

Elliot Lake Mall Roof Collapse

- June 2012, mall roof collapsed killing 2 people and injuring 19.
- July 2012, Ontario government established an independent public inquiry (cost \$20 million)
- Final report October 2014
- Before collapse, inspecting engineer claimed building was "structurally sound"; made changes to report after sign-off, removing photographs and references to "ongoing" leakage at the mall owner's request, to ease a refinancing application
- Commissioner stated engineers forgot the "moral and ethical foundation" of their vocation, were concerned with pandering to clients than protecting the public
- The report made 71 recommendations re. design and construction, maintenance standards, inspections and emergency response capability
- The engineer's trial began in September 2016

Case Studies

- **Kansas City Hyatt Walkway Collapse**
- Fourth floor walkway collapsed onto the second floor walkway, which in turn collapsed onto the floor. 114 lives were lost.
- Design change by contractor meant load on the nuts holding the fourth floor walkway doubled
- Various hearings and lawsuits, several engineers lost their licenses, firms went bankrupt and lives were ruined.
- Fabricator claims to have phoned the design engineer to approve the change(denied)
- There was no documentation of the change, other than a shop drawing showing the revised configuration, which was provided in a package of 42 shop drawings.

- The connections were not adequately detailed on the shop drawings, and the fabricator had not performed calculations on the connections.
- The design engineer assigned review of the shop drawings to a technician on his staff; the technician performed no calculations on the connections.
- The design engineer testified at hearing that it was common industry practice for the structural engineer to leave the design of steel-to-steel connections to the fabricator.
- The design engineer performed "spot checks" on portions of the shop drawings and approved them.
- **Cargo door**
- explosive decompression
- Passenger doors are "plug type" (inward-opening) – pressure prevents door from opening.
- Cargo doors have to open outward, but pressure would assist in keeping the latches closed.
- Incomplete closure would result in pressure forcing the latches open.
- Ground testing: The fundamental vulnerability of a differential in pressure resulting in a failure of the floor, the severing of the hydraulic control lines, and the resulting loss of control of the aircraft was not addressed.
- Convair's FMEA was never shown to the FAA and McDonnell Douglas's own FMEAs submitted to the FAA made no mention of malfunctions of the cargo door.
- Applegate's bosses did not act on the memo because they thought it would harm Convair's relationship with McDonnell Douglas
- Failure to convey the urgency of these modifications, and a failure on the part of the FAA to ground the aircraft until they were carried out, resulted in the second

modification never having been done to the Turkish Airlines aircraft.

- **Pinto**
- Crash tests of prototypes showed that the Pinto would not withstand standards proposed by the National Highway Traffic Safety Administration (NHTSA) which would require cars to survive a 20 mile-per-hour impact without leaking fuel.
- Economic Theory of Negligence (Learned Hand Rule)
- The defendant's duty to protect against injuries is a function of three variables:
- (1) The probability of the accident;
- (2) the gravity of the resulting injury;
- (3) the burden of adequate precautions.
- This relationship has been formalized as: $PL > B$
- B is the cost (burden) of taking precautions, P is the probability of loss and L is the gravity of loss.
- The product of P and L must be a greater amount than B to create a duty of care.

Professionalism

- "The conduct, aims or qualities that characterize a professional person"; "set of **attitudes** and **behaviours** believed to be appropriate to a particular occupation"
- Company Code of Conduct may relate to additional aspects

Roles & Responsibilities of Engineers

- Demonstrating professionalism
- Adhering to the APEGBC Code of Ethics
- Protection of the Public
- Serving the Public Interest
- **Protection of the Public**
 - Minimizing risk of failure impacting public safety with respect to design, construction and operation of facilities.
 - Minimizing the negative impacts on public safety that arises from a failure.

- **Serving the Public Interest**

- APEGBC Code of Ethics:
 - welfare of the public
 - fidelity to the public needs
- Reduction of negative societal, economic and environmental impacts, even when these imply reduced private profits

Regulation

- Licensure provides the title "Professional Engineer" (P.Eng.) or equivalent, and grants the right to practice professional engineering
- The P.Eng. title can only be used by licensed engineers; it grants the authority to take legal responsibility for engineering work
- The practice of engineering is protected in law and enforced in all provinces
- **Role of APEGBC**
 - Authorized under the Province's Engineers and Geoscientists Act to uphold and protect the public interest with respect to engineering – by licensing all individuals who practice professional engineering in BC and by regulating the engineering profession in BC
- **Self-Regulation**
 - APEGBC through the *Engineers & Geoscientists Act*
 - Ensure only registered engineers practice engineering
 - Establish process for becoming registered
 - Establish APEGBC
 - Give powers to APEGBC to regulate the practice of engineering
- Engineers Canada includes the Canadian Engineering Accreditation Board (CEAB) and the Canadian Engineering Qualifications Board (CEQB);
 - CEQB is responsible for developing national guidelines for professional

- engineering qualifications, standards of practice, ethics and professional conduct
 - CEAB accredits engineering programs across Canada
- Engineering Accreditation
 - Graduates of accredited programs meet the academic requirements for the P.Eng.
 - CEAB accredits by assessing conformance with criteria that relate to:
 - Graduate attributes
 - Students
 - Curriculum content and quality
 - Program environment
- Investigation and discipline (re. members inappropriately engaged in the practice of engineering)
- Enforcement (re. non-members inappropriately assuming the P.Eng. role or inappropriately engaged in the practice of engineering)
- liaises on regulatory matters
- Development of Practice Guidelines relating to specific engineering topics
- **Code of Ethics states:** "Members and licensees shall act at all times with fairness, courtesy and good faith to their associates, employers, employees and clients, and with fidelity to the public needs. They shall uphold the values of truth, honesty and trustworthiness and safeguard human life and welfare and the environment." / "Hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace"

APEGBC

- *Association of Professional Engineers and Geoscientists of BC*
- 13 elected members
- 4 lay members appointed by Lieutenant Governor
- Faculty and PGEO appointees if neither elected
- Council includes the President, Vice-President and immediate Past-President, each with one-year terms
- A CEO and Registrar, reporting to the Council, is responsible for APEGBC's operational activities
- The membership is engaged through branches, committees and votes in elections and on issues from time to time
- Key standing committees includes the registration, discipline and investigation committees
- Regulation activities relate to:
 - Registration of suitably qualified individuals
 - Required standards of practice (through practice reviews)
- Set of 10 principles established by APEGBC as being required of all engineers
- Following the code is required, but also good practice
- Not following the code can lead to discipline, loss of ability to practice engineering (and earn an income)
- Can also lead to liability in negligence in many cases
- (1) hold paramount the safety, health and welfare of the public, the protection of the environment and promote health and safety within the workplace;
- (2) undertake and accept responsibility for professional assignments only when qualified by training or experience;
- (3) provide an opinion on a professional subject only when it is founded upon adequate knowledge and honest conviction;

- (4) act as faithful agents of their clients or employers, maintain confidentiality and avoid a conflict of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client;
- (5) uphold the principle of appropriate and adequate compensation for the performance of engineering and geoscience work;
- (6) keep themselves informed in order to maintain their competence, strive to advance the body of knowledge within which they practice and provide opportunities for the professional development of their associates;
- (7) conduct themselves with fairness, courtesy and good faith towards clients, colleagues and others, give credit where it is due and accept, as well as give, honest and fair professional comment;
- (8) present clearly to employers and clients the possible consequences if professional decisions or judgments are overruled or disregarded;
- (9) report to their association or other appropriate agencies any hazardous, illegal or unethical professional decisions or practices by members, licensees or others; and
- (10) extend public knowledge and appreciation of engineering and geoscience and protect the profession from misrepresentation and misunderstanding
- Promotion of Organizational Quality Management that supports quality assurance in companies as relating to engineering practice
- Advocacy and promotion of engineering with the public and governments

- Promoting careers in engineering, in part through student scholarships (via the APEGBC Foundation)
- Branch activities and other forms of membership engagement and support
- Other member benefits such as through publications and through the "affinity" program

P.Eng

- Canadian citizen or permanent resident
- Academic qualifications – accredited program or completion of specified courses / exams
- Four years satisfactory engineering experience (one year in Canada)
- Law & Ethics seminar
- Professional Practice Exam (PPE) – 3-hour exam, including a one-hour essay
- English Language Competency – via PPE essay and referee comments
- Evidence of good character – via referee comments
- Engineer-in-training (EIT) status is granted to individuals meeting the academic requirements of the P.Eng. and who are working towards the four year work experience requirement
- Experience requirement is normally under the supervision of a P.Eng.
- EIT's participate fully in branch activities and enjoy several member benefits
- **Benefits**
 - Employment requirement of many positions with many employers
 - Right to practice professional engineering
 - Right to the P.Eng. title, and the use of stamp and seal
 - Prestige, distinction and professional excellence
 - Engagement in branches, professional committees

- Access to APEGBC publications, services, professional development, employment resources, affinity programs and mentoring
- Forms of membership
 - Engineering Licensee – license to practice within a prescribed scope of practice
 - P.Eng. with non-practicing status
 - Non-Resident Licensee – licensed to practice in BC
 - Inter-Association Mobility Agreement – applicant who is a P.Eng. or EIT in another province
 - International Agreement – applicant with P.Eng. equivalent from a designated country
 - Provisional Member – applicant working towards the one-year Canadian experience requirement
- **Iron Ring**
 - Professional integrity, the Code of Ethics, and the Iron Ring obligation.
 - Engage in continual improvement – both within the profession and in personal lives
 - Remember the big picture. Apart from needed specifics, make sure that the overall direction is the right one.
 - Expect the unexpected. Be prepared that something new or unaccounted for arises. We have developed systems of checks, reviews and quality control just to anticipate such situations.
 - Don't be a rubber-stamp. Encourage diverse viewpoints, maintain independent thinking and ask the tough questions

Law

- **Major Source of Law**
 - Common Law
 - From England
 - Judge Made case-by-case

- between the people/ between people and the state
- Legislation
 - Constitution
 - Charter of Rights and Freedoms reduces it
 - Regulations developed by a person who is given the power under an Act, technical
 - Provincial Jurisdiction
 - Property and Civil Rights/ Education/Marriage/Taxes within province/ Administration of justice/ Natural Resources
 - Federal Jurisdiction
 - Trade & Commerce/ Shipping (Rail, pipelines etc)/Banking /Intellectual Property/Taxes /Criminal Law
- **Other Sources**
 - International law
 - Aboriginal law
- Civil law (Quebec)
- **Plaintiff**: the person who makes a claim in a lawsuit - π
- **Defendant**: the person being sued by the plaintiff - Δ
- **Appeal**: an action a person can take when they have lost a lawsuit to have the case considered by a higher level of court
- **Appellant**: the person who brings an appeal; the person who lost the original lawsuit
- **Respondent**: the person who defends against the appeal; the person who won the original lawsuit
- **Action**: a court proceeding; a lawsuit
- **Damages**: an amount of money awarded by a court to make up for a loss
- **Personal Property**: almost anything that has a value and is not real estate or related to real estate (also called chattels)

Tort

- **Tort:** breach of a civil duty owed to another party (Compensate)
- **Crime:** breach of a duty prescribed by the state (punish)
- both, e.g. a punch is – Tort of battery between the parties – Crime of assault between the punch thrower and the state
- Elements
 - Breach of an established common law duty
 - Intent (usually) If intent not required, then some other standard may apply such as strict liability* in nuisance (e.g. pollution)
 - Harm or loss or damage
- Purpose
 - Restoration and compensation
 - Plaintiff back in the position they were in before the tort occurred
 - Can't get more out of law suit than that which you had before the harm occurred
 - Compensation is by an award of "damages" (money)
 - For egregious conduct, courts sometimes award aggravated or punitive damages
- Burden of proof
 - Plaintiff has the burden of proof
 - "on a balance of probabilities", in other words, more than 50% likelihood
 - Criminal law: beyond a reasonable doubt – much higher standard
- **Intentional Torts**
 - Assault (threats)
 - Battery (physical contact)
 - False Imprisonment
 - Intentional infliction of nervous shock
 - Conversion (stealing)
- **Other Torts**
 - Defamation
 - Nuisance
 - Trespass to Land, Chattels
 - Passing off

- False imprisonment
- Negligence

- Court structure
 - BC Provincial court has jurisdiction for: criminal law, family law, small claims, traffic infractions and bylaw matters
 - BC Supreme court – everything that is not allocated to provincial court
 - For claims under \$25,000 "small claims", go to provincial court

Environmental/Aboriginal Law

- **Aboriginal Law**
 - Sources of law: Constitution, Indian Act, Case Law, Provincial legislation
 - Essentially: First Nations have the right to use their land and its resources as it has been traditionally used, with some modern modifications
 - Gives rise to Crown duties of Consultation and Accommodation
 - Crown has knowledge of the right
 - Crown action will take place in aboriginal territory
 - Crown action has potentially adverse impact
 - Private companies (who need Crown resources) required to negotiate Impact Benefit Agreements with First Nations
- **Natural Resource Law**
 - Natural resources are owned by whomever can capture/extract/exploit them (the "Rule of Capture")
 - Crown owns all the resources
 - Access to these resources by leasing them from the Crown
 - Must "do work" to keep your lease
 - When you buy property, you do not own the minerals – others may be granted rights to access resources on your property
- **Environmental Law**

- Anytime there is an emission also legislation that regulates it
- For contraventions, Strict liability is usually the standard that applies, meaning if you've done the bad thing, you're liable.
- For large projects, environmental assessments are required (different standards for Provincial and Federal)

Employment Law

- Canada Labour Code; Canadian Human Rights Act; BC Employment Standards Act & Regulations; BC Human Rights Code
- BC Employment Standards Act: Minimum standards
 - The Act says employees are entitled to minimum standards which cannot be contracted out of
 - Wages (\$10.85/hr in BC, 2016)
 - Hours and overtime (1.5x for >8hrs; 2x for >12hr)
 - Vacation (1-4 yrs: 2 weeks; 5+ yrs: 3 weeks)
 - Termination and Notice (1 week/yr of service) – Statutory holidays and pregnancy leave
 - Does not apply to P.Eng or EIT!; does not apply to high-tech industry
- Occupational Health and Safety
 - 3 fundamental rights
 - Right to participate
 - Right to know
 - Right to refuse unsafe work
 - employer can be investigated and fined or ordered to change behaviour
 - If injured while working, cannot sue employer compensation is through WorkSafeBC (compensation is less than court awarded damages)
- Human rights
 - Every province to legislation protect individuals from discrimination.
 - unlawful to make certain decisions based on a prohibited ground of discrimination (race, sex, age, etc)
 - HR Tribunals can order employers to stop discrimination, monetary awards, or to reinstate employees
- Employee
 - Entitled to statutory minimums
 - Cannot deduct expenses
 - Cannot usually do work for other employer
- Independent contractor
 - No entitlement to statutory minimums
 - Can deduct business expenses
 - Can set own hours of work
 - Can do work for other employers
 - More expensive: need to buy own equipment/tools
- Termination
 - without cause: employer has obligation to provide minimum notice, or payment in lieu of notice
 - just cause: employer has no requirement to provide notice
 - formal warning first
 - employee resigns: employee must give reasonable notice (usually 2 weeks)
 - Wrongful Dismissal Damages
 - reasonable notice or pay in lieu: Rule of thumb: 1 month notice per yr service
 - Reasonable notice is what a person would need to find another job
 - Constructive Dismissal
 - Breaching a fundamental term of the contract
 - Conducting itself in a way that makes continued employment intolerable
 - Employee must notify employer of objections
 - Employee can then sue employer for wrongful dismissal and obtain compensation

- Constructive Dismissal
- Duty to Mitigate
- claiming wrongful dismissal
 - Can take some time off to get over shock
 - May have to travel or relocate, depending on circumstances
- Non-competition and Nonsolicitation agreements
 - Restrictions on your actions that continue after employment ends
 - Non-solicitation means you cannot talk to clients/customers of your former employer
 - Non-competition means you cannot obtain business from clients of your former employer
 - Court will only enforce what is reasonable as it does not wish to permit restraint of trade

Contracts

- Legally enforceable promise between parties
- Common law recognition
- Can be oral or written (latter is definitely preferred)
- Can be with 2 or more parties
- Can be unilateral (one party makes promise) or bilateral
- Requirements for a valid Contract:
 - 1. Intention to create legal obligations
 - 2. Offer
 - 3. Acceptance and communication of acceptance
 - 4. Consideration
- intention is assumed except under certain circumstances (Promises between friends and family)
- there is duress or incapacity, requirement of intention is not met and contract will be void (Mistake, illegality, misrepresentation)
- Offer
 - tentative promise that contains sufficient details such that upon

acceptance, all parties will be certain as to what is required of them

- key to find that there is an offer is certainty
- Acceptance and Communication
 - offer must be accepted (cannot force a contract on someone)
 - communicated to the offeror
 - counter-offer rescinds the offer
- given or done in exchange for the promise
- Gratuitous promises are unenforceable
- Consideration can be an action
- Consideration may be nominal (insignificant monetary value)
- Unenforceable
 - contract is for something illegal
 - One or more parties did not have capacity
 - Duress or undue influence
 - Misrepresentation
- Remedies
 - one party fails to perform obligations
 - Sue for breach of contract, and the award will be damages
 - position you would have been in had the contract been performed
 - can obtain specific performance
- Limitation clauses
 - limit your liability with a limitation or exclusion clause
 - Use bold type, require signing or initialing clause
 - engineers, still potentially liable in negligence
- Tender Contracts
 - Each bid by a contractor forms a contract A with the owner
 - liability at the bidding stage
 - bid is accepted, Contract B is formed
 -

Intellectual Property

- rights to stop other people from using or taking advantage of your efforts

- Patents
 - monopoly for 20 years from date of filing
 - Includes: processes, inventions
 - NOT: Software, med treatment
 - Novel: Invention must not have been disclosed anywhere in the world prior to filing.
 - Non-Obvious
 - Useful: Invention must do something for someone.
 - Infringement
 - Injunctions (order to stop infringement)
 - Order delivery of infringing goods
 - lost profits
 - Disgorgement of profits
 - Filing
 - Prepare the specifications, claims, drawings and application
 - Pay the filing fees
 - Submit the application: use lawyer
 - save money by filing a “provisional” application
 - High cost
- Copyrights
 - protects: artists, software engineers (code), photographers, website owners, video game producers, broadcasters, engineers (drawings)
 - not protect ideas but rather their expressions
 - arises automatically
 - not need to register, nor use the ©
 - requires an exercise of skill
 - more than a mechanical production
 - exclusive right to
 - reproduce a work
 - Make a recording of it
 - Perform a performance
 - Broadcast a work
 - life of the author plus 50 years.
 - employer owns it
 - Infringement
 - Remedies are similar to patents
 - statutory remedies(\$100 to \$5,000 for ALL infringements that are non-commercial)
 - Fair dealing allows some copying
 - ISPs: DMCA vs Notice and Notice in Canada
- Trademarks
 - Protect brands from being imitated
 - Protect consumers from purchasing knock-offs
 - Trade-mark is a sign that is used to distinguish goods or services of one supplier from another
 - register your trade-mark for a fee
 - Key requirement: distinctiveness
 - protected in the areas where you have established “goodwill” (without reg)
 - Remedies are similar to patents
- Confidential Info
 - protect things do not wish to disclose
 - Duty to keep information confidential can arise automatically
 - duty is being inserted into standard employment contracts
 - proving a breach is inherently difficult

Negligence

- Defendant owes plaintiff a duty of care
- Defendant did not meet the requisite standard of care
- Defendant’s breach of the standard caused harm or loss to the plaintiff
- Duty of care
 - reasonably foreseeable that harm could occur
 - established for a given situation in the case law, sets a precedent
 - engineers owe a duty to clients, customers, and the public
- Standard of care
 - reasonable person in the circumstances
 - Practising engineer or geoscientist must exercise the same degree of skill and

possess the same level of knowledge that is generally expected of other members of the profession with the same training and experience

- Causation
 - Plaintiff suffered a loss
 - Does not have to be direct actions or direct harm to prove causation
- Damages
 - Designed to compensate (but rarely, to punish)
 - Limited to the loss suffered
 - Reduced if there is contributory negligence
- Vicarious Liability
 - employer liable for actions of employees
 - Employer not liable for negligent contractors
 - Employer may still sue engineer to recover the loss
 - engineers (or the business) often covered by insurance
- Third-party liability
 - Liability in negligence can extend to people with whom the defendant had neither any contact nor contractual relations
- Limitation periods
 - Limitation Act: A claim must not be started after 2 years from the day it was discovered
 - discovered when a person knew or ought to have known there was a claim
 - Exceptions if the wrongdoer acknowledges the wrongdoing, the 2 year period resets.

Dispute Resolution

- Negotiation (work it out amongst yourselves) ALWAYS start here

- Mediation (work it out with a neutral 3rd Party) Another perspective can help (optional)
- Arbitration (Neutral 3rd party decides outcome) Watch out for the arbitration clause in contracts
- Last resort: Civil litigation – If you have a poor claim, you could end up paying the costs for the other side's lawyers

Communication

- Audience
 - Wants, needs, desire
- Purpose
- Look the part
- Be brief (7 second attention span)
- Use story telling

Ethics

- **Ethics** refer to behavior customary in our culture or society.
- **Morals** refer to personal standards of right and wrong.
- Engineering ethics is the set of rules and standards which govern the conduct of engineers as professionals.
 - Standards may be written (as in the APEGBC Code of Ethics), or unwritten.
 - Large organizations may have ethics officers to enforce ethics in their organization.
- Some things that are legal are not ethical
- Law is supposed to provide justice, but laws may be unjust
- considered to be separate from religion
- **APEGBC Code of Ethics**
 - Public interest
 - Know your limits
 - Don't fake it
 - Conflict of interest
 - Respect your value
 - Lifelong learning
 - Do unto others...

- Stand your ground
- Be brave (W B)
- Spread the word
- Aristotle: Actions are right if they support good character traits (Virtues).
- Locke: Each person has Rights which need to be respected.
- Kant: Every person must discharge Duties or universal obligations and rules of conduct.
- Mill: Utilitarianism, governed by the maximum benefit for the greatest number of people.
- **Virtue**
 - action is honest
 - demonstrates loyalty to community or employer
 - believed to be responsible
 - avoids extremes: best solution is the one that no one likes
- **Rights**
 - Freedom right: freedom of conscience, freedom of religion, freedom of thought, freedom of belief, freedom of expression;
 - Democratic rights: right to participate in political activities;
 - Legal rights: right to life, liberty, and security of the person;
 - Equality rights: equal treatment before law without discrimination

Conflict of interest

- professional has a special interest that influences the objective exercise of professional duties
- 3 Types: Actual, potential, apparent
- avoid conflicts of interest but, where such conflict arises, fully disclose the circumstances without delay to the employer or client
- Recuse – disqualify yourself from any decisions

Whistle Blowing

- raising a concern about wrongdoing within an organization
- duty to safeguard the public, and exercising the right to disclose wrongdoing
- may be fired (wrongful dismissal in B.C.) or punished
- Types:
 - Internal: Employee goes over the head of the immediate supervisor
 - External: Employee reports the perceived wrongdoing to a newspaper, a well-known outside expert in the field, or a law-enforcement body.
- The matter in question must be important.
- The whistleblower must have clear first-hand knowledge of the infraction(s) and relevant expertise.
- All other actions within the power of the employee should have been exhausted.
- All internal avenues of communication should be exhausted before seeking outside help.

Outside Country

- Engineers Canada recognition bilateral agreements licensed engineers with Hong Kong, Ireland and Australia.
- Recognition agreement between Accreditation Board for Engineering and Technology (ABET), the US accreditation board, and Engineers Canada.
- La Commission des Titres d'Ingénieur (CTI) of France to recognize substantial equivalence in accreditation processes.
- Canada is a signator of an APEC (Asia Pacific Economic Cooperation) mutual recognition accord.
- 1989 Washington Accord that recognizes substantial equivalence of engineers in Australia, Canada, Hong Kong, Ireland, Japan, Korea, Malaysia, New Zealand, Singapore, South Africa, Taiwan, Turkey, United Kingdom and United States.
- **Corruption of Foreign Public Officials Act**

- Bribing a foreign public official.
- Laundering property and proceeds
- Possession of property and proceeds.
- Conspiracy or an attempt to commit the offences. Aiding and abetting in committing these offences, intention to commit them, and counselling others to commit them.
- Jurisdiction of Canadian courts, a significant portion of the activities must have taken place in Canada.

Environmental Ethics

- Bio-centric Ethics: views all life, not just humans, as having intrinsic value
- Eco-centric Ethics: considers ecological communities, not individual organisms, trying to preserve the ecological integrity of whole regions. Industrial
- Ecology: studies industrial systems with the goal of finding ways to lessen their environmental impact Sustainable
- Development: considers social, economic and environmental aspects; development must not compromise the well-being of future generations.

Entrepreneurship

- Just because you are good at your vocation does not mean you can build a business based on your vocation.
- Problem Solving-Risk Taking –Analytical- Practical -Enjoy the work- Team Player- Ethical (integrity) -Easier to learn new skills (business)
- Cash from R&D to Market

Business structure

- Sole Proprietorships
 - No separate legal entity
 - Tax advantage: deduct business expenses
 - Dies when you die
 - Easy & cheap to form/dissolve

- hook for all liability
- under own name no need to register
- city business license if you have premises which serve customers
- register for GST if your revenue >\$30k/yr
- Business names
 - reservation possible for all buiz structures
 - distinctive and descriptive element
- Partnership
 - two or more persons carry on business with a view of profit
 - Share profits, expenses, liability and administration
 - General Partnerships: debts incurred by one partner are shared by the others
 - Limited Partnerships, and Limited Liability Partnerships: extent by limiting liability of LP to their contribution
 - Partnership registration and fees same as proprietorship
 - Need a lawyer for partnership agreement
 - Tax advantages, especially to LPs
- Corporations
 - Separate legal entities
 - Can sue and be sued, obtain insurance, own property, enter into contracts, purchase products, and live forever
 - liability can be shifted away from you and partners to the corporate entity
 - cannot use the corporation to shield oneself from liability
 - Courts will “pierce the corporate veil” and pin liability on owners(fraud)
 - Shareholders are the owners of the company, ultimate decision makers
 - Board of directors appointed by shareholders to run the company
 - Executives carry out the day-to-day management as directed by the Board
 - Staff do the actual work.

- Shares represent fractional ownership of a corporation
- Dividends/Capital on windup/Choose directors/Vote on major decisions
- Should when: When you get an employee (usually) – When you are making more \$ than you spend – When you are dealing with big money, the loss of which you could not absorb – When you are doing something financially risky – When you have investors or, partners who don't participate in the business (but LP could work too) – When you want to look more official than you are
- Directors owe the company a fiduciary duty
 - treat the company fairly
 - duties of care, and confidentiality
 - Unhappy shareholders can effectively sue directors
- 3 significant tax advantages of corp: – Small business tax deduction reduces tax payable – Tax deferral delays paying taxes – Capital Gains Exemption reduces tax payable
- Small business tax deduction: reduces the corporate tax rate from 26% to 13.5% for up to \$500K in net income (not revenue)
- Tax deferral: allows you to earn income at lower corporate rate, which can then be invested and earn interest
- Qualified small business shares: sell your business and you can save up to \$200k in tax
- Best structure for investment: corporation • Prohibited to sell shares to the public – Must rely on exemptions such as friends and family, or accredited investor exemption • Present your idea (BCIC, VANTEC, Angel Investors Forum, etc.) • Find investors • Negotiate terms
- **Tender:**
 - Privilege Clause: The Owner is in no way obligated to accept this or any other tender
 - irrevocable for 30 days after the closing
 - Negligent misrepresentation requires
 - there must be a duty of care based on a “special relationship”
 - the representation must be untrue, inaccurate or misleading;
 - the representor must have acted negligently in making the representation;
 - the representee must have relied reasonably on the negligent misrepresentation;
 - the reliance must have been detrimental to the representee in the sense that damages resulted;
- Defamation: false statements about a person which injures that person's reputation
 - communicated to the third parties
- Protection
 - Practice competently:
 - Keep up to date with industry knowledge
 - Don't undertake services you are not qualified to perform
 - Establish system of checks on work, including peer review where appropriate
 - Use contractual limitations of liability o Temporal (limit the time for claims to be brought)
 - Monetary (limit the amount of claims responsible for)
 - Qualitative (limit the kinds of damages responsible for)
 - Don't accept unreasonable / unrealistic risks
 - Use Disclaimers
 - Notification to public on drawings /reports that purpose is limited and

Things go wrong

- not responsible for unauthorized use
 - Identification of matters for which you are not taking responsibility
- Insurance
 - The right insurance for the right risks

10 Rules of business success

- Leadership is Confidence AND Vulnerability
 - Learn to ask for help, and to accept it
 - Humility is a universal trust requirement
 - Welcome feedback
 - Work on your leadership
 - Understand your impact on others
- Know Yourself
 - Think about your purpose statement
 - Value exercise
- There is no excuse for not getting the basics right!
 - Always be on time. Seriously
 - Thank you notes
 - Politeness to people at every level
 -
- The way we learn is through failure.
 - Never fail then, not taking enough risks
 - Taking personal risk (not company risk, technical risk) is what differentiates leaders
- Failure hurts though and body blows are hard to take – keep your energy banks full in order to keep your reliance in reserve
 - Eat well/Sleep well /Exercise
- Read
 - If someone recommends a book, read it. •
- Your boss isn't who determines whether you'll get promoted – its your peers
 - Only if people want to be lead by you, will you get or stay promoted
 - Be kind to people on the way up
 - Support other people's success
 - hire people smarter than you

- Life Balance is achieved over a lifetime
 - Most important decision you ever made is who your parents were. Second most important was where you were born.
 - The third is quite probably who you chose to be with. Choose wisely. A true partner is just that.
 - Childcare is an investment even when it feels like a tax.
 - Professionals get professional help.
 - Balance is an old word.. it's Integration.
- Parallel career
 - Find your passion (your other passion)
 - Do something in it
 - Use it to develop your leadership skills
 - Your worlds will come together
- Learn how to Keep Your Options Open
 - Option value is the least understood and the most powerful resource you have
- The Secret to Business....is relationships! The bigger the relationship (a bowl as a metaphor) the more you can put into it.

PRIMACY OF BELIEF

- ORDER OF SPEECHES RULE 12-5(72)
Addresses to the jury or the Court must be as follows: a) the party on whom the onus of proof lies may open his or her case before giving evidence b) at the close of the case of the party who began, the opposite party, ... may open his or her case.
- RULE 1 COMPANIES MUST ENSURE THAT THEIR VEHICLES DO NOT PRESENT AN UNREASONABLE RISK TO OTHER USERS OF THE ROADS
- RULE 2 IF THE COMPANY DOES NOT TAKE CARE IN THE DESIGN AND HURTS SOMEONE THE COMPANY HAS TO PAY FOR THE HARM IT CAUSES

Things Learned

- Confirmation bias

- all theories and models are mere approximations
- understanding of a problem or situation is also just an approximation to be replaced by some other understanding of the same problem
- careful with statistics
- Overconfidence
 - Above-average effect
- Physical attractiveness stereotype
 - liking effect
- wary of the narrative
- Filling in details
- Never trust memory
- Stereotypes
- The highly improbable
- Averages can hide important information
- Averages can hide important information
- Causation and Correlation
- 3 rules: 1. Do not fear the break up (pain, loss, shame) 2. Do not buy the new car (house, plane, spouse) 3. If you really want to know what you will feel after your decision, ask someone who has already made it
- • Be skeptical of all predictions • Avoid “advice” unless they have skin in the game
 - Ask someone else how they feel right now
 - Don’t try to predict how you’ll feel later • Your brain tricks you – at least be aware, or even use the tricks to your advantage • Don’t lose all your money on the stock market; but if you do, don’t worry – you’ll get over it.