

Week 1 – NEOLIBERALISM:

- **Worldview (1-1)** Assumptions we have on the world – influence our actions
- Can be an individual or societal idea (eg someone's idea vs society's idea)
- Western Educated Industrialized Rich Democratic (WEIRD) Countries
- – Founded by
 - 1. Secularism, Science/Industrialization (set foundation for rigor, apathy)
 - 2. Capitalism (set foundation for neoliberalism)
 - 3. Colonialism (set foundation for racism)
- **Neoliberalism (1-1):** Beliefs, Progress inevitable
 - **Value defined by market/money:** – What can't be measured (eg love, community) is devalued – Potential relies on individual – Unregulated capital good for innovation ect.
 - **Policy** – Little government role in a free market – Reduce public spending – Trickle-down economics
 - **Legacy** – Economic: More taxes on individuals vs corporations – Social: greater inequality; love, community devalued – Environmental: Increased extraction and pollution

Neil Postman – 5 Things we Need to Know About Technological Change Ideas

- **Technology as Gadget (1-2)**– Technology is defined by an apparatus, not the work that went into making it or its social impacts
- **Socio–technical Dualism (1-2)** – ‘Technical’ ideas (or invention) belong in engineering, not the social impacts – Invention and social/political impact are distinct
- 1. **All technological change is a trade-off.** For every advantage a new technology offers, there is always a corresponding disadvantage. (Think about opportunity and cost)
- 2. **Technological change has winners and losers (1-2)** – The advantages and disadvantages of new technologies are never distributed evenly among a population. Some groups are not even affected, rather than being harmed or helped.
- 3. **Every technology has a philosophy (1-2)** Existence of tech creates or perpetuates ideas – Eg Homeopathy perpetuates distrust of big pharma The medium is the message. Embedded in every technology there is a powerful idea. When people have a certain perspective or worldview, they can typically only see through that lens. To a man with a hammer, everything looks like a nail.
- 4. **Technological change is not additive; it is ecological.** A new medium does not add something; it changes everything. With philosophy comes ecological change (effects of technology are not really isolated – society at large almost always affected)
- 5. **Media tends to become mythic (1-2)**, myth meaning to refer to a common tendency to think of our technological creations as if they were god-given, as if they were a part of the natural order of things. Tech becoming mythic is dangerous because it is accepted as it is and therefore is not easily susceptible to modification or control. Tech becomes the status quo – ‘inscribed in legend’

Neoliberalism – was established under certain conditions and is now the status quo without too much question (debatable)

Week 2: Davis and Chouinard

- **Disaffordance:** not recognizing the relevant aspects of a user
- **Dysaffordance:** not recognizing the relevant aspects of a user, resulting in the user having to misidentify themselves
- Mechanisms and conditions create a scaffold through which artifacts:
 - request, demand, allow, encourage, discourage, and refuse, and do so through variations in perception, dexterity, and cultural and institutional legitimacy
- **Request:** when users are asked to use the object in a particular way, but are not required to do so
- **Demand:** when users are required to use the object in a particular way
- **Allow:** when an artifact remains indifferent to in and/or how a particular feature is used, and to what outcome
- **Encourage:** when users are guided towards some lines of action and away from other lines of action
- **Discourage:** when users can only access a certain line of action through effort due to inbuilt barriers
- **Refuse:** when certain actions are made unavailable to users
- **Perception:** what a subject knows about the artifact
- **Dexterity:** what a subject can do with the artifact
- **Cultural and institutional legitimacy:** social support in executing the function
- **Actor Network Theory (2-2)** Method that makes analyzing socio-tech systems easier, Relationships between actors form products – Social & tech actors are given equal standing offers generalized symmetry (creates criticism – humans have agency, non-humans have affordances)
- **Punctualization (2-2)** Roles and resistances often hard to see when everything is in working order
- **Resistance (2-2)** Must be overcome when creating a relationship Changing resistances could cause actors to make off on their own
- **Power (2-2)** Can oppress or liberate actors (eg. handicapped unfriendly design oppress, non-discriminatory laws liberate) Exerted through relationships between actors, can also be generated by relationships

Week 3: Brightman and Beaver

- **Ethics (3-1)** Morals – what u think is justifiable, ethics – what people in general think is justifiable
- **Moral Foundation Theory (3-1)** Fairness/Reciprocity, Harm/Care, Purity, Loyalty Authority/Respect
- **Macroethics/Microethics (3-1)** **Micro** – ethics regarding within the engineering profession (eg helping someone, stealing work are microethical questions) **Marco** – ethics regarding social responsibilities of engineers (eg software engineers should not leak user data)
- **Merit Goods (3-1)** Goods that should be free – i.e. public goods

Reflexive principlism is an approach to ethical decision-making that focuses on internalizing (reflexivity) a reflective and iterative process (reflectivity) of specification, balancing, and justification of four core ethical principles (beneficence, non-maleficence, respect for autonomy, and justice) in the context of specific cases.

- **Beneficence:** preventing harm and providing benefits.
- **Non-maleficence:** avoiding the causation of harm.
- **Respect for autonomy:** supporting and respecting autonomous decisions.
- **Justice:** fairly distributing benefits, risks, and costs.
- **Specification:** the process of reducing the vagueness of general norms to increase their scope while retaining the moral commitments in the original norm.
- **Balancing:** the process of balancing the relative weights and strengths of different moral norms in different contexts.
- **Justification:** the process by which the coherence (consistency) and completeness (structure) of an ethical-reasoning decision is evaluated.

Week 4: Schmidt

- Virtue ethics focuses on the person who acts (being good), rather than the action itself (doing good).
- A virtuous engineer internalizes the use of ethics to exercise practical judgement to enhance the material well-being of all people by achieving:
- safety, sustainability, and efficiency (the “why” of engineering) while exhibiting
- objectivity, care, and honesty (the “how” of engineering) in
- assessing, managing, and communicating risk (the “what” of engineering).

- **Internal Goods (4-1)** In Engineering: safety, sustainability, efficiency
- **Material Well-being (4-1)** Focuses on improving the parts of our lives that are not good because of our bodily limitations – Eg communication with people is limited by our bodies (we cant teleport to far away ppl). So engineers increased our material well being by making phones
- **Virtue Ethics (4-1)** Being ethical by strengthening the virtues inside of you – Being good will prompt you to do good
- **Empathy (4-1)** Ability to sense other peoples emotions
- **Types** – Cognitive – understanding a perspective – Affective – ability to share emotion/build emotional connection – Compassionate – moves us to action – **How to build it** – Seeing the world as others see it (taking the time to do so)– Don't judge people too quickly – Show ppl they are heard/acknowledged
- **Ethics of care:** Moral action is associated with meeting the needs, reducing/alleviating the suffering, and supporting individuals (care, benevolence, and interpersonal relationships) Four methods/ideas:
 - **Interdependent relationships:** maintain relationships and respond to the needs of others.
 - **Context and circumstances:** consideration of context and circumstance of specific cases
 - **Vulnerability:** understand the relevance of the needs and suffering of others and act according to those who can be affected by an action.
 - **Voice:** a way of communicating the needs of all those who are affected by an action

Week 2: Schmidt

- AI creates ethical distance in decision-making.
- The ethical implications of AI can be mitigated by the implementation of ethics of care. Moral distance has two components:
 - **Proximity distance:** there is an inverse ratio of readiness to cruelty and proximity to victims.
 - **Physical distance:** how physically far away the affected parties are.
 - **Temporal distance:** how far into the future the consequences of one's acts are.
 - **Cultural distance:** how morality and ethical standards are separated from the culture where they emerge.
- **Bureaucratic distance:** procedures of formal rationality with hierarchies, complex processes (many hands), and principles
- **Hierarchy:** individuals tend to act against their principles when an authority demands.
- **Complex processes (many hands):** it is hard to identify who is morally responsible for the outcome of a collective action.
- **Principlism:** creates a blind attachment to guidelines and principles.

Week 2: Schmidt

- **Sustainable Development (5-1)** In conflict with neoliberalism, types of sustainability:
- **Weak:** – ecological capital can be substituted by innovation – Achieved when capital grows/ at least sustained for future gens
- **Strong:** – Ecological capital limits innovation– Sustainability is based on whether we are living within the environmental limits
- **Three Pillars Framework (5-1)** economic growth, political freedom, and environmental protection are needed for true sustainability under 3 Pillars model – Environmental protection not being fulfilled
- **Planetary Boundaries (5-1)** Thresholds involving human activity on the planet 1. Chemical pollution 2. Climate change (exceeded) 3. Ocean acidification 4. Ozone depletion 5. Nitrogen/Phosphorus cycle (exceeded) 6. Freshwater use 7. Land use 8. Biodiversity lost 9. Aerosol loading
- **Biodiversity loss:** – 1. Change in land/sea use – 2. Organism exploitation – 3. Climate change – 4. Pollution – 5. Invasive species
- **Petrocapitalism (5-2)** Shows how dependent current political system is on oil
- Petrocapitalism benefits to canada – We have lots of Fossil Fuel reserves and have better environmental protection laws (the lesser evil) Environmental Risks 1. Emissions 2. Ecological Disturbance 3. Lack of cleanup 4. Energy requirements for extraction and maintenance 5. Methane Leaks 6. Explosions during shipment
- **More-than-Human Actors (5-2)** The environment, animals – Should be given political status for protection
- **Post-Sustainability Trilemma (6-1)** Political Participation, Economic growth, environmental protection – only 2 can be achieved at same time
- **Technology business as usual:** Institutions only provide means for populace to do what they want –Market works freely –Wont work since we are not on track to meeting crucial climate targets **Environmental Authoritarianism** – Political freedoms allow people to neglect the environment – Democracies cannot impose limits effectively, small group of decision-makers more effective – Authoritarian growth still requires extraction, thus wont work.
- **Post Growth–** we no longer strive for economic growth – A-growth – no longer growing, Degrowth – shrinking *Achieving post growth* 1. End making devices meant to break down 2. Less advertising 3. Ownership -> usership (??) 4. End food waste 5. Scale down industry that destroy ecosystem 6. Account for human cost 7.Reduce inequality 8. Decommodify public goods (eg education, medicine)
- **Tensions** – Same policy could fit under all 3 modes of governance (with the right framing) – Tech from TBAU that could help solve climate change potentially disastrous (eg geoeng) – Democracy may not be fully compatible with environmental protection – WEIRD countries may never accept EA – Innovation may stop without economic growth
- **GDP (6-1)** GDP = Consumption + Investment + Gov Spending + Net exports
- Doesn't include value of community, sustainability – Also Domestic Material Consumption – Kind of bad cause doesnt take into account the impact of producing/transporting goods – Sometimes offshored by rich countries to poor countries

Sustainable Energy/Decarbonization (7-2)

- **Carbon Capture and Storage Technology** – Leaks of CO2 during transport – Storage in geological formations (may harm surrounding ecosystem)– Promote burning of fossil fuel
- **How to move away from Fossil Fuels** – Wind, Water and Sunlight (WWS) that are reliable and flexible – Energy storage – Long range transmission lines – Smart Grid – Managing sunk costs when transitioning
- **Tragedy of the Commons (7-2)** When many people share a resource, it will be used up
- **Just Transition (7-2)** – Specific principles to question energy processing (extraction, production transportation utilization etc.): Consider energy availability, affordability, responsibility, intergenerational equity, transparency and accountability, due process etc

Week 8: Doughnut Economics and Circular Economy

- **Doughnut economics:** Modern economics was hijacked by a "cuckoo" goal (GDP growth) and needs a clear goal (human prosperity in a flourishing web of life). The Doughnut: a twenty-first-century compass. Between its inner ring (social foundation of human well-being) and outer ring (ecological ceiling of planetary pressure) lies the safe and just space for humanity. All about solving social issues but staying within environmental limits
- **How to achieve the safe and just space (the 5 factors)?** 1. Prevent overpopulation 2. Distribution – Set up infrastructure for distributing resources 3. Stop people from being consumerist (change aspirations) 4. Improve technology 5. Government that enforces planetary protection and social betterment
- **Circular Economy/Regenerative (8-1) Biological cycle** – has to do with stuff that naturally degrades – Keep things in services as long as possible – Return back to earth effectively (not in a landfill where plants/animals/fungi cannot use them) – Do not mix technical with biological (eg mixed fabrics) **Technical Cycle** – Sharing – Design for repair – refurbish/reuse parts of old designs in new – recycle where possible

Week 11 – Cech, Erin – Misframing Social Justice:

- Depoliticization says social issues should be ignored, meritocracy justifies that there aren't any issues as inequalities arise from fair systems.
- **Depoliticization:** Belief that engineering is a technical space and should be kept separate from social/political issues. Through the frame of depoliticization, the political and social foundations of all engineering work are culturally invisible in the meaning systems surrounding that work. Any aspect of social life which has conflicting perspectives is cast as political and dangerous to real engineering work.
- Meritocracy: Belief that inequalities are the result of a properly-functioning social system that rewards the most talented and hard-working. (no systematic aspect)
- Allows denial of responsibility from engineering to fix these inequalities. Meritocratic ideology also frees eng from having to design more accessible and affordable products and services over profitable ones.
- Biological Determinism: Idea that an individual's characteristics and behaviour are dictated by biology (genes) and disregards environment
- **Diversity, Equity, Inclusion (9-1)** Lack of diversity in engineering – Likely because engineering not a super welcoming place for minorities **Equity** – describes recognizing and eliminating barriers faced by ppl due to identity **Inclusion** – everyone feels welcomed, supported Diversity a fact, inclusion the practice, equity the goal
- **Intersectionality (9-1)** The identities of a person influence who they become (due to biases and discrimination)
- **Privilege (9-1)** Special advantages or immunities granted to a person or group of people
- **Design for Social Justice Framework (9-2)** How to design for social justice? 1. Engage in listening 2. Identify things in the society that give rise to needs 3. Increasing human rights, opportunities, resources 4. Reducing risks/harms 5. Enhancing human capabilities (eg giving new skills)
- **Social Justice (9-2)** Equitable distribution of opportunities and resources
- **Listening (9-2)** Types of Listening – The spec (eg the size of something) – To desires – The other – Local context – Structural conditions
- **Economic Inequity (10-1)** Median income growing (modestly) across all groups, Fewer people living in extreme poverty, Some decline in social mobility, People with high incomes benefit the most, Problems that come with increasing income inequality
- **Design for Technology** → prevails in eng courses → addresses constraints such as budget, time and functionality all tailored to clients needs → focusing on the "specs". Cons: Fails to address why products are needed, how they can affect others esp. if they cause harm e.g. designing highly functional prosthetics while improving life of an individual can price poor veterans out of market

Week 12 – ROB KITCHIN:

Urban big data is generated and processed in real time providing an exhaustive scope and fine resolution. We need to create smart cities and urban science that have a set of ethical principles/values at their heart.

- **Datafication:** a radical expansion in the volume, range and granularity of the data being about people and places – **Digital footprints** – traces of data we leave ourselves – **Digital shadows** – traces of data captured (contributes to behaviour surplus – data that goes beyond product use)
 - **Dataveillance:** a mode of surveillance enacted through looking, processing, generating, sorting and sifting datasets in order to identify, monitor, track, regulate, predict and prescribe
 - **Geosurveillance:** the tracking of location and movement of people, vehicles, goods and services and the monitoring of interactions across space
 - **Data uses:** social sorting, anticipatory governance, etc.
1. **Inferencing, predictive privacy harms** – Insights can be gathered by making inferences about data – The other attributes of a person could be inferred by looking at similar people – Inference algorithms are Black boxes for example predictive modelling using urban big data
 2. **Anonymization and Reidentification** – "Anonymous pseudonym" an oxymoron – people are easily identified from data attached to them – unique tag to ID individual and is tracked to make profiles
 3. **Obfuscation and reduced control** – Sharing is widespread, thus often leaked and repurposed in ways that were not desired by person giving the data
 4. **Absence of notices and consent** – If you don't want to be surveilled you might have to inconvenience yourself (eg not going on a street that has cameras) or denied services or lose access
 5. **Data use, sharing, repurposing** Datasets widely shared but with poor documentations – bias fosters – Solution: data should only be kept for how long its needed as if purpose not specified = reuse & sharing and data can be kept forever, repackaged data given to data brokers

Urban issues are often best solved through political/social solutions and citizen-centered deliberative democracy, rather than technocratic forms of governance

Smart city initiatives and urban science need to be recast in three ways: a re-orientation in how the city is conceived, a re-casting of the epistemology of urban science, the ethical dimensions of smart city technologies and urban science need to be much more thoroughly mapped out and addressed

Note: the ethical concerns raised in this paper need to be continued to be addressed from a more traditional privacy rights perspective

Week 11 – ALEC STUBBS:

Ethics of Machine Learning (5 Issues) (11-2) – 1. Inferring Sensitive Attributes – 2. Predatory Microtargeting – 3. Discriminatory models (like using protected classes as input) – 4. Machine Bias (eg hiring someone cause they're white) – 5. Coded gaze (input data excludes some groups)

The four "S"s of the technocapitalist economy tend towards heightened levels of economic centralization and economic inequality as compared to those experienced under industrial capitalism

- **intangible assets:** the development of specific products/processes or investments that create/strengthen a firm's competitiveness

Four "S"s of the intangible economy:

- **scalability:** the ability of intangible assets to be used repeatedly in multiple places simultaneously at less marginal cost e.g.: software scalability → economic centralization
- **sunkenness:** investment in intangible assets leads to the development of irrecoverable costs
 - e.g.: branding, R&D, product design, software, etc.
 - sunkenness → equity financing → economic centralization
- **synergies:** intangible assets are worth more when they are combined
 - e.g.: uber + lyft, computers + smartphones, internet + mobile networks
 - synergies + scalability + sunkenness → monopolization → exploitation by venture capitalist firms
- **spillovers:** other businesses can take advantage of intangible asset investments they don't make themselves
 - e.g.: iphone spillovers → monopolization of venture capitalist firms to prevent access to spillovers

Week 13 – ZEYNEP TUFEKCI: Computational Politics

Examines six intertwined dynamics that pertain to the rise of computational politics: the rise of big data, the shift away from demographics to individualized targeting, the opacity and power of computational modeling, the use of persuasive behavioral science, digital media enabling dynamic real-time experimentation, and the growth of new power brokers who own the data or social media environments. It then examines the consequences of these new mechanisms on the public sphere and political campaigns.

- **public sphere:** the location and place in which rational arguments about matters concerning the public freed from constraints of status and identity
- **computational politics:** applying computational methods to large datasets derived from online and offline data sources for conducting outreach, persuasion, and mobilization in the service of electing, furthering or opposing a candidate, a policy or legislation.

Six dynamics:

- **big data:** Big data refers to large and complex datasets that are generated from various sources, including digital platforms, social media, sensors, and other sources of information. These datasets are characterized by their volume, velocity, and variety, meaning they contain a massive amount of data, are generated at a high speed, and come in various formats and types.
- **emergent computational methods:** allow political targeting from group to individual-based modeling
- **modeling:** allows for acquiring answers about an individual without directly asking questions to the individual
- **behavioral science:** results in a move away from models of the "rational human" towards more refined models of human behavior, allowing for enhanced social engineering
- **experimental science in real-time:** enable these methods to be experimentally tested in real time and for immediate deployment, molding the public sphere with more efficiency
- **power of platforms and algorithmic governance:** require access to proprietary, expensive data, and are driven by opaque, non-transparent algorithms (black box algorithms)

The document discusses how political campaigns have historically used **wedge issues**, which are highly salient and contentious topics, to elicit significant passion and mobilize support from specific segments of the voting population. It explains that these issues can be double-edged for campaigns, as they elicit significant passion on all sides. The document also highlights how computational politics, driven by big data and individualized targeting, may further encourage the deployment of potent wedge issues at the expense of broadly engaged topics. Additionally, it discusses the use of wedge issues in direct mail and the prevalence of wedge issues in digital networks, creating a new type of "dog whistle" politics.

Information asymmetry refers to a situation in which one party in a transaction or interaction has more or better information than the other party. In the context of computational politics, information asymmetry arises from the unequal distribution of knowledge and access to data between political campaigns, data brokers, and individuals. This imbalance allows campaigns and other entities to accumulate extensive information about individuals, often without their knowledge or consent, while the individuals lack access to this information.

Epistemic fragmentation refers to the division and isolation of knowledge and information within a society or community, leading to the formation of distinct and often conflicting knowledge bases. In the context of computational politics, epistemic fragmentation can occur as a result of the individualized targeting and messaging strategies employed by political campaigns. These strategies, driven by big data and computational modeling, can lead to the creation of isolated information bubbles, where individuals are exposed only to content and messaging that aligns with their existing beliefs and preferences. This can result in a fragmented public sphere, where different segments of the population are exposed to divergent and often polarized information, hindering the formation of a shared understanding and discourse. Epistemic fragmentation can contribute to societal polarization and the erosion of a common knowledge base, posing challenges to informed decision-making and democratic deliberation.

It highlights the information asymmetry and secrecy built into computational politics, drawing parallels to the concept of the "panopticon" as described by Jeremy Bentham and later used as a metaphor for modern surveillance by Foucault. The document emphasizes that modern social engineering operates by making **surveillance** implicit, hidden, and invisible, without the observed person being aware of it.

Mechanisms for Decarbonization

- Feed in Tariffs: small scale clean energy producers are promised (a usually high) price for their output to encourage small enterprises
- Carbon Taxes: Raises the cost of coal, gas, and oil, compared with other sources to shift incentive. (Offers certainty to consumers), currently practiced in Canada, no control on carbon emissions
- Permit System: emitters purchase permits for CO2 emissions set by the government (limits total carbon supply/output). Price increases with scarcity (leads to price volatility and administrative complexity)
- Businesses transfer production to countries with more lax emissions (i.e. leads to carbon leaking).
- Gain in efficiency leads to a higher consumption of resource which worsens the environmental crisis (i.e. in Indonesia)
- Other mechanisms: large scale investments in renewables and research, subsidies and tax breaks for energy efficient buildings, appliances and electric vehicles. Reducing tax breaks and other benefits for large emitters, Ecotaxes on other products and services.