ETHICS IN TECH PRACTICE:
An Overview

ETHICS IN TECHNOLOGY PRACTICE: AN OVERVIEW

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Project Background

Ethics in Technology Practice is a project developed by the Markkula Center for Applied Ethics and made possible by a grant from Omidyar Network's Tech and Society Solutions Lab. The project aims to provide free materials to encourage and support ethics training workshops in technology companies, especially for designers and engineers. Such training workshops are best led by qualified technology ethicists with experience teaching applied ethics content in technical and industry settings. To request permission to use or adapt these materials for training purposes, please email us at ethics@scu.edu. They are made available under a Creative Commons license (CC BY-NC-ND 3.0) for noncommercial use with attribution and no derivatives.

Project Materials

The materials made available as part of this project include:

1. What Are These Materials?
2. Ethics in Tech Practice: An Overview
3. Conceptual Frameworks: Ethical Lenses to Look Through
4. A Framework for Ethical Decision-Making
5. Teaching Guide to Ethics in Tech Practice
6. An Ethical Toolkit for Technologists
7. Case Studies and Discussion Questions
8. Sample Design Workflow
9. Sample Slides for Ethics Training Workshops
10. Tech Ethics: Best Practices

THE OVERVIEW

'Ethics' has become an increasingly urgent topic of discussion in the technology industry, from questions about 'Ethical AI' to the ethics of autonomous vehicles and the ethics of our new digital media culture. But what is ethics, really? And why are we talking about it in technology contexts? And why *now*?

This short overview/reference guide does not give complete answers to those questions, but rather functions as a quick, readable orientation to them to stimulate deeper discussion. It also works to dispel some common myths/misunderstandings about ethics that can get in the way of effective ethics training in technology settings.

What *Is* Ethics? It Is *Not*:

Legal/Corporate 'Compliance' (Legal ≠ Ethical; Ethical ≠ Legal)
A Set of Fixed Rules to Follow (No fixed set of rules can cover all ethical cases/contexts)
A Purely Negative Frame: ("Don't do that! Or That! Or THAT!")
Subjective Sense of Right/Wrong ("You have your ethics, I have mine")
Religious Belief ("It's right/wrong simply because my religion says so")
Non-moral Customs of Etiquette ("That is just *Not Done* here")
Uncritical Obedience to Authority ("Good Germans'/'Good Americans")

Ethics *Is*:

Promoting objective (but context & culture-dependent) conditions of human flourishing
Respecting the dignity of others and the duties created in our relationships to them
Living as a person of integrity and principle
Promoting beneficial and just outcomes, avoiding and minimizing harm to others
Cultivating one's own character to become increasingly more noble and excellent
A skillful practice of moral perception, sensitivity, and flexible, discerning judgment
Learning to more expertly *see* and *navigate* the moral world and its features

Kinds of Ethics

Formal Ethics

Theoretical Ethics (moral theory in philosophical ethics and moral psychology)
Normative Ethics (theories that say how we *should* act, how our ethical norms *should* be)
Descriptive Ethics (theories that neutrally describe what a society's ethical norms *are*)

Practical Ethics

Applied Ethics (Translating theoretical knowledge of ethics into specific action-guidance)
Professional Ethics (Ethical norms, values, & practices distinctive to a particular profession)
Technology Ethics (Theoretical or applied expertise in the relationship between tech & normative ethics: includes robot ethics, digital media ethics, data ethics, AI ethics, etc.)
Engineering and Design Ethics (A field of professional ethics that develops theoretical & applied insights into the distinctly *ethical* conditions of successful engineering/design)

This training focuses primarily on *practical* ethics, drawing on formal ethics in limited ways as a conceptual tool to help identify and classify ethical issues that commonly appear in technology practice.

Why Are Technology and Ethics Increasingly Interconnected?

- Technology is increasingly the medium through which we act with & toward others

- Technology increasingly shapes the social, political, economic, biological, psychological, & environmental conditions in which humans strive to flourish

- Technology makes us more powerful as a species but more vulnerable and interdependent as individuals; we flourish or collapse *together*

- Technological design and implementation decisions are concentrated in the hands of an increasingly elite few who do not embody the interests/needs/values of all

- Technology in our global economy manifests an impersonal drive to efficiency, optimization, measurement, control, & other machine values, often at the expense of humane values such as justice, compassion, nobility, freedom, and leadership

- Technological choices now have *existential* implications for future generations, for the survival/flourishing of humanity & others with whom we share the planet

- For humanity to have a future worth wanting, the growing power of technology must be matched by growth in human *wisdom* & *responsibility*; our efforts must be rebalanced to fuel the latter kind of growth that is presently in neglect

Growing Concerns in Technology Ethics:

The digital age has brought *undeniable* gains in economic productivity and efficiency. It has greatly amplified the scope, speeds, and scales at which humans can communicate, socialize, and access information. It has led to numerous medical and scientific breakthroughs that would have been impossible without it. But it has also had damaging social effects and created many new or amplified ethical risks, such as:

- **Declining Transparency/Rising Opacity** of Technological Processes, Decisions, Risks, Limitations, and Effects

- **Algorithmic Bias and Injustice**: Use of Algorithmic Decision-Making to Conceal, Legitimize, or Perpetuate Harmful or Unjust Human Biases

- **Diminished Data Privacy/Security:** The growing difficulty of controlling access to sensitive information about you that may be used in ways you do not want

- **Technological 'Psyops'/Manipulation:** The use of techniques such as AI, targeted digital advertising, and behavioral 'nudging' to alter our beliefs, desires, emotions, habits, and values in ways that we do not control or want

- **Tech Monoculture:** The global spread of new digital technologies such as smartphones, social media, and virtual assistants, all designed by a relatively homogenous culture of technologists who cannot represent or anticipate the full diversity of human experience, needs, and values

- **Increasing Concentration of Power:** The tendency of new technologies to concentrate wealth and power in the hands of very few, and evidence of declining economic mobility and opportunity in many technologically-driven societies

- **The Surveillance Society:** The development of increasingly sophisticated modes of digital surveillance, including c face, gait, and voice-recognition algorithms to identify and track our behavior in both public and private spaces; especially as used by powerful actors in society to monitor the less powerful

- **The Attention Economy**: The increasing monetization of human attention, in ways that negatively impact the cognitive, emotional, and physical health of many individuals and families, create risks of technological addiction, and are correlated with significant economic and productivity losses in the workplace.

- **Growing Machine Autonomy/Declining Human Control and Accountability:** Automated decision-making has expanded steadily in recent decades, and developments in machine learning are accelerating that trend. Maintaining meaningful human control and accountability of medical, judicial, governmental, employment, educational, and military decisions is increasingly challenging.

- **New 'Digital Taylorism':** New digital forms of 'scientific management' and control of workplace behavior, in ways that can be dehumanizing, demoralizing, and destructive to the mental and physical health of workers

- **Declining Social Trust/Civic Virtue:** The impact of social media 'echo chambers,' 'fake news', politically motivated 'trolling,' digital radicalization, polarization and culture wars on democratic virtues and civic trust has been devastating in the U.S. and the U.K., and has inflamed political conflicts elsewhere. To date, damaged trust in traditional social authorities—such as lawmakers, scientists and legacy media—has not been replaced by other widely trusted social agents.

- **Environmental Sustainability of Digital Culture:** The rapid growth and spread of computing power places increasing pressure on energy supplies, which contributes to continued carbon emissions and accelerated climate change. It also demands more intensive mining of rare earth minerals and other non-renewable natural resources. Finally, the declining cost and growing disposability of digital devices is causing an explosion in non-biodegradable and sometimes toxic 'e-waste,' much of which is shipped off to poorer countries for unsafe disposal.

- **Democracy vs. Technocracy/Tech 'Solutionism':** Many technologists believe the risks and challenges described above can best be solved by the development of *more and better technology*. Critics challenge this 'technological solutionism' as ignoring the underlying social, political, and economic ills that perpetuate ethical failures in society, and placing unwarranted faith in superficial 'techno-fixes' as opposed to more robust social, political, and economic reforms. They also question whether technologists in democratic nations act as unelected 'technocrats' – trespassing on the democratic franchise of the citizenry by means of regulatory capture, relentless privatization of public functions, and degradation of the civic power of communities to design their own solutions to social problems.

How Can Cultivating Ethics in Tech Practice Help?

The risks and challenges above are immensely complex and challenging to address; and as noted above, many of them require non-technological solutions and reforms. Still, given that many of the harms above have been amplified by failures of technologists to anticipate and adequately respond to ethical issues, these risks can surely be reduced and mitigated by ethical reforms of technology practice.

Key to such reform is cultivating more ethically skillful and responsive practices of technology design and engineering.

The free resources developed by the Markkula Center for Applied Ethics and included here are intended for tech companies, designers, developers, and engineers who want concrete, practical tools and guidelines for cultivating those skills in their organizations, and integrating ethics more fully into their products and design. There is no 'silver bullet' here; creating technologies that will promote human flourishing and sustainable life on this planet is hard and uncertain work, involving difficult tradeoffs, some inevitable failures, and challenges that defy simple and stable solutions. But it is *good* work, work that can and must be done.

A Useful Metaphor: Ethical Issues are Like Birds

Like birds, ethical issues are:

- *Everywhere* (some local, some regional, some global; some rare & some common)
- *Varied* (some big and some small, and exist in a huge range of different forms)
- *Can be difficult to spot* (even when 'hidden in plain sight')
- *Frequently concentrated in particular areas/environments*
- *Easier to spot and identify in groups than alone*
- *Sometimes more easily spotted with special guides, tools, or 'lenses'*
- *Noticed by people who are in the habit of looking for them*
- *Can often be anticipated if you know where/when they tend to show up*

Getting good at noticing and identifying ethical issues, like birdwatching, is a skill that takes repeated practice to develop.

But you *don't* need to be an academic expert on moral philosophy to acquire this skill – just as most expert birdwatchers are *not* ornithologists.

What matters is *not* a theoretical knowledge of ethics (though this can be a useful tool, like a birdwatchers' field guide), but *practical experience and skill* assessing the ethical landscape in those areas connected to your life and work.

What Tools Can Help to Build Ethics in Tech Practice?

Three kinds of tools are key:

1) *Conceptual frameworks* that help you recognize ethical issues when you are in their presence, and help you to describe them; as noted above, this is where a loose grasp of ethical theory can work like a field guide to practical ethical concerns.

2) *Case studies* in the technology domain, including design and engineering, that can be analyzed as a form of ethical practice and skill development. Case studies function as a bridge from the conceptual level of ethics, allowing acquired ethical knowledge and skills to transfer to new, real, professional situations in which they will be needed.

3) *Professional exercises/routines* that can seamlessly integrate ethical practices and skills into existing workflows, company/team cultures, and organizational incentive structures.

This free set of resources includes tools of all three kinds:

a set of **conceptual lenses** for thinking about ethical concerns

a set of relevant **case studies** with discussion questions that invite application of ethical reasoning and decision-making skills

a professional **toolkit** consisting of seven habits/routines that can be integrated into technology workflows, cultures, and incentive structures.

a list of well-recognized **best practices** in tech design and engineering

These materials can be selected and customized for ethics training at multiple levels (individual, team, department, division, corporate), but at each level they must be integrated with care as part of a genuine effort to build in **sustainable** ethical practices.

Ethics in tech practice is not something that can be checked off a checklist, or 'completed' as a task and then set aside. It's a way of doing one's work that must remain part of the technologist's mindset, must be integrated in their daily work habits and those of their colleagues, and must be *reinforced at all levels of leadership* so that the retention and ongoing cultivation of ethical design and engineering skills (as well as ethical skills in other company roles) is noticed, acknowledged, and rewarded.

Without the necessary incentive structures, company-wide integration of ethical expertise and communication channels, *and* the resources for effective, sustainable implementation of ethical routines and tools, all the 'good intentions' in the world won't make much of a difference in the company's products or its employees' success in ethical practice. The ethical reputation of technologists and technology products is quickly becoming the metric by which 'good' companies are judged, and a key factor in attracting and retaining top talent. Building ethical support systems is investing in the future of tech excellence.

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