What Graduate Students Need to Know About Intellectual Property

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The Issues

• The invention/creative process
• What is Intellectual Property?
• University of Alberta IP policies
• How do I get it?
• Is it useful (or not)?
• Once I have it, what do I do with it?

What is Intellectual Property?

• Establish property protection over intangible things such as ideas, inventions, signs and information
• Distinct (albeit related to) from the tangible objects in which they are embodied

Complex Systems

• Circular and iterative
• Diffused in space and time
The Economics of Information

• natural scarcity
  – naturally occurs when demand exceeds supply
• artificial scarcity
  – IP law creates market for information
  – reduces supply of information
  – increases value of information-based assets
  – theoretically provides incentives to create ideas

Intellectual Property Laws

• intellectual property
  – copyright
  – trademarks
  – patents
  – industrial designs
  – integrated circuit topographies
  – plant variety protection
  – internet domain protection
• trade secrets and confidential information

Starting Points

• IP systems strive to balance conflicting interests of producers and users of new knowledge
• Current poor understanding of how IP systems function in the real world to produce social, economic and scientific outcomes

Starting Points

Commonalities of Laws

• Similar image of what it means to ‘create’
  – Assumed it is an individual who creates rather than God, machine, force of nature
  – Act of creation occurs when an individual exercises mental labour to manipulate underlying raw material
• Laws define parameters of intangible property:
  – Schemes of deposit and registration
  – Statutory rules and legal concepts such as requirements for sufficiency of disclosure (patent) or originality (Copyright)
• IP laws are NATIONAL IN SCOPE

Business Practices (examples)

• IP protection vs. trade secret
• Enforcement strategies
• Research and Development Strategies
• Commercialization or Technology Development Plans
• Financing Strategies
• Encryption
Institutions (examples)

- Intellectual Property Offices
- World Intellectual Property Office WIPO
- Trade/Industry Departments/WTO
- NGOs
- Courts
- Research Institutions
- Corporations

Copyright - why

- Primarily utilitarian: US constitution: “promote the Progress of Science and useful Arts”
- Balance of competing claims: encourage and reward creative work against broad public availability of literature, music and other arts
- International efforts by artist for moral rights (droit d’auteur)—Continental Law concepts

Copyright - what

- Original work of authorship with threshold level of creativity
- Literary, dramatic, musical, artistic, cinematographic works
- Canada – new Part II for performances, sound recordings and communication signals
- Computer programs protected as literary works
- DURATION = lifetime of author + 50 years (70 in US)

Forms of Expression not Protected by Copyright

- Canadian examples
  - slogans
  - short phrases
  - titles for songs
  - names of computer programs
  - factual information/data
Copyrightable Subject Matter

- Only expression or form of ideas protected and not ideas themselves – fixation in a tangible medium of expression
- = idea/expression dichotomy
- International treaty texts:
  - “copyright protection extends to expression and not to ideas, procedures, methods of operation or mathematical concepts as such”.

Authorship and Ownership

- The author and artists who create the work initially acquire copyright
  - For entrepreneurial works– the entity that made the work possible
- Joint Works:
  - Collaboration
  - Absence agreement to the contrary, each of the co-authors has an equal, undivided ownership interest in the entire work, even if unequal contribution
  - Duration is plus 50/70 years of last surviving author

Threshold for Protection

- Interpretation varies somewhat in national jurisprudence
- “original” for literary, dramatic, musical and artistic works
  - UK: labour, skill or judgment = low threshold; University of
  - US: creative spark
  - Canada: exercise of skill and judgment
- Note that entrepreneurial works have no originality requirement – only “not copied”

Authorship and Ownership

- exceptions
  - employment context
    - employer generally owns copyright
    - “author” shall include an employer for “works made for hire” (US)
  - Legal difficulties arise in definition of ‘employee’
    - commissioned work
      - copyright transferred if purchased by commission
    - independent contractor
      - initially copyright rests with contractor
      - contract should expressly transfer to business

Formalities

- Berne Convention: copyright “shall not be subject to any formality”
- BUT registering copyrighted works gives additional protection
  - US: Registration with the Copyright Office
    - Not requires for foreign authors
    - Required prior to suit for domestic works

Traditional Rights of Copyright Owner

- The right to make copies
- The right to display the work publicly
- The right to distribute the work (including sell/rent/lease/lend)
- Transfer or licence in exchange for royalties
- Transfer as gift
- The right to make derivative works (convert work into different forms)
  - eg convert novel into sound recording
- The right to authorize any of the above
U of A policies - students

- Student works, produced in the course of study (including personal thesis work for Masters or PhD programs or exercise work for course-based Masters programs), belong to the student.
- Even where the work is produced with University facilities and equipment, the copyright is still owned by the student, and there is no implied licence to an instructor or supervisor for use by that person.

U of A Research Publications Policy

- Research funded by external grants should not be delayed beyond 18 months following submission of final report (no time restrictions usual)
- Graduate students should not undertake, nor supervisors involve students in research for a thesis if a contract prohibits public access—thesis should be made freely available following successful defence.
- Supervisor has duty to inform of and consult over policy.
- Council of the Faculty of Graduate Studies and Research may approve request for withholding publication of a thesis for e.g., patent filing (max 1 year)
- Request must be made known to student and approved by final examination committee

Best Play It Safe

- Students should not infringe the copyright of others
- Provide students with links to published works available through the U of A library.
- Purchase appropriate copyright licenses through collective society (new terms under negotiation).

U of A – faculty and staff

- Faculty — governed by Faculty Agreement.
  - Article 10: Copyright and Appendix B
- U of A owner of copyright and of all copyrighted works produced by a staff member
- U of A waives interest in copyright except
  - for work made for the University (so e.g., need to provide teaching material for free)
  - Arrangements with the U of A for compensation for contribution to copyrighted work
  - Policy also deals with University’s right to use the copyrighted materials

The Right to Use Works Protected by Copyright

- lawful use without permission (statutory exemptions)
  - use of works as fair dealing / fair use
  - Criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research
  - But—need to be considered against:
    - purpose and character of use,
    - nature of © work,
    - amount used,
    - effect on potential market for or value of the © work

Patent versus public domain versus trade secret
Public Domain

- Openly available to everyone and not subject to intellectual property protection.
  - IP waived
  - IP expired
  - IP never existed
- High Value
  - Building block for further creation/innovation
  - Access to cultural heritage
  - Promotes low cost of information
  - Promotes public health and safety
  - Promotes democratic process and values
  - Enables competitive imitation

National Patent Laws

- TRIPs sets minimum standards for inclusion in national patent legislation, enforced by all WTO members.
- Has not created consistent national patent laws—why?
  - Practice and interpretation

Trade Secrets

- Grant rights over information that is treated as confidential
- Gives ability to sue for a breach of confidentiality if someone discloses confidential information to a competitor.
- Wronged party is entitled to a remedy - monetary compensation
- Provide a necessary supplement to other IPRs
- used to protect technical information and know how during R&D and testing stages
- Generally common law (some US State laws)

National Patent Law

- Patent laws are generally national in scope and apply only to the use of patented inventions within national borders
- Patent application must be filed in each country where patent protection is sought
- National variation may affect
  - the subject matter which can be patented,
  - the criteria used to judge whether a patent may be awarded, and
  - the scope of the right granted

Patents

- Negative rights that confer upon the holder the right to prevent others from selling, using, importing and making the invention for a set period of time (20 years)
- Bargain between inventor and society- time limited monopoly for disclosure of invention

National Patent Laws in Canada

- Legislation
  - Patent Rules S.O.R./96-423
- Quasi-Legislation
- International Treaties and Conventions
  - PCT, Paris Convention, TRIPs
### U of A Policies

- Faculty—governed by Faculty Agreement.
  - Article 10: Copyright and Appendix B
  - Article 11: Patents and Appendix C
  - http://www.uofaweb.ualberta.ca/vpres_policies/nav01.cfm?nav01=11159

- Refers to U of A Policies:
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- Graduate Students: Graduate Program Manual
  - Section 10: Intellectual Property
  - http://www.gradstudies.ualberta.ca/gradmanual/ten.htm

### U of A Patent Policy

- Intended to encourage patenting and commercialization
- Invention: defined as result of duties at University OR use of University facilities or resources under grants, sponsorships, contracts or agreements approved by the University
- INVENTOR(S) OWNED POLICY
  - Inventor may apply individually (only when no co-inventors) or through the University
  - Applies to plant cultivars and germ plasm
  - Must always submit an “Report of Invention” to the IP and Contracts Office—30 days for consideration
  - University may accept assignment
  - Facilitation of public use and commercial application considered with Inventor
  - If inventor/sponsor go it alone then:
    - Reporting requirements
    - One-third of net income to University
    - One-third to inventor(s)
    - One-third to commercialization process
  - Provisions of contracts entered into by University e.g., grants, contracts, sponsorships or research agreements supersede this policy.
  - University commits portion of revenue to inventing department and encourages inventor to do the same.

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  - also governed by Patent Policy.

### U of A Patent Policy

- the inventor can offer to assign ownership of the invention to the University. If the University accepts the offer, it is responsible for patenting, marketing, and licensing the invention, and the University is entitled to receive 2/3 of the net revenues arising from the commercialization of the invention, or
- the inventor can claim personal ownership of the invention. If so, the inventor accepts responsibility for patenting, marketing, and licensing the invention, and the University is entitled to receive 1/3 of the net revenues arising from commercialization of the invention.
**In Practice**

- Patenting and commercialization are expensive
- Most researchers lack business skills
- TEC Edmonton is the commercialization arm of the University of Alberta

**Patenting and Commercialization**

- Initial Screen for Assistance
- Discovery
- Pre-Development Financial Analysis
- Market Analysis
- Invention
- Concept Development
- Negotiation
- Prototype Development
- Commercialization Decision

**Patentable Subject Matter**

- **United States**
  - Broadly interpreted: “anything under the sun that is made by man.” *Diamond v. Chakrobarty*
  - Grants patent rights over innovations which are excluded from patentability in other countries, e.g., hESC, plants

**How To Get a Patent**

**Substantive Patent Law:**

**Patentable Subject Matter**

- **Canada excludes:**
  - S. 27(8) of the Patent Act, and some jurisprudence.
  - Scientific principles and abstract theorems s. 27(8) *Schlumberger v. Commissioner of Patents*.
  - Method for Medical treatment (*Tennessee Eastman v. Commissioner of Patents*).
  - Higher life forms are not patentable in Canada

**To Get a Patent:**

- Eligible inventor(s) or applicants
- Eligible subject matter
- An invention that meets the patent criteria
- Enablement—must be adequately disclosed
- Conform with other procedural rules to get a patent

**Substantive Patent Law:**

**Patent Criteria**

- Is the product or process described in a patent application an invention?
- If the product or process fails to meet the criteria, the innovation is not patentable.
- Most countries have three similar criteria:
  - In the US and Canada, the criteria are utility, novelty and non-obviousness.
  - The EPC defines the criteria as industrial application, novelty and inventive step.
  - In Japan, the criteria are industrial application, novelty and inventive step.
### What is an invention?

- **Canada s. 2 Patent Act**
  - "invention" means any new and useful art, process, machine, manufacture or composition of matter, or any new and useful improvement in any art, process, machine, manufacture or composition of matter;

### Substantive Patent Law:

#### Patent Criteria: Novelty

- New means not previously in existence
- Determined by patent offices
  - Diligence varies depending on staffing levels, expertise and funding
- Search of prior art
  - Publicly available disclosure prior to patent application filing date
- Prior art may be used to challenge validity of patent

#### Invention vs. Discovery

- Invention: product or process that did not exist previously
- Discovery: something that already exists and is a product of nature
  - E.g., a gene sequence that exists in situ is not patentable
  - Isolated gene sequence is patentable (with further restrictions in some countries)
  - Gene patent for c-DNA so man-made product derived from nature

### Substantive Patent Law:

#### Patent Criteria: Utility

- **US**: Is the invention useful for described purpose (not mere functionality?)
  - E.g., DNA sequences: utility is established if a substantial, credible and specific use is demonstrated in the application
- **Canada**: Does the invention work for the purpose intended? May be established based on a "sound line of reasoning"

### Substantive Patent Law:

#### Patent Criteria: Novelty

- Disclosure (by the Inventor)
  - **US**: use of the invention, printed publications or patents from any country that pre-date the day when the applicant created the invention
  - **EPO**: use as well as both oral and written descriptions of an invention pre-dating the filing of the patent application
  - **Japan**: public knowledge or public working of inventions and printed publications that precede the filing date of the patent application
  - **Canada**: use, written descriptions of the invention as well as public disclosure, which may include oral disclosure, pre-dating the filing of the patent application s. 28.2

- Disclosure: Grace Period
  - **US/Canada** – s. 28.2
    - inventor is granted a one-year grace period during which he can disclose the invention before filing a patent application without the disclosure barring the right to a patent
  - **Japan/EPO**
    - six month grace period with stringent conditions
    - inclusion in an officially recognized international exhibition or caused by an "evident abuse" (e.g., breach of a confidentiality agreement)
    - UK—NO disclosure
**Substantive Patent Law:**
**Patent Criteria: Non-obvious**
- Invokes the expertise of a person skilled in the art (PSITA),
- would PSITA have considered the invention to be obvious in light of the ordinary knowledge
  - US requires a consideration of knowledge existing when the invention was made
- Canadian jurisprudence distinguishes obviousness and novelty in the following manner; saying that an invention is obvious if a person skilled in the art sees it and says “any fool could have done that” whereas novelty invokes a reaction of “your invention, though clever, was already known”.

**Public Document**
- **Canada**
  - S. 10(1) – all patents open for public inspection
  - S. 10(2) – confidentiality period for 18 months
  - S. 10(3) – confidentiality period begins on the filing date

**Procedural Patent Law:**
**The Patent Application**
- Public document
- Discloses invention and establishes the boundary around the rights given to the patentee
- Intended to give fair warning about infringing activities
- Most often omit key details of optimum manufacture or working of an invention

**Who may apply for a patent**
- **Canada:** s. 27 of the Patent Act: inventors or their legal representatives (assignee)
- An inventor must have conceived the invention and have sound prediction it would work
- Assignment registered with Patent Office
- Employee owns invention unless:
  - Express contract to the contrary
  - Employee was hired to invent

**Procedural Patent Law:**
**Patent Filing**
- **First to File vs. First to Invent**
  - **US- First to Invent:** if two different patent applications describe the same invention, the patent right will be issued to the invention which can be proven to have been invented first
  - **EPO, Canada, Japan – First to File:** if two patent applications for the same invention are filed, the patent right will be granted to the applicant who filed an application at the earliest date
**Procedural Patent Law:**

**Patent Filing: How/Where?**

- **How/Where to File**
  - National, Regional, PCT
  - Decision depend on commercial, strategic and cost considerations

- **Regional Patent Offices**
  - Distinct from national patent offices.
  - Allow for a filing process that reserves rights in all nations within the region simultaneously.
  - Regional patent offices are limited to undertaking the grant of patents.
  - National patent offices also administer the national patent laws.
  - E.g., EPO, ARIPO (African Nations)

- **National Patent Offices**
  - Act within the boundaries of the country they exist within and apply that country’s patent law.
  - Decision of where to file an application is generally based on the predicted potential markets for the invention.
  - Most cost-effective strategy for an invention which is only marketable in a small number of countries is to file patent applications directly with individual national patent offices.
  - Some national offices allow “provisional patent applications”

- **Patent Cooperation Treaty**
  - Application reserves for an inventor the right to seek patent protection in all countries which are signatories to the PCT at the time of filing
  - Chosen because:
    - Inventor is unsure of the scope of the market for the invention, but believes it could be global.
    - Inventor needs time to raise investor funds – time

- **Paris Convention**
  - Allows for priority filings amongst signatory nations.
  - Have one year to file in subsequent jurisdictions.
  - A priority filing is one which relies upon the filing date of a previously filed patent application.
  - Takes off some of the pressure of deciding exactly what type of patent to file immediately while holding an early filing date for subsequent filings to rely upon - crucial in first to file patent systems.

- **Not a patent granting system but reservation of right to file with National Patent Offices.**
- **BUT**—already examined so the expectation is that national patent filing will be simplified.
- **More expensive than national filing.**
- **Includes an extended review period of 30 months pre-national filing**
- **EPO requires a full examination of the patent**
- **Some national patent offices require no examination** (e.g., Belgium, the Netherlands, Switzerland and Ireland)
Scope of Patent Protection

- Defines the breadth of the patent right.
- Interpretation varies between jurisdictions.
- US/Canada – not limited to commercial workings
- Japan – limited to commercial application
- EPO - prescribed by national patent law—most European states impose a level of industrial application.

Access to Innovation

- IP involves a cost and a benefit
  - Benefit: increased investment in research into or, more likely, distribution of innovative products and services
  - Cost: decreased access to those products or services
- Obviously, our goal is to increase the benefits while reducing the costs
- How do we manage IPRs to balance costs and benefits?

Access Guidelines

- CIHR: Policy on Access to Research Outputs
  - Improve access to research outputs funded by CIHR, and to increase the diffusion of research results.
  - Peer-reviewed journal publications, research materials, and research data.
    - Archive, open-access journal, acknowledgement
    - Deposit data into public database-Annex
    - Retain data minimum 5 years
- Based on NIH Policies:
  - NIH Public Access Policy
  - NIH Statement on Sharing Research Data

TENSIONS

- Patent Thicket
- Culture of Science
- Tax on Research
- Access / Clinical Application
- Humanitarian Needs
Once I have IP, What do I do with it?

Licensing Introduction

- Contracting for IP rights
- Once you have IP what do you do with it?
- Licensing Best Practices
  - Software
  - Biotechnology
  - Access Considerations

Basics of Contract Law

- contract = legally enforceable agreement
- promises and contracts
  - simple promise is not legally enforceable
  - contractual promise is legally enforceable
- elements of a contract
  - intention to create legal relations
  - meeting of the minds (offer and acceptance)
  - exchange of value (consideration)

What is a license?

- A license is a type of contract.
- A license is a grant of permission for a party to enter onto the physical property of another, that is, an agreement not to hold the party liable for illegal trespass.
- With respect to intellectual property (IP), a license is a promise not to sue a party for actions that would otherwise constitute infringement.

Contracts: Assignment

- assignment = process of transferring rights
- parties to assignment
  - assignor = party transferring rights
  - assignee = party receiving rights
- subject matter of assignment
  - rights generally can be assigned
  - obligations generally cannot be assigned
- Canada: s. 27 of the Patent Act: inventors or their legal representatives (assignee) may apply for a patent
- Assignment registered with Patent Office

Contracts: Employment

- Set terms of employment
- May incorporate institutional policy on IP
- May limit or enhance rights to IP
- Always best to negotiate IP and other contentious issues UP FRONT
- May require independent legal advice
Licenses

- Nature – Type
- Protection
- Ownership issues
- Encumbrances
- Prior Rights

Confidentiality

- Limited statutory law in Canada
- Common law provides some protection
  - general obligation
  - contract law
- Agreements are very important

Ownership

- Clear and unambiguous determination of ownership is important for:
  - protection
  - use
    - freedom to operate
    - prosecuting infringement
  - licensing, strategic alliances, etc.
- Law is not always helpful or clear

Confidentiality Agreements

- Define & identify
- Obligations
  - Maintain confidential
  - Time limit versus Term
  - Standard of care – objective
- Limits on use
- Exceptions – from definition; from obligation
- Remedies
- Return of information – archive copy?

The Licensing Process

- Initial contact
- Confidentiality Agreement (CDA, NDA)
- Term Sheet
- Letter of Intent, Memorandum of Understanding (MOU)
- Letter Agreement, Interim Agreement
- Licence Agreement

Licence Agreement

- Clear identification of subject matter
- Exclusive vs. Sole vs. Non-Exclusive
- Extent – Field of use
- Territory
- Limitations
- Duration
Licensing Considerations (Terms)

- Development Responsibilities
- Marketing Efforts
- Confidential Information
- Protection, enforcement, infringement
- Improvements
- Assignment and Sublicensing
- Representations and Warranties
- Termination
- Dispute Resolution

Main Commercialization Routes

- Patent
- Licence to Existing Company
- License to start-up/ spinoff company

- Alternative business models
  - Open source
  - Service based

Compensation

- Initial or upfront lump sum
- Fixed instalments
- Milestones
- Royalties
  - Continuing
  - Minimum
- Equity

Other Licensing Strategies

- Creative Commons Licenses for copyrighted works -
- Public Domain Dedication/Waivers of IP for data
- Standard/simplified conditions of use for research tools and materials

Global Access Licensing

- Non-commercial/government/humanitarian right reservation
- Clarify freedom to operate
- Enable generic production (cost + pricing)
- Address diversion issues
- Definitions (e.g., developing country)
- Development Milestones
- Reserving March-in rights
- Mechanisms to achieve competition
- BE IMAGINATIVE AND DON’T GIVE AWAY THE STORE

Thank You.