Patent Drafting Assignment

- For this assignment (worth 30% of the course grade), you are to invent a solution to one of the three following problems and to draft a patent for submission to the U.S. Patent and Trademark Office.

- Prompts will be e-mailed to you LATER THIS WEEK (and posted on the syllabus page)!
Prompt 2: You are not comfortable going to your local barber/hairstylist for a haircut, but you are also tired of the light one-inch trim or buzz cut at home. Invent something that will either aid in a better self-haircut at home or allow you to visit your barber/hairstylist safely.

NOTE: THIS IS NOT THE PROMPT FOR THIS YEAR!

**“THE BARBER BOT” / REMOTE HAIR CUTTING SYSTEM**

**INVENTOR:** COLIN ENGLISH

**Totally Remote:** the client station can be installed in your home and the barber station can be operated from anywhere!

**Totally Customizable:** has all the tools and comforts you would expect from a professional hair appointment.

**Feels Like the Barbershop:** multiple video feeds allow for sophisticated hair styling and face-to-face interaction.

**Helpful Beyond Pandemics:** provides professional hair styling to people who may have difficulty getting haircuts, pandemic or not.

For the Barber

For You

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Prompt 3: Before the pandemic, you were accustomed to going to your local coffee shop for an iced coffee and a bagel before class. Now you don’t feel safe doing going inside. Invent a solution that will help you get your breakfast safely.

NOTE: THIS IS NOT THE PROMPT FOR THIS YEAR!

Do you need a safe, convenient, and contactless way to get your morning pastries?

Look no further!

The drone that fetches your café orders for you!
Patent Drafting Assignment

Some important points:
• Don’t just start drafting! Take some time to think about a solution and research the prior art for that invention.
• Be creative! Invent something you will feel comfortable presenting to the class!
• Your invention need not solve the entire problem, but it must address an important aspect of the problem
• Remember the novelty requirement! If you discover your proposed invention is part of the prior art (including something in commercial use), you will need to invent a new solution
• You will not be graded on the real-world functionality of your invention, nor on whether your invention is likely to survive scrutiny by the USPTO

When preparing your submission:
• Focus more on basic elements of a patent and less on appearance/production
• Drawings will be helpful, but you will not be graded on your artwork
• Minor technical expertise may be required, which involves some background reading; explain (as best you can) why your invention is distinguished from the prior art; do your best to use proper terminology where appropriate

Plus/Delta

Plus: What Went Well
— I prefer the larger room
— The slides were easier to see with the new orientation
— The timing of the break and end of class was perfect.
— The in-class exercises were very helpful to my understanding of claim construction.
— Practicing how to write a claim
— The sound on your end was good. We did not face any issues hearing you

Delta: What Could Go Better
— The sound did not work as well today
— A step-by-step illustration of how to write a claim. It was a little hard for me to grasp the technicality behind it, how to create a long running sentence, and structure a broad independent claim

**The Patent Document**

**Statutory Rules/Requirements**

35 U.S.C. § 112

(a) Written description, enablement, & best mode requirements
(b) Claims & claim definiteness
(c)-(e)Independent, dependent, & multiple dependent claims
(f) Means-plus-function & step-plus-function limitations

**Claims for “Pencil”**

Possible Product Claims for “Pencil”

1. A writing instrument comprising a solid, marking material held in position by a non-marking material.
2. The instrument of claim 1 wherein the non-marking material is made of wood.
3. The instrument of claim 1 wherein the marking material comprises graphite.
4. The instrument of claim 3 wherein the marking material is approximately 90% graphite by mass and 10% clay by mass.

**Possible Process Claims for “Pencil”**

1. A method of writing comprising holding a writing instrument by a non-marking portion of the instrument; bringing a solid, marking portion of the instrument into contact with a surface; and exerting enough force to transfer material from the solid, marking portion of the instrument to the surface.
2. A method of making a writing instrument comprising forming a handle comprising non-marking material; and bringing a solid, marking material into contact with the handle so that the handle and the marking material are in a generally fixed relation and a surface of the marking material is exposed.

**Patentable Subject Matter**

**Statutory Language**

35 U.S.C. § 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 ….”
Patentable Subject Matter: §101

U.S. Pat. No. 1,647: “Improvement in the Mode of Communicating Information by Signals by the Application of Electro-Magnetism”

O’Reilly v. Morse: Natural Laws & Undue Breadth

Background

Morse Claim 5: “The system of signs consisting of dots and spaces, and of dots, spaces, and horizontal lines, for numerals, letters, words, or sentences … for telegraphic purposes.”

Morse Claim 8: “… the use of the motive power of the electric or galvanic current … however developed for marking or printing intelligible characters, signs, or letters, at any distances.”

O’Reilly v. Morse: Natural Laws & Undue Breadth

C.J. Taney’s opinion for the Court

• “the discovery of a principle in natural philosophy or physical science, is not patentable.”

• Congress intended to give an inventor “the exclusive right to use the means he specifies to produce the result or effect he describes, and nothing more.”
The Telephone Cases

While Morse’s claim was invalidated, Bell’s was upheld. Can you see why?

Morse Claim 8:
8. I do not propose to limit myself to the specific machinery or parts of machinery described in the foregoing specification and claims, the essence of my invention being…

Bell Claim 5:
5. The method of, and apparatus for, transmitting vocal or other sounds telegraphically, as herein described, by causing electrical-undulations, similar in form to the vibrations of the air accompanying the said vocal or other sound, substantially as set forth.

Who is Dr. Chakrabarty?

• Ananda Chakrabarty, PhD is a distinguished professor of microbiology and immunology at the University of Illinois College of Medicine
• His most notable creation is a biology-based solution for cleaning up toxic spills using the genetically engineered Pseudomonas (today classified as Burkholderia cepacia or B. cepacia).


• Bacterium containing 2 or more plasmids
• Each plasmid provides a separate hydrocarbon degradative pathway
• Capable of breaking down multiple components of crude oil
• Believed to have significant value for the treatment of oil spills
Diamond v. Chakrabarty (1980)

**Background**
- Chakrabarty applied for patent on “genetically engineered bacterium”
- USPTO rejected claims on ground that “living things” are not patentable
- CCPA reversed on ground that status as a living thing is irrelevant

**C.J. Burger’s opinion for the Court**
- “Constitution grants Congress broad power … to promote … useful Arts.”
- “In choosing such expansive terms … modified by … ‘any,’ Congress plainly contemplated … wide scope.”
- Legislative history shows “that Congress intended” inclusion of “‘anything under the sun … made by man.’”

**Diamond v. Chakrabarty (1980)**

**J. Brennan’s dissent**
- Different Start: Tension between “Nation’s deep-seated antipathy to monopolies” and “need to encourage progress”
- Similar End: “It is the role of Congress, not this Court, to broaden or narrow the reach of the patent laws.”

**J. Rich’s opinion for the Court**

“Practical application” test

- “[T]he transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, because it produces ‘a useful, concrete and tangible result’—a final share price momentarily fixed for recording and reporting purposes ….”

**State Street Bank (Fed. Cir. 1998)**

**J. Rich’s opinion for the Court**

No “business method patent” bar

- “The repetitive use of the expansive term ‘any’ in §101 shows Congress’s intent not to place any restrictions on the subject matter … beyond those specifically recited ….”
- “Since the 1952 Patent Act, business methods have been … subject to the same legal requirements for patentability as applied to any other process or method.”

**Prior Supreme Court Cases on Mathematical Formulas and Algorithms**

- **Gottschalk v. Benson (1972):** a process claim directed to a mathematical algorithm was not patentable
  - “the patent would wholly preempt the mathematical formula and in practical effect would be a patent on the algorithm itself”
- **Parker v. Flook (1978):** an invention that departs from the prior art only in its use of a mathematical algorithm was not patentable
  - Requires some other “inventive concept in its application”
  - “insignificant extra-solution activity” is not enough (adjusting an alarm limit according to a mathematical formula)
- **Diamond v. Diehr (1981):** process for curing synthetic rubber using a machine controlled by a computer program was patentable
  - Inclusion of mathematical formulas does not render the patent invalid – the claims must be “considered as a whole”

**Machine-or-Transformation Test: Bilski (Fed. Cir. 2008) (en banc)**

**C.J. Michel’s opinion for the court:**

Claimed process must:

- (1) be “tied to a particular machine or apparatus” OR (2) “transform[m] a particular article into a different state or thing”
- have “meaningful limits” (no preemption); AND
- not confine all machine-or-transformation aspects to “insignificant extra-solution activity.”
**Bilski v. Kappos (2010)**

**Background**

Claim 1: “A method for managing the consumption risk costs of a commodity … comprising …:
(a) initiating a [first] series of transactions …;
(b) identifying market participants …;
(c) initiating a [second] series of transactions ….”

USPTO rejected the patent application as an “abstract idea,” BPAL and Federal Circuit affirmed

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**J. Kennedy’s opinion for the Court (5 Justices.)**

• Machine or transformation test is “just an important and useful clue.”
• Business method patents are not generally prohibited.
• Patent claims “an unpatentable abstract idea.”

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**Bilski v. Kappos (2010)**

**J. Stevens’ opinion for 4 Justices**

• Method should have been held patent-ineligible for “describing only a general method of engaging in business transactions.”
• “Process” in §101 does not refer to a process in the ordinary sense.

**J. Breyer’s opinion for 2 Justices**

• Patent-eligible process is one that, “‘considered as a whole,’” “‘perform[s] a function which the patent laws were designed to protect.’”

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**Parke-Davis & Co. v. H.K. Mulford & Co. (S.D.N.Y. 1912)**

**Background**

• Takamine isolated purified adrenaline as “a chemical base” and also in form of salts
• Some have commented that this “extract” was essentially insulin
• Takamine’s patent for a “Glandular Extractive Product” was “assigned” to Parke-Davis, which sued Mulford.

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**U.S. Pat. No. 730,176: “Glandular Extractive Product”**

Claim 1: “A substance possessing the herein-described physiological characteristics and reactions of the suprarenal glands in a stable and concentrated form, and practically free from inert and associated gland-tissue.”
**Parke-Davis & Co. v. H.K. Mulford & Co. (S.D.N.Y. 1912)**

**J. L. Hand’s opinion for the Court**
- Isolated base differed “in kind,” not merely degree, from previously isolated salts.
- Even if isolated base were viewed as merely “a purification of the principle,” its level of purity made it “for every practical purpose a new thing”

Throughout the 1990s and 2000s, the USPTO has relied on this decision to issue thousands of patents on isolated and fragmented parts of DNA (more to come on this!)

**Funk Brothers Seed Co. v. Kalo Inoculant Co. (1948)**

**Background**
- Mix of “non-inhibitive [bacteria] strains” known to aid growth of plants without interfering with one another
- Applied to seeds of leguminous plants (e.g., beans) to enhance growth
- Effectively a bacterial “cocktail” with some bacteria helping certain plants and some helping others

**J. Douglas’ opinion for the Court**
- “The qualities of these bacteria, like the heat of the sun, electricity, or the qualities of metals, are part of the storehouse of knowledge of all men.”
- “[H]owever ingenious the discovery of the natural principle may have been, the application of it is hardly more than an advance in the packaging ….”

**Mayo v. Prometheus (2012)**

**Background**

Claim 1: A method of optimizing therapeutic efficacy ..., comprising:

(a) administering a drug providing 6-thioguanine ...; and
(b) determining the level of 6-thioguanine in said subject and
wherein the level of 6-thioguanine greater than about 400 pmol per 8 x 10^8 red blood cells indicates a need to decrease the amount of such drug ....

**Nature of Invention/Discovery**

Patents "embody findings that concentrations in a patient’s blood of 6-TG or of 6-MMP metabolite beyond a certain level ... indicate that the dosage is likely too high ..., while concentrations ... of 6-TG metabolite lower than a certain level ... indicate that the dosage is likely too low ...."