

How To Be An Ethical Technologist

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Abstract. Many of us got involved in computing because programming was fun. The advantages of computing seemed intuitive to us. We truly believed that computing yields tremendous societal benefits; for example, the life-saving potential of driverless cars is enormous! Recently, however, computer scientists realized that computing is not a game—it is real—and it brings with it not only societal benefits, but also significant societal costs, such as labor polarization, disinformation, and smart-phone addiction.

A common reaction to this crisis is to label it as an “ethics crisis” and talk about “corporate responsibility” and “machine ethics”. But corporations are driven by profits, not ethics, and machines are built by people. We should not expect corporations or machines to act ethically; we should expect people to act ethically. In this talk the speaker will discuss how technologists act ethically.

Social Responsibility

I think often of Ender’s Game these days. In this award-winning 1985 science-fiction novel by Orson Scott Card (based on a 1977 short story with the same title), Ender is being trained at Battle School, an institution designed to make young children into military commanders against an unspecified enemy. Ender’s team engages in a series of computer-simulated battles, eventually destroying the enemy’s planet, only to learn then that the battles were very real and a real planet has been destroyed.

I got involved in computing at age 16 because programming was fun. Later I discovered that developing algorithms was even more enjoyable. I found the combination of mathematical rigor and real-world applicability to be highly stimulating intellectually. The benefits of computing seemed intuitive to me then and now. I truly believe that computing yields tremendous societal benefits; for example, the life-saving potential of driverless cars is enormous!

Like Ender, however, I realized recently that computing is not a game—it is real—and it brings with it not only societal benefits, but also significant societal costs. Let me mention three examples. I have written on the automation’s adverse impact on working-class people—an impact that has already had profound political consequences—with further such impact expected as driving gets automated¹. It has also become clear that “friction-less sharing” on social media has given rise to the fake-news phenomenon. It is now widely accepted that this had serious impact on both the 2016 U.K. Brexit referendum and the 2016 U.S. Presidential election. Finally, a 2017 paper in Clinical

¹ (<http://bit.ly/2AdEv8A>)

Psychological Science attributes the recent rise in teen depression, suicide, and suicide attempts to the ascendance of the smartphone².

A dramatic drop in the public view of Tech, a term that I use to refer both to computing technology and the community that generates that technology, has accompanied the recent recognition of the adverse societal consequences of computing. This decline was well exemplified by Peggy Noonan, a Wall Street Journal columnist who wrote a few years ago about trying to explain (dubiously, IMHO) why Americans own so many guns: “Because all of their personal and financial information got hacked in the latest breach, because our country’s real overlords are in Silicon Valley and appear to be moral Martians who operate on some weird new postmodern ethical wavelength. And they’ll be the ones programming the robots that’ll soon take all the jobs!”³

The question I’d like to pose to us in Tech is as follows: We have created this technology; What is our social responsibility? Of course, not all of us sit in Silicon Valley, and not all of us make product-deployment decisions. But much of the technology developed by high-tech corporations is based on academic research, by students educated in academic institutions. Whether you like it or not, if you are a computing professional, you are part of Tech!

Computer Professionals for Social Responsibility (CPSR), founded in the early 1980s, was an organization promoting the responsible use of computer technology. The triggering event was the Strategic Defense Initiative (SDI), a proposed missile-defense system intended to protect the U.S. from attack by ballistic strategic nuclear weapons. CPSR argued that we lack the technology to develop software that would be reliable enough for the purpose of SDI. Later, CPSR expanded its scope to other tech-related issues. The organization was dissolved in 2013⁴. With the benefit of hindsight, the issues that CPSR pursued in 1980s appear remarkably prescient today.

One could argue that CPSR is not needed any more; there are now numerous organizations and movements that are focused on various aspects of responsible use of technology. But our society is facing a plethora of new issues related to societal impact of technology, and we, the people who are creating the technology, lack a coherent voice. The Association for Computing Machinery (ACM), the leading professional society in computing, is involved in many of these organizations and movements, by itself or with others, for example, ACM U.S. Public Policy Council, ACM Europe Policy Committee, the ACM Code of Professional Ethics, the Partnership on AI, and more. Yet, these efforts are dispersed and lack coordination.

I believe ACM must be more active in addressing social responsibility issues raised by computing technology. An effort that serves as a central organizing and leadership force within ACM would bring coherence to ACM’s various activities in this sphere, and would establish ACM as a leading voice on this important topic. With great power comes great responsibility. Technology is now one of the most powerful forces shaping society, and we are responsible for it!

² <http://bit.ly/2zianG5>

³ <https://www.wsj.com/articles/the-culture-of-deathand-of-disdain-1507244198>

⁴ <http://bit.ly/2zvZsZb>

Technology and Democracy

The past decade has been a decade of ACM milestones. In 2012, ACM celebrated the Turing Centenary.⁵ In 2017, ACM celebrated 50 Years of the ACM A.M. Turing Award.⁶ On June 10 of this year, ACM celebrated ACM's 75th Anniversary (ACM75).⁷ But the differences in tone were palpable. The 2012 and 2017 events celebrated the achievements of computing and its remarkable ascendance as a technology. While the 2017 event did end with a panel on "Challenges in Ethics and Computing," such challenges were a major focus in 2022, and a participant found "the whole thing a little ... depressing."

The somber tone of ACM75 cannot be separated from concurrent events. On June 9, 2023, a U.S. House of Representatives select committee opened public, televised hearings investigating the Jan. 6, 2021 attack on the U.S. Capitol, laying out evidence of an attack on U.S. democracy orchestrated at the highest level of U.S. government. The school shooting in Uvalde, TX, on May 24, 2022, was also on many minds, remembering that an 18-year-old gunman fatally shot 19 students and two teachers and wounded 17 others. Brian Bennett wrote in Time magazine, "Even as America's firearm massacres provoke profound shock, change seems out of reach."⁸

U.S. society is in the throes of deep polarization that not only leads to political paralysis, but also threatens the very foundations of democracy. The phrase "The Disunited States of America" (tracing back to Harry Turtledove's 2011 novel with this title) is often mentioned. "The U.S. is heading into its greatest political and constitutional crisis since the Civil War," wrote Robert Kagan in the Washington Post,⁹ raising the specter of mass violence. How did we get here? What went wrong? Historians will probably spend the next 50 years trying to answer such questions, but the crisis is upon us. We need some answers now!

The last 40 years have launched a tsunami of technology on the world. The IBM Personal Computer – Model 5150, commonly known as the IBM PC, was released on Aug. 12, 1981, and quickly became a smashing success. For its Jan. 3, 1983 issue, Time magazine replaced its customary person-of-the-year cover with a graphical depiction of the IBM PC – "Machine of the Year." A computer on every work desk became reality for knowledge workers within a few years. These knowledge workers soon also had a computer at home. With the introduction of the World Wide Web in 1989, many millions could access the Web. The commercialization of the Internet in 1995, and the introduction of the iPhone in 2007, extended access to billions.

The socioeconomic-political context of this technology tsunami is significant. There was a resurgence of neoliberalism marked by the election of Margaret Thatcher as Prime Minister of the U.K. in 1979, and of Ronald Reagan as President of the U.S. in 1980. Neoliberalism is free-market capitalism generally associated with policies of economic liberalization, privatization, deregulation, globalization, free trade, monetarism, austerity, and reductions in government spending. Neoliberalism increases the role of the

⁵ <https://turing100.acm.org/index.cfm?p=home>

⁶ <https://www.acm.org/turing-award-50/conference>

⁷ <https://www.acm.org/75-celebration-event>

⁸ <https://time.com/6182996/biden-uvalde-guns-new-zealand/>

⁹ <https://www.washingtonpost.com/opinions/2021/09/23/robert-kagan-constitutional-crisis/>

private sector in the economy and society and diminishes the role of government. These trends have exerted significant competitive pressure on the economies of the developed world. To stay competitive, the manufacturing sector automated extensively, with the nascent distributed-computing technology playing a significant role. The implications are still with us.

A 2014 paper by MIT economist David Autor provided evidence that information technology was destroying wide swaths of routine office and manufacturing jobs, while creating new high-skill jobs.¹⁰ The result of this labor polarization is a shrinking middle class. Autor's data showed that this pattern of shrinkage in the middle and growth at the high and low end of the labor-skill spectrum occurred in the US as well as in 16 European Union countries. The immediate outcome of this economic polarization is growing income and wealth disparities.

On top of this, information technology is flooding Internet users with more information than they can digest, so tech companies engage in mass personalization, and now we mostly read information that confirms our preconceived opinions. This exacerbated further the “filter bubbles” that were created earlier in the broadcast media, following the abolition, in 1987, by the U.S. Federal Communications Commission under President Reagan, of the “Fairness Doctrine,” which required holders of broadcast licenses both to present controversial issues of public importance and to do so in a manner that reflected differing viewpoints fairly. Economic polarization was thus followed by cognitive polarization, creating political polarization.

Computing has become highly important in everyday life during the past 75 years. In addition to its numerous benefits, however, it has also played a major role in driving societal polarization. The somber tone of ACM75 appropriately recognized this.

Ethics and Corporate Behavior

Everyone in computing is promoting ethics these days. The Vatican has issued the Rome Call for AI Ethics, which has been endorsed by many organizations, including tech companies. Facebook (now Meta) has donated millions of U.S. dollars to establish a new Institute for Ethics in Artificial Intelligence at the Technical University of Munich, since “ensuring the responsible and thoughtful use of AI is foundational to everything we do”¹¹. Google announced it “is committed to making progress in the responsible development of AI”¹². And last, but not least, ACM now requires nominators and endorsers of ACM award candidates attest that “To the best of my knowledge, the candidate ... has not committed any action that violates the ACM Code of Ethics and ACM's Core Values.”

But AI technology is the fundamental technology that underlies “Surveillance Capitalism,” defined as an economic system centered on the commodification of personal data with the core purpose of profit-making. Under the mantra of “Information wants to be free,” several tech companies have turned themselves into advertising companies. They have also perfected the technology of micro-targeted advertising, which

¹⁰ <https://www.nber.org/papers/w20485>

¹¹ <https://about.fb.com/news/2019/01/tum-institute-for-ethics-in-ai/>

¹² <https://ai.google/responsibilities/responsible-ai-practices/>

matches ads with individual preferences. In Silicon Valley lingo, this business model is described as, “If you’re not paying for it, you’re the product.” Shoshana Zuboff argued¹³ eloquently about the societal risk posed by surveillance capitalism. “We can have democracy,” she wrote, “or we can have a surveillance society, but we cannot have both.” Internet companies have mastered the art of harvesting the grains of information we share with them, using them to construct heaps of information about us. And just as the grains of information are turned into a heap of information about us, the grains of influence that Internet companies give us result in a heap of influence we are not aware of, as we learned from the Cambridge Analytica scandal. All of this is enabled by machine learning that maps user profiles to advertisements. AI is also used to moderate content for social-media users with a primary goal of maximizing user engagement, and, as a consequence, advertising revenues. Surveillance capitalism is perfectly legal, and enormously profitable, but it is unethical, many people believe¹⁴, including me.

The tension between an unethical business model and a façade of ethical behavior creates unsustainable tension inside some of these companies. In December 2020, Timnit Gebru, a computer scientist who works on algorithmic bias, was the center of a public controversy stemming from her abrupt and contentious departure from Google as technical co-lead of the Ethical Artificial Intelligence Team, after higher management requested she withdraw an as-yet-unpublished paper, which detailed multiple risks and biases of large language models, or remove the names of all Google co-authors. This management request was described by many Googlers as “an unprecedented research censorship”¹⁵. In the aftermath of Gebru’s dismissal, Google fired Margaret Mitchell, another top researcher on its AI ethics team. In response to these firings, the ACM Conference for Fairness, Accountability, and Transparency (FAccT) decided to suspend its sponsorship relationship with Google, stating briefly that “having Google as a sponsor for the 2021 conference would not be in the best interests of the community.”

The biggest problem that computing faces today is not that AI technology is unethical—though machine bias is a serious issue—but that AI technology is used by large and powerful corporations to support a business model that is, arguably, unethical. Yet, with the exception of FAccT, I have seen practically no serious discussion in the ACM community of its relationship with surveillance-capitalism corporations. For example, the ACM Turing Award, ACM’s highest award, is now accompanied by a prize of US\$1 million, supported by Google.

Furthermore, the issue is not just ACM’s relationship with tech companies. We must also consider how we view officers and technical leaders in these companies. Seriously holding members of our community accountable for the decisions of the institutions they lead raises important questions. How do we apply the standard of “have not committed any action that violates the ACM Code of Ethics and ACM’s Core Values” to such people? It is time for us to have difficult and nuanced conversations on responsible computing, ethics, corporate behavior, and professional responsibility.

¹³ <https://nyti.ms/3u8IT4I>

¹⁴ <https://bit.ly/3g4rD8v>

¹⁵ <https://n.pr/3INyw5A>

In Conclusion

The ACM Code of Professional Ethics¹⁶ starts with “Computing professionals’ actions change the world. To act responsibly, they should reflect upon the wider impacts of their work, consistently supporting the public good.” So how should one be an ethical technologist? One should reflect upon the wider impacts of one’s work, consistently supporting the public good.

¹⁶ <https://www.acm.org/code-of-ethics>