with a wonderful complement, our patented banana hollandaise sauce."

4. A method of lifting heavy weights through a modified "clean-and-jerk" technique, suitable for use by Olympic athletes.

5. A new perfume, cologne or scent.

6. A method of preventing repetitive stress injuries during computer keyboard usage by holding one's hand, wrists and forearms in a straight and fluid line.

7. A character assessment method comprising (1) instructing the person to produce a drawing which includes a pictorial representation of a hand, eye, flower, star, half-circle and other objects; and (2) subjecting the drawing to a psychological interpretation.

8. A method of remodeling a building, comprising (1) presenting design ideas to a client; (2) allowing the client to select her favorite design; (3) taking a photograph of the building; and (4) preparing a drawing of the proposed remodeled building employing the photograph and the preferred design.

9. The "Human Wave" commonly performed by spectators at sporting events. (Cf. yoga moves)