the ethi{CS} project

Book Review: Sara Wachter-Boettcher's *Technically Wrong*

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Use case: Lessons on how design choices made in the tech industry are full of, in Wachter-Boettcher's own words, "blind spots, biases, and outright ethical blunders" (p. 6). The text is accessible to a wide age range: chapters could be assigned independently or the book could be read as a whole.
Suggested age range: 9th grade-adult
Special topics: Survey/form design (Ch. 4, "Select One") and privacy (Ch. 6, "Tracked, Tagged, and Targeted")

At my school, I teach an Ethics of Technology course, where (of course) students dive deeply into questions about how choices made by those creating technologies can cause harm, and so in their lives as future technologists (if that's what they end up doing) will be alert to ways in which they, and the institutions they are part of, can be better. I work with colleagues in Computer Science and other technology classes, and one of our perennial tasks is to figure out ways in which ethics can be regularly and interestingly embedded in their courses as well.

So, how could we design projects or assignments so that students (say, in a CS or technology course) are required to do good ethical thinking? One way is by having students engage with supplemental texts as they're working through an assignment, and having the assignment itself engage with what they've learned. For example, Wachter-Boettcher's *Technically Wrong* could be one such text. In what follows, we'll set out how materials from her book could be used to extend students' ethical thinking in a CS context.

The book as a whole has ten chapters on a variety of topics that might be usable for introducing a variety of themes in ethics of technology: how default settings can, if poorly-designed, only represent people from a narrow range of backgrounds (Ch. 3), algorithms that preserve or promote bias (Ch. 7), digital violence (Ch. 8), and so on. They are well-written and accessible, and could be used as introductions to a variety of topics.

Lesson on Survey/Form Design

Chapter 4, "Select One"

One foundational skill all students of computer science must learn is to collect and respond to information submitted by users, such as creating a form for user input in an app. For students who are unfamiliar with best practices in survey-writing or data collection, they might make a number of choices that seem innocuous to them, but can actually do harm. Wachter-Boettcher's opening example is a striking one: that of being asked whether or not one had been sexually assaulted (on a new patient form), with no indication of who would see the response or how they would use that information.

Technology companies make a number of decisions that impact how information can be taken in and verified, and have resulted in harms. Facebook's real name policy has led to Native Americans' names not being approved. For others, the use of legal names on Facebook might cause harm (as for victims of stalking or abuse) or forbid people from expressing their authentic selves (e.g. for members of the drag community) (p. 52-59). Similarly, questions about race and gender can also be ill-fitting or harmful (p. 59-66)—for example, I as a biracial person am stumped every time I get a 'select one' box for race.

> *"Forms inherently put us in a vulnerable position, because each request for information forces us to define ourselves: I am this, I am not that. And they force us to reveal ourselves: This happened to me."*
> *(p. 51)*

Students must be *trained* in order to do better data collection and form design in their own projects. Students may otherwise design in ways that 'feel fine' to them, but can do harm for those with experiences and lives unlike theirs.

Instead, students should ask themselves:

- Do I genuinely need this information in the first place? (This would include paying special attention for information gained indirectly such as from titles like Mx. or Mrs. that can reveal one's gender or marital status)
- Will the way in which information is requested impede my users' ability to accurately and authentically report information about themselves? (e.g., only allowing data entry that fit Western or American norms)
- Does my request for information or its verification place an inappropriate burden on users?
- Who gains power from the forms we make? Who has control? How do users feel as they fill out the form?
- Do the forms we design not only avoid bias, but mitigate against known social harms caused by bias?
- Have I confirmed that I have avoided blind spots in my design choices? Am I accountable for fixing my choices, if I discover that there are faults?

Throughout, students should be particularly sensitive to the ways in which their choices might place special burdens on those who are already marginalized. This chapter might be a useful tool for students for seeing why the above kinds of questions *matter,* and why form-creation is not neutral.

A colleague of mine (Nick Zufelt) pairs this chapter with an assignment in his app development class where students create a business card design app. Users of the app would enter whatever personal information was required of them by the student, and then the information is displayed appropriately in a virtual business card. This project replaces the traditional "my first app" such as a calculator. It forces students to still take in, reshape, and output information, but now they're asking questions like, *"will this person's longer name fit onto the business card?"* and *"what if someone is concerned about their personal address or phone number appearing on the card? Who knows where business cards end up!"* It allows his students to get to many of these interesting questions about user data early in the term.

Lesson on Privacy
Ch. 6, "Tracked, Tagged, and Targeted".

Our students are inundated by digital requests for information from the sites they frequent and apps they use. What always strikes me about conversations in my ethics of technology course is that while certain students are very savvy about how they engage online, others are not. Some don't care about their privacy, others *do* care yet don't take any or many steps to care about protecting their personal information, and others still aren't quite sure what they know and need to know about their digital privacy.

I'd argue that it's important in our CS and technology classes to make space for our students to determine what they know and what they don't know. Most of our students (and, frankly, many adults) have not read all of the details about how companies use the information we've given them. Even if we do read them, we might not have enough technical know-how or clarity (the language can be vague or jargon-filled) to know what companies mean in their privacy policies.

But there is a basic digital literacy of things worth knowing: how companies use user data in order to make money, the technical details of how our data is collected, used, and disseminated, and what our alternatives are (from the small—personal methods of reducing the risks that our data are used in ways that harm us or that we do not consent to—to the big—alternative government protections.)

This is where Chapter 6 of *Technically Wrong* can do us (and our students) some favors. It discusses the ways in which we're tracked by companies like Facebook, Uber, Apple, and Google, and what they do with our information. Students can get a first-pass understanding of how this data tracking can do harm, or have biased consequences.

My colleague Nick also has designed a CS project that pairs well with this chapter. In it, students design a social media platform of their choosing, specifying elements from what data their app will collect to how the layout will be designed. That assignment (or similar) could be assigned early in the term for an app development course or in a course more suited toward visual design, and pairs well with students auditing each others’ app designs for ethical concerns.