COMPUTING'S SOCIAL OBLIGATION

BY
MICHELLE TRIM

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The cover of the August issue of Communications of the ACM showcases Harvard's impressive experiment integrating ethics throughout its undergraduate computer science curriculum [6]. Anyone currently grappling with exploding enrollments must applaud Harvard's deliberate use of resources to broaden CS education beyond its traditional technical components. In a similar vein, ACM recently updated its professional code of ethics, calling on CS professionals to acknowledge "all people are stakeholders" and to "ensure that the public good is the central concern during all professional computing work," [1] possibly adding to the pressure many in CS education may be feeling to 'up their game' when it comes to their programs' attention to ethics. Unsurprisingly, doing ethics in CS can seem like yet another requirement tasked to an already overburdened system. If one is operating under constraints, perhaps limited by shortages in money and personnel, ethics, or put another way, instilling concern for computing's impact on society, starts to seem like a luxury: something that we all agree is valuable and that would be nice to have if we can afford it. But, what happens if learning about ethics is just as fundamental to software engineering as procedural abstraction or just as crucial to data science as learning to avoid spurious correlation?

In 2018, a presenter at Artificial Intelligence, Ethics, and Society (AIES) was taken by surprise when audience members asked about possible ethical implications of their partially generative algorithm, which was a key component of a gang-related-crime labeling software. His response, "I'm just an engineer," went viral [8]. Reading about the avalanche of criticism that followed, I admit that I felt a bit sorry for the presenter. I think he saw himself as mostly doing computer science, which can feel objective and compartmentalized away from social concerns, a lot like doing math. Colleges and schools often rely on the humanities to teach people about what it means to be human, to understand the place of the individual within society. It isn't that unusual to encounter in the world people who believe disciplines like math or computing and the humanities are almost mutually exclusive in shaping expertise. Given this established binary, it somehow feels almost socially acceptable to give this poor guy, whose expertise looks a lot more like math, a break.

Meanwhile, automotive consumers come to grips with learning that a longstanding company has been programming their cars with cheating software [7], misleading emissions testers about the amount of pollution being put back into the air [12]. Rather than being just a transgression of some perceived red-tape regulation, this deceptive work-around resulted in EPA estimates of 35 times more pollution entering the air than the allowable standard. In the United States, Facebook users learned that their personal data was obtained by Cambridge Analytica in a breach that captured even the attention of the U.S. legislature [4]. Questions of privacy, personal data exposure, and even consumers' ability to know and control what data about them is being collected are now part of mainstream media discussions of tech companies' obligations for transparency in using customer data [2]. Writers like Cathy O'Neil [10] and Virginia Eubanks [3] have published exhaustively researched exposés on decision-making software that has separated children

from families, prevented the needy from receiving their welfare support, affected access to housing, and enacted racist policing models. In these cases, it is not dramatic to state that human lives depend on the fairness, accuracy and transparency of these computing systems.

Ben Green, Affiliate at the Berkman Klein Center for Internet & Society at Harvard, argues that all data scientists must see themselves as activists [5]; this suggests that expertise in math and the implementation of algorithms as being exempt from social concerns is quickly becoming an archaism. In fact, the National Science Foundation's (NSF) Directorate for Computer and Information Science and Engineering (CISE) has begun requiring approved Broadening Participation in Computing (BPC) plans as part of each funded project for many of its core research programs [9]. This requirement has put pressure on many CS researchers who historically have eschewed worrying about broadening participation efforts as problems better left to sociologists and others interested in broad societal concerns. If computing educators, researchers, and professionals have only been trained to do computing, then how can we as a field provide the next generation with the training they will need to be more than 'just engineers?' Once the responsibility for that education is accepted, a next step might be to reach out to those in the academy, in the profession, and in education who have the expertise we need. We can partner with them, co-teach with them, co-author and co-research. We can add more voices and more diverse backgrounds to those that sit on our curriculum and planning committees, and we can welcome those with different perspectives into our sacred disciplinary spaces.

And, it is this act of welcoming that brings me back to the cover of that recent issue of the Communications of the ACM. The classically stylized image of Socrates possibly evokes thoughts of philosophy, of ancient Greece, and of what some regard as the central disciplinary home for ethics. Since Harvard's project involved the integration of philosophy into their CS courses [6], I can understand why this cover made sense. However, perhaps it is also worth reflecting that in a time when computing is working so diligently as a field to broaden its appeal and to welcome women, people of color, and people from other disciplinary traditions, that this cover could also reference a time and place of extreme tyranny. A time and place when women – all women – had no rights at all, when slavery was legal, and when only an elite few made decisions that governed everybody. A classical definition of ethics is not enough to serve computing now, nor is it compatible with the inclusiveness and diversity required for CS to be representative of the society it impacts. Indeed, the article describing the difficult work Harvard has undertaken emphasizes the necessity of incorporating other voices, ending with a call for readers to share ethics resources in order to improve and grow their existing repository.

Can computing afford not to see social impacts of its work as central to the discipline? Just as Green argues for data science, those doing computer science are building the world, and thus have a responsibility to the society absorbing the impacts of their actions. That responsibility requires an attention to more than just classical ethics; it requires an active and purposeful outreach into communities previously un(der)represented within computing.

As increasingly sophisticated and inscrutable decision making systems continue to take up roles within our civic lives, we must recognize that "those machines will then face an age-old problem of moral philosophy: how to" equitably "apportion benefits and costs among different individuals with conflicting desires" [11]. Adding that attention to equity cannot be achieved through reason and logic alone; it requires that we go out of our way to incorporate the concerns, desires and needs of people who may be very different from us. That kind of outreach also demands exposure to lessons in how discrimination gets inscribed into systems and society. Only through relentlessly inclusive and diversity positive actions will computer science truly be for the common good.

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