Commentary

Care and Liberation in Creating a Student-Led Public Interest Technology Clinic

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Engineers disengage from public welfare concerns during undergraduate engineering education [1]. In her widely cited study, Erin Cech argued that this arises from a culture of depoliticization in engineering that dismisses "nontechnical" concerns and competencies, reifying a false technical/social dichotomy and meritocratic ideology that justifies existing social structures. Our college, Olin College of Engineering, was part of that study, displaying similar patterns to more traditional schools. We are resisting that trend by embracing "public interest technology" (PIT) [2], which we believe offers a response to the culture of disengagement. In our application, PIT represents a community of practice that encourages engineers to fully engage with context, inequity, and uncertainty; to connect technical work to their own lives and environment; and to prioritize the common good while minimizing public harms.

In 2019, we—four undergraduate women engineering students and their faculty advisor—cocreated a student-led PIT clinic (called "PInT[1]"). Olin College is a tight-knit community well acquainted with team-based experiential learning, student cocreation of curriculum, and commitment to gender balance, diversity, and inclusion. Care for others is a core value shared among Olin's faculty, staff, and 350 students. PInT is our vehicle for promoting a culture of engagement at Olin. Key initiatives include PIT speaker events, community-wide discussions, student-run skill shares (see Figure 1), technical consulting projects with community partners, and a student-driven PIT summer fellowship. Our approach embodies an ethic of care and creates engineering learning experiences in the mold of liberatory education.

During summer and fall 2020, we conducted a collaborative autoethnography to analyze and synthesize our experiences cocreating PInT. We individually reflected on why we joined PInT and how it affected our identities. We used affinity mapping and interactive discussions to identify three meta-themes that describe the essence and value of PInT: prioritizing emotion and relationships, embracing slowness and deliberation, and claiming student ownership.

Prioritizing emotions

By prioritizing our emotions and wellbeing and integrating them with our work, we oppose the hierarchical gendered dualisms prevalent in engineering that devalue work with people in favor of "masculine instrumentalism" [3], [4] and contribute to the culture of disengagement [1].

For example, we begin meetings with check-ins about our emotional state in addition to the status of our technical work, and we invite new members to reflect on what they need for support and emotional safety (see Figure 2). Assuming responsibility for every team member's social and mental wellbeing

[1] http://pint.olin.edu

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Figure 1. Student-run skill share, which gives PInT members a space to learn from each other.

Figure 2. Sticky notes on a window from an early facilitated reflection activity that invited new PInT members to explore what they need to feel support and emotional safety.

models an ethic of care, or an orientation toward actively sensing and responding to others' needs [5].

We also applied the ethic of care through deep listening [6], an activity we led with members of PInT in an effort to cultivate a "contemplative, iteratively reflective" engineering culture. Integrating the ethic of care in our daily practices helped us support one another. When Emma wrote the rest of us a letter to express how she felt after shouldering too many organizing tasks without recognition, these practices prompted us to prioritize her emotions and our team relationship. Valuing our emotions in our engineering education pushes against harmful norms and produces a more caring engineering education experience.

Embracing slowness and deliberation

Practicing contemplation, slowness, and deliberation has helped us become better public interest technologists. We had been enculturated in engineering-dominant ideologies of positivism, depoliticization, and efficiency, which led to a deep belief of engineering as an inherent neutral good [7], [8]. Slowing down and questioning who we were doing our work for; who our work will help, harm, or miss; and what forms of knowledge we could be missing [4] shifted us to an ethic of care.

For instance, we refused to build a web scraping tool which intended to help law enforcement rescue victims of human trafficking, but would endanger not only these victims, but voluntary sex workers as well. We arrived at a decision of design refusal [9] after a deliberative process that included consulting experts, reflecting on our values, and understanding the power relations that we could be perpetuating. Slowness and deliberation adjust us toward "reflection-in-action" [10] and allow us to better care for the needs of PInT and each other. This is exemplified in our efforts to reflect on our working styles as an organizer team and to write a deliberate strategic plan for PInT's future. Embracing slowness and deliberation shifts us from traditionally harmful ideologies to more caring mindsets.

Claiming student ownership

With PInT, we are solidifying trust in our instincts and decision-making abilities and dissociating from the leadership structures within traditional engineering education [1]. For example, when Sam was designing PInT's summer fellowship program, she instinctively dealt with uncertainty by approaching our faculty advisor seeking "expertise" and permission. Rather than providing specific next steps, our advisor validated Sam's knowledge and ownership of the project. This showed her that she already knew how to design a fellowship for students, being a student herself.

Sometimes we *don't* have all the expertise. For instance, when teams encountered roadblocks in their technical consulting projects, we hosted a design review to solicit feedback from community members. While the teams were initially hesitant to ask for help, they learned to embrace it once they experienced the transformative nature of new suggestions and alternative paths. Similarly, in the anti-human-trafficking case, we reached out to a subject

matter expert to help inform our decision-making process. We felt empowered without equating asking for help with relinquishing our agency or control, and we learned how to ask questions without expecting one answer. Through PInT, we learned to see faculty as collaborators and supportive resources, rather than the directors of our work, and to see ourselves as active creators of our learning experiences [11].

PInT is powerful because it is student-led. We are embracing PIT and redefining engineering to forge a new culture of deep engagement that wholeheartedly embraces our responsibility to public welfare. By choosing to prioritize emotions and take responsibility for team health, we demonstrated how PInT can embody an ethic of care. By taking the time to slow down, listen, and deliberate, we were better able to center care for our stakeholders and ourselves. By "relinquishing" decision-making power to students, our faculty mentors applied liberatory pedagogy and empowered us to explore context, navigate uncertainty, and create personal connections [11]. While Olin is a small college with a unique commitment to experimenting with engineering education, we believe that students at other colleges would benefit through similar applications of the ethic of care and liberatory education. ■

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