

## Reflexive Principlism

**Beneficence:** What are potential benefits and how can they be maximized? What values are embodied (freedom, community, efficiency)? Is this the best way to achieve them? What benefits are generated through care and reciprocity?

**Nonmaleficence:** What are potential harms and how can they be minimized/prevented? Who is affected and what can they do about it? What harms come from lack of care & reciprocity?

**Justice:** Who benefits and who risks? Is this evenly distributed? How can we privilege those with less power? How can we promote community, fairness and equity? How do the relationships demonstrate balance and fairness through reciprocity?

**Autonomy:** Who do we consider? What do they want? How can we protect their rights? What are competing rights? What maximizes individual freedom? What are the roles of actors, are they aware of the responsibilities and are roles honored?

### Reflexive Principlism Steps:

1. Specification: Making general norms more specific to a particular context
2. Balancing: Resolving conflicts between norms; weighing their importance
3. Justification: Evaluating the completeness and coherence of a decision

## Care Ethics

**Interconnectedness:** Awareness of one's place in a network of actors. What are the roles of past/present actors? How are they connected? How does hardship impact other actors?

**Interdependence:** Relationships that motivate reciprocal responsibilities and beneficial care. What products are formed by relations? What benefits/harms are created by care and reciprocity/lack thereof? What are the relations between human and more-than-human actors?

**Competence:** Virtues, skills and knowledge needed for care. What do I need to know about (more-than-human) actors? How do I gain the knowledge? What virtues are relevant?

**Attentiveness:** Attentiveness to the context of problems. How can I minimize negative impact on the network? Which actors are particularly deserving of attention and care? What happens when relations are altered? Over time? In other systems?

## ANT

Looks at structure, relationships and power. Power is generated through the network; not from the most powerful actor but from the most influential relationship.

**Translation:** Overcoming resistances to bring actors together (process: patterning, social orchestration, etc) to make a functioning system (effects: devices, organization, concepts).

**Patterning/Ordering:** Stable sets of relationships maintained over time; when a pattern works, it may replicate itself.

**Punctualization:** When many actors are concealed in a coherent entity. Things can break off from the network, depunctualizing the network as a whole.

**Intermediaries:** transport the force of another actor.

**Mediators:** have outputs that cannot be predicted.

## Affordances

**Mechanisms:** Request, demand, allow, encourage, discourage, refuse; the "how" of relationships.

**Conditions:** Perception (knowing the function), dexterity (having the skill to use it), cultural/institutional legitimacy (cultural/institutional norms); the "when" of relationships.

## Postman's Five Things

1. Culture always pays a price for technology
2. Technology has winners and losers
3. "Powerful ideas" are embedded within technology
4. Technological change is "ecological" – it has wide reaching implications
5. Technology tends to become "mythic"

## Nightingale's What is Technology

Way of Thinking about Technology	Exemplar user	Key Issue
Artefacts that solve problems	Engineers	Takes process as given, solves problems
Outcome problem-solving process	Innovation-Managers	Takes context as given, improves process
Artefacts, technique & regime	Sociologists	Takes history as given, counterfactual context
Co-evolving artefacts, etc	Historians of technology	Explores 'Long view' of history
Distributed co-evolution	Tech-Governance	Systemic interactions
After S&T coincide	Historians of Tech-change	Qualitative difference btw machines & systems
Way of looking at the world	Philosophers	Systems imposed frameworks

## Erin Cech - Misframing Social Justice

**Depoliticization:** Belief that engineering is purely technical, so political and social questions are outside our scope. Allows us to carry on with our important work without the messiness of asking questions about the impacts of engineering.

**Meritocracy:** Belief that success is a result of individual work and talent. Denies the structural foundations of inequality, which may include our own work; allows us to think that we neither play a role nor have a responsibility to fix inequality.

These ideas are often upheld by the very people it disadvantages. We only need to agree to "go along".

**Leydens, Lucena, Nieuwsma - Design for Social Justice**  
"[E]ngineering practices that strive toward an **equitable distribution of opportunities and resources** in order to **enhance human capabilities** while reducing imposed risks and harms among the citizens of a society."

Contextual listening, identifying structural condition that give rise to needs (economic, cultural, etc), increasing human rights, increasing opportunities and resources, reducing imposed harms, enhancing human capabilities (what people are able to do and be, positive freedoms). DSJ renders visible the constraints already inherent but are often ignored.

### Wittkower Disaffordances & Dysaffordances

**Disaffordance:** Failure to recognize differing experiences (race, gender, disability, religion, etc).

**Dysaffordance:** Failure to recognize differences and forcing individuals to misidentify themselves in order to use a service.

## Kentaro Toyama - Can Tech End Poverty?

"Technology—no matter how well designed—is only a **magnifier** of human intent and capacity. It is not a substitute."

"New technologies generate optimism and exuberance eventually dashed by disappointing realities." (Connect to Russell and Vinsel - Hail the Maintainers)

Technology can widen the gap:

**Differential Access:** Richer people have better access to technology, so technology gets designed for them

**Differential Capacity:** Poorer people have less capacity (social skills, education, connections) to work with technology

**Differential Motivation:** People have less motivation to use technology for "productive" purposes

## Joseph Wong - Poverty, Invisibility, and Innovation

"Poverty is no longer a temporary or transitory phenomenon."

**Social innovation** needs to be examined from the perspective of the very poor. "Move our focus from poor countries to poor people"

**Poverty means invisibility:** poor people work informal arrangements, maybe illegal; it's hard to give them welfare; companies also ignore them due to their lack of money. To innovate for the poor: **Reduce direct monetary costs, reduce transaction costs** (e.g. transportation, lost work, social ostracization) and **actively generate demand**.

**Krista Donaldson - \$80 Knee**

The product needs to be **world class, user-obsessed** (consider the whole actor network – the user, the clinic, the market, the supply chain, and also consider the social context (transaction costs, Wong)), and **market-driven**.

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**Alec Stubbs - Technocapitalism (Intangible Economy)**

The intangible economy worsens monopolistic tendencies.

**Scalability:** Intangible assets can be reproduced at almost no cost, allowing rapid expansion and monopolization.

**Sunkness:** Investments to intangible assets are equity-based, so only those who are already rich can afford the risk of investing in them, which makes them even richer.

**Synergies:** Intangible assets are worth more together in a network. This means newer tech will try to integrate with the big players, making them even bigger.

**Spillover:** With intangibles it's easy to profit off someone else's work. Therefore VCs have even more of an incentive to create a monopoly where it's harder for others to take advantage of their spillovers.

**Walled Garden:** The platform provider has total control over content, applications, etc (e.g. Netflix with low initial fees)

**Madrigal - Automation Could Worsen Racial Inequality**

Automation affects marginalized groups more, because they are typically one of the ones employed in low-skilled jobs that are easily automated. (From seminar) Less education also means it's harder for them to adapt and find new jobs.

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**Shoshana Zuboff Documentary**

We think we know the tradeoffs of service vs. privacy, but "the information we provide is the least important part of the information collected about us".

**Behavioural Surplus:** data that we leave behind as a result of everyday actions, from which valuable data can be extracted, with unintended consequences (e.g. behavioural prediction, targeting people when they're most vulnerable, facial recognition tech sold to China).

**Surveillance capitalism:** "Unilateral claiming of private human experience as free raw material for transition into behavioural data". Engineered to be undetectable and create ignorance. Companies make money from **surveillance dividends** (people pay for products with their privacy). It's largely unimpeded by legislation since it's never been done before. Surveillance capitalism leverages **scale** (amount of data), **scope** (sources of data), and produces **actions** beyond the online world.

**Eric Siegel - Machine Learning Threatens Social Justice**  
**Discriminatory models** use protected classes; **machine bias** can infer protected attributes; **coded gaze** means some groups are underrepresented in the training data. These are problematic because what they get wrong.

**Sensitive attributes** (e.g. pregnancy, relationships status) can be inferred from data, enabling **predatory**

**micro-targeting** for vulnerable groups. These are problematic because what they get right.

Finally, ML **lacks heavily in transparency**.

**Rob Kitchin - Ethics of Smart Cities**

Data from various sources used to manage and improve operations across the city. Big data led to a radical expansion in the volume, range and granularity of the data. Promotes a "computational" understanding of cities which fails to account for complexities and biases in data.

**Datafication, dataveillance and geosurveillance** tracks individuals, which can be used to **infer and predict** their behaviour. "Anonymized" data can be easily **re-identified**. Data is passed between various actors resulting in **obfuscation and reduced control**. **Consent is missing or ill-informed**. Data is **shared and repurposed**.

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**Diebert - Digital Authoritarianism**

Digital tech is used by authoritarian regimes to monitor and manipulate citizens and political opponents, using malware and big data (e.g. Saudi Arabia, social credit system in China). "Selfie culture" makes this even easier.

Even in democracies, tech still causes political divides.

**Zeynep Tufekci - Engineering the Public**

Computational politics erodes the public sphere. There has been an **exponential increase** in the data available; new algorithms can use this data to **profile specific individuals**; this targeting is **opaque to the individual**, allowing deceit; behavioral sciences allow effective **social engineering**; digital networks allow these methods to be **tested and deployed immediately**; all is driven by opaque algorithms that give control to a few **powerful social media platforms**.

This allows campaigns to use "wedge issues" that further divide and polarize citizens.

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**Jamil Zaki - Empathy Shortage**

Empathy has been decreasing due to factors such as neoliberalism. Empathy is a skill that can be learned and improved. (Examples of training police and white supremacists to use empathy.) Can relate to Week 5 podcast about indigenous communities' collectivism vs. individualism.

**Russell and Vinsel - Hail the Maintainers**

"Innovation provided a way to celebrate the accomplishments of a high-tech age without expecting too much from them in the way of moral and social improvement." The fixation on innovation makes us ignore maintenance, which is often more important. This stems from the neoliberal focus on growth.

**Technology is not innovation**; many technologies in widespread use have been unchanged for decades.

**Basic infrastructure is essential. A lot of essential work goes into maintenance.**

**Pawley - Asking Questions, We Walk**

People are good at understanding direct causation, but bad at systemic causation, which is what causes many of the crises.

"Instead, we need to grapple with what it could mean to be an engineer if engineering no longer relied on gendered and raced logics about our fundamental values regarding truth, science, large-scale change, and progress." (Relate to Cech)  
"For people in power, using the metaphor of homogeneity as tumor doesn't actually threaten their position in power, so it is not in their interest to see it otherwise."