A Short Course @ CUNY

Intellectual Property: Invention & Innovation
Entrepreneurialism & Commercialization

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Part I: Invention / Innovation / IP

Part II: Entrepreneurialism / CUNY IP Policy

Part III: Commercialization
Invention
The process of creating something novel (device, method, product, process, or technique) and the thing so created.

Innovation:
The process of creating a new or improved product, process or service, and the thing so created.

Entrepreneur:
A person who sees an opportunity and actively organizes, manages, and promotes exploitation of that opportunity, while also assuming at least some of the risk associated therewith.
Invention: Factual

The process of creating something novel and the thing so created (e.g., device, method, product, process, or technique).

- Discovery of solid acrylic was a laboratory mistake. But it was an invention.

Innovation: Practical

The process of creating a new or improved product, process or service, which can be usefully applied with favorable results [and the thing so created]:

- Major innovation: solid acrylic marketed as Plexiglas® products + copycats after 20 years.
• Why do we care about IP?
• What makes IP valuable?
• How is IP created?
• What are different types of IP?
• What are the rules governing IP?
• How can we benefit from IP?
Why Care About IP?

“IP comprises more than 70% of the value of Fortune 500 companies.”

Price Waterhouse Coopers, 2000
Market Cap = $185.4 Billion
Net Asset Value = $27 Billion

WSJ Dec 8, 2009
AMGEN

Market Cap = $ 65 Billion
Net Asset Value = $ 19 Billion

WSJ Dec 8, 2009

Genentech

Market Cap = $ 89 Billion
Net Asset Value = $ 11 Billion

WSJ Dec 8, 2009
What Makes IP Valuable?

CONTROL

YES!  NO!
Types of Control (IP)

- Patent
- Copyright
- Trademark
- Trade Secret
How Is IP Created?

Constitutional Basis:
“The 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, Clause 8.*
Mechanism of Control

• Grant Exclusive Right
• For a limited period
• Exclusive Right v. Disclosure
• “Discoveries” → Patent
• “Writings” → Copyright
Copyright protects form of expression

A **copyright** protects original works of authorship including literary, dramatic, musical, and artistic works, such as artwork, poetry, novels, movies, songs, computer software, and architecture.
Copyright

Protects form of expression:

**DOES NOT PROTECT**

idea, procedure, process, system, method of operation, concept, principle, or discovery.

Was © 1966, but . . .

See: **Sad Story:**

http://www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=2840
Copyright Notice

Copyright 2006-2009 PerfectUninstaller.net  All rights Reserved.

© 2006-2009 PerfectUninstaller.net  All rights Reserved.

© Copyright 2006-2009 PerfectUninstaller.net  All rights Reserved.
Trademark

A *trademark* (or service mark) protects words, phrases, symbols, or designs that identify and distinguish the source of a good or service. Does not protect idea.

Could have been but ...

See: Sad Story:

http://www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=2840
Trademark

Purpose:
- Prevent Consumer Confusion
- Identify Source of Goods/Services
- Transfer of Good-will/reputation

Requirements:
- Distinct & Non-descriptive
- In-use in interstate commerce

Term: Unlimited assuming continued use

Notice:
- Trademark “TM”
- Servicemark “SM”
- “®” if registered
What is a patent? Protection for 20 Years - Right to Stop Others From Using Invention
Patent Types

**Utility Patent (Non-Provisional)** may be granted to anyone who invents or discovers any new and useful process, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof.

**Design Patent** may be granted to anyone who invents a new, original, and ornamental design for an article of manufacture.

**Plant Patent** may be granted to anyone who invents or discovers and asexually reproduces any distinct and new variety of plant.

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**Provisional “Patent”** 12 month; temporary; enables quick filing and early filing date, relaxed requirements.
Patent Protection

Notice:

“Patent Pending”

“Pat. Pend.”

US Pat No. 7,123,456
Examples

New Compounds/Materials
- New compounds for treatment of cancer
- Organic nanomaterials for use in flexible displays

New Methods
- Method for storing energy in wind power plants
- Method of making bio-fuels using novel strains of algae

New Apparatus/Device/Software
- Medical device for safer and more effective electrotherapy
- High capacity batteries for hybrid vehicles
- Microsoft Word

New Research Reagents
- Novel reagents for bio-imaging
Can Patent What?

New useful method, use or thing:

• New material, device or tool
• New process
• New result (even if is a only new combination of old things / steps)
• A synergy?
Elements of Patenting:

Invention =

1. Conception

Plus

2. Reduction to Practice
   Liberal: a written description is all you need (but may rely upon something that you actually made or did)
1. Conception

Conception of an invention means conceiving of an advance in technology that benefits its users.

Conception requires more than just formulating a desire to accomplish something - that is called wishing, not inventing.

Conception requires a specific way of achieving a desired result, with a beneficial result.

Conception is complete when one of ordinary skill in the art can construct a product or perform a process without unduly extensive research or experimentation, given a reading of the disclosure of the invention.

Conception is more than just identification of a problem, but if added to a solution it may be an invention.
2. Reduction To Practice (R/P): Two Types

(a) Actual Reduction to Practice:
   • Actually build the device or actually perform the process

   OR

(b) Constructive Reduction to Practice
   • Drafting & filing a patent application is all that is needed in most cases
   • You do not need to know why it happens, you just have to describe your invention as you know it. Describe it in sufficient detail that a person skilled in the art can read the description and practice the invention without undue experimentation.
Standards of Reduction To Practice (R/P)

Physical Sciences v. Life Sciences

• R/P standards depend on complexity and predictability of particular art. Sometimes a well-written patent application is enough without making anything and sometimes experimental data is required where the written description is too speculative.

• R/P standards are higher for life sciences related inventions as compared to physical sciences inventions.
Standard for R/P

What it means?

• Predictable variations or extensions of invention need not be preformed, made, or built, as long as there is sufficient detail in patent application.

• Demonstrations or actual experiments are required when the art is unpredictable, e.g., molecular cloning, etc.
“Publication:” non-confidential public disclosure of the contents of invention, whether oral or written or printed or electronic.

Can File a US Patent Application within 12 months of public disclosure

Cannot file any Foreign Patent Application after first public disclosure

*For foreign patent rights, must file a patent application “prior to publication” i.e., prior to public disclosure of so much of the invention that a person skilled in the art could copy the invention without much experimentation.
What Happens If….

File US Provisional

Publication

<12 months

US & Foreign rights still preserved if file application within 12 months of prov. date

No publication of any kind

>12 months

Filed US Prov. 1 Filed US Prov. 2

US & Foreign rights may be still preserved* based on Prov. #2 . . .

*But major risk of someone publishing or filing a patent application before you file, which may be fatal.

What Happens If….

As to US Prov. 2, Foreign Rights are lost. US rights may be salvaged if #2 filed within 12 months of publication date.

US & Foreign Rights still preserved based on Prov #1 priority date.
What Happens If....

Inventor ‘A’ conceives the invention & reduces it to practice

< 12 months

Inventor ‘B’ publishes a paper disclosing the invention

Inventor ‘B’ File patent appl.

Inventor ‘A’ File patent appl.

Who gets the patent . . . ?
Who Gets the Patent . . .?

In United States:

- First to invent gets the patent (if not too long delay in filing).
- Grace period of 12 months to file patent application after publication that teaches the invention
- Invention = Conception + Reduction to Practice
- Timing:
  1. If Inventor ‘A’ conceived & reduced to practice before publication of competitor Inventor ‘B’,
     then ‘A’ can get a patent if ‘A’ can prove that ‘A’ invented before ‘B’
  2. If Inventor ‘B’
     Filed patent application prior to competitor ‘A’,
     then ‘B’ can get a patent if ‘B’ can prove that ‘B’ invented before A
Who Gets the Patent . . .?

In Foreign Jurisdictions (e.g., Europe, etc.):

- First to file gets the patent regardless of who invented first.
- No grace period of 12 months to file patent application after publication that teaches the invention.
- Timing
  - If Inventor ‘A’
    - ‘B’ wins the race to the patent office.
  - If Inventor ‘B’
    - Filed patent application prior to ‘A’,
    - then ‘B’ can obtain a patent if there was no prior publication.
Part I: Invention / Innovation / IP

Part II: Entrepreneurialism / CUNY IP Policy

Part III: Commercialization
Entrepreneur:
A person who sees an opportunity and actively organizes, manages, and promotes exploitation of that opportunity with the expectation of profit, while also assuming associated risk.

Entrepreneurialism:
Process of recognizing business opportunity and working toward exploitation of the opportunity for profit. Creating benefit out of innovation.

- Transform an invention into an innovation
- Microsoft and Apple computers
- Google search engine
- Solid acrylic marketed as Plexiglas® products
CUNY Motivation

Bayh-Dole Act

- The Bayh-Dole Act or University and Small Business Patent Procedures Act was enacted on December 12, 1980.
- Prior to BD, government owned IP arising from federal funded research.
- After BD, Universities can retain the title in inventions arising from federal funded research.

- Grant the federal government a non-exclusive, royalty-free license. (But still valuable for government sales)
- Actively promote the commercialization of the invention.
- Invoke entrepreneurialism at university.
CUNY IP Policy & Entrepreneurialism

**Purposes:**

To serve the public by promoting and facilitating the dissemination of University invention and innovation

To recognize and encourage research, authorship and invention by the University community by providing for the sharing of tangible rewards resulting from commercialization of such innovation

To define the ownership, distribution and commercialization rights associated with these university activities and achievements
CUNY IP Policy

Applies to any “Member of the University”:

• Full-time and part-time faculty, staff
• Graduate students, faculty-directed research, paid or not
• Individuals compensated by grant funds made available to the University by or through the Research Foundation
• Any other person who develops Intellectual Property while making extraordinary use of University Resources
• Exception: a written agreement stating that such person shall not be subject to this policy in a particular case.
Quid Pro Quo for CUNY Ownership:

- Members of University have obligation to report to TCO
- TCO obligation to champion commercialization

CUNY Shares Royalty Income:

1. Reimburse protection-related expenses;
2. Then, 10% to TCO patent fund;
3. Share Net Proceeds:
   - 50% to the Creator;
   - 25% to the University for the support of research and scholarly activity;
   - 25% to the Creator's College(s), with 50% of such amount going to the Creator's academic or research unit(s) for the support of research and scholarly activity.
The TCO Process?

Evaluate Invention / Innovation /IP
  • Google; Patent Search; IP Committee; Network

Protect IP
  • US/PCT/Foreign (Provisional & Utility)

Market Innovation
  • Call/email contacts, look on-line, tradeshows

Commercialize / License IP
  • Company pays royalties based on sales
  • May be used to support funded research
Evaluating New Innovation

Ask:

- Is it CUNY? What is it? Who cares?
- How new? To be Published?
- Is it practical? Is it protectable?
- Can it be utilized/commercialized?
- What is the value to public/CUNY?
- What should we protect?
- Can we get early protection?
- File a provisional or non-prov. application?
TCO Best Practices: Early Protection

Day 1
- Disclosure (NTD)
- By Day 14:
  - TCO Staff
  - Review
  - Raise Q’s
  - File?
- Provisional Pat. App.
  (Often)

Day 365
- By Day 365
  File
  Winner
  (Utility & PCT)

Day 250
- Review
- Market
- Opp’ty
- File?
- Non-Provisional

Provisional: Early Protection
1. Disclosure + Manuscript/Proposal
2. Office debrief inventor; Imagineer
3. Internal: $100 fee + US Express Mail
4. Law Firm: $3-10,000

$5 - $20K

MORE Solid Winners:
Early Priority Date
Higher Value
Higher Revenue
More Efficient

Controlled Costs +
More Likely Success
TCO: Managing US & Foreign IP

File Provisional Or Utility
(monts) 0 12
File first application Or File US Utility

Chapter I

International Search Report and ISA Written Opinion

Enter national phase

International Preliminary Examination

Chapter II

PCT/Foreign Budget:
~ $80 - $150K

$10-20K + Plus $20-30K + Plus $50-100K

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TCO: Managing US & Foreign IP

PCT/Foreign Budget:
~ $80 - $150K

$10-20K + Plus $20-30K + Plus $50-100K

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TCO Best Practices: Early Protection

Publication and Timing

- **Publication**: Regardless of form, it is a disclosure of the important parts of the invention clear enough that a person skilled in the art can practice the invention without undue experimentation.
- **Best**: NTD before publication
- **OK**: Within 12 months of publication
- **Patent Filing**: Filing patent starts protection as to content of the disclosure
- **Provisional**: 12 months to convert to Non-provisional
- **Rollover**: Re-file Provisional: but RISK intervening rights!
TCO Works With Inventors:

Faculty, staff, and graduate students and others who create “something valuable” during research using CUNY funds, facilities or equipment.

To Commercialize Something Valuable:

Use IP law to capture value of a creative work-product with the expectation that the market will recognize the value and will want to license the IP.
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Technology Commercialization:

- **Process**: moving a technical innovation to market for financial return
- **TCO as Resource**: spinoff assistance, mentoring, incubators, accelerator funding; & road show assistance
Example of Commercializable Invention

Process & Apparatus

Supercooled Liquid

Supercooled Pellets

Supercooled Cubes

Slow Melting Ice: A Better Daiquiri

Synergy?

See Patent US 7,059,140
License:

- Want Company to champion technology; license IP & exploit the innovation for a fee ($Royalties)
- Company can be an existing company or can be a new spinoff company

Agreements:

- Non-disclosure/Confidentiality Agreement (NDA) or CDA
- Material Transfer Agreement (MTA),
- Option Agreement
- Sponsored Research Agreement (SRA)
- License Agreement
• **Evaluate**
  – Novelty? Prior art? Market (size, demand) Synergy?

• **Protect**
  – File patent applications

• **Exploit Opportunity**
  – License to existing companies
    • Equipment manufacturers
    • Drink companies like Coca-Cola Company
    • Specialty process companies – Like Popsicle Company
  – Form a spinoff company
    • Build a team & license to the spinoff
Typical License Terms:

- License Agreement
- License Fee/Equity
- Running Royalty
- Milestones
- Grant/Field
- Patent Expenses
- Minimum Royalty
Conventional University Spinoff:

- Form new company, raise funds, and license IP from CUNY
- Intent is to grow company for big time success $$$
- Major commitment (keep day job?): Critical need for first class business team, funding, and strong IP
- Can use SBIR/STTR funds for early growth
SBIR-Type Spinoff:

- Used as a method of obtaining funding to support sponsored research at CUNY. SBIR funds come into Spinoff which in turn contracts with RF; TCO sets terms on IP rights.

- Need an off-campus incubation space and an employee or two; don’t need a full team
Gut Check:

• Where do you fit in?
• What is the best use of your time?
• It is not easy to succeed in a Spinoff!
• The challenge in a nutshell:

Read: *Crossing the Chasm*,

by Geoffrey Moore
What do you need?

✓ Team
✓ IP Protection
✓ Business Plan
✓ Marketing Plan
✓ Strategy
✓ Money, Money, Money… $$$ $$$
✓ Roadshow
✓ Luck
FIRST SALE, FIRST STEP

How Long? to Market?
Adoption?

First Sale of
The Great Innovation
How Long?
to Market?
Adoption?

Publicity & First
Introduction

CUNY
RESEARCH
EARLY
ADOPTERS

Market

THE CHASM
CROSSING THE CHASM

Publicity & First Introduction of Great Innovation

Real Products & Volume Sales

Time + Team + Money + IP

SALES SUCCESS $$$

Market Adoption
Beverage +
Ice +
IP +
Team +
Market +
License for profit

Success!
TCO is here to help:

- We are your entrepreneurial partner in technology commercialization!
- Get to us early, preferably pre-publication!
- You can work with us!
- It starts with just a phone call!
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