Diversity Statement

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Awareness

When I became interested in computing education as an undergraduate, it quickly became apparent to me that the biggest issue in the discipline was the lack of diversity. The exclusion of women and minorities has impacts on societal equity, the culture in our community, and the technology created by members of our discipline. Economically, we will never begin to address the dearth of employable programmers until we make computing more inclusive and accessible. Furthermore, I believe that increasing diversity is necessary and useful for all learners, because exposing learners to multiple perspectives gives them a wider view of the world.

As a white male, I have led a very privileged life, without facing any kind of discrimination. This has not been true for many of my peers, however, and I have attempted to observe and learn from their experiences. For example, in my undergraduate Computer Science program, there were exactly 4 women in my cohort, and only one persons of color. Many times, I observed the problematic interactions these students had from their peers. Micro-aggressions, marginalization, presumption, and even worse occurred. Often, there was no ill intent by the aggressor, but actions and choices were made that disadvantaged or discomfited them.

Past Efforts

When I was in graduate school, I was strongly committed to issues in diversity. For four years, I served as an officer in the Association for Women in Computing. The AWC is a student-run organization within Virginia Tech's Computer Science department that works to promote and retain women and minorities in computing, and to facilitate dialogue about issues involving diversity in technology. As the webmaster, I was responsible for maintaining and updating the website and members listserv. However, I also presented several talks for undergraduate and K-12 students on modern topics of diversity, such as gender in gaming culture. However, many times, my role in the organization was behind the scenes; bringing the food for the event, arranging female speakers, or brainstorming topics along with my fellow officers. It was very important to me that I avoid predominating an organization meant first and foremost for women and minorities, and instead simply be a useful contributor.

In one of my more unique experiences as an officer, the AWC sent me to the Grace Hopper Celebration of Women in Computing conference in 2013, which was a very powerful experience[1]. As one of the only male attendees at the conference, I had two goals: find out what a conference for women was like, and what practical things I could do as a male ally to support women in computing organizations like AWC. I came away with a very positive reaction to the conference, and I look forward to sending many future female students to similar events - I was blown away by the energy it imparted to participants, and the immediate practical effects of

messages such as "Lean In" could have. There were also many panels on topics such as implicit biases and fascinating research results that gave me practical suggestions.

In the final years of my graduate research, I helped teach a new course for non-computing majors in the arts, humanities, and social sciences. This course was the audience for my dissertation research on studying introductory computing contexts' impact on student motivation. Although my dissertation research was not explicitly centered around gender differences, I felt it was an important element to study when the data was available. Because this course is meant for non-computing majors, the gender ratio is much higher than for-major courses (33%-60% depending on the semester, as opposed to 10-15%[2]). This meant the course was an opportunity to develop a curriculum that could appeal across genders, and also explore research questions related to gender. For example, we surveyed students about potential introductory contexts (e.g., game development, scientific computing), and found significant gender differences in student interest in robotics[3] - although not conclusive, these kinds of analyses can help drive pedagogical development through data instead of intuitions.

Future Plans

As a curriculum designer, I want to design learning experiences that can appeal to a wide range of audiences. When designing my courses, I always attempt to avoid my inherent biases, first simply by being aware of them, but also by confronting them head-on. When designing assignments, for instance, I often need to think of anchor contexts to frame the instruction around, which can be biased towards my own set of experiences. When possible, I design opportunities for multiple possible contexts where students can explore their own interests.

As an instructor, I will seek to apply inclusive pedagogy to support all of my learners. There are many well-established ways for instructors to do so: finding metaphors that resonate with everyone, making sure that voices are not lost in large classrooms, making sure that students' self-efficacy is healthy. One particularly important element of teaching large scale courses is effectively leveraging teaching assistants, which in turn requires effective training and mentorship. I am interested in building formal learning experiences for undergraduate teaching assistants to give them training not only in subject matter, but also in topics on diversity.

As a researcher, I want to better understand and study the role that gender and minority status has on learning. Are there important differences in how different students read and interpret feedback from autograders? Do we need to tune introductory contexts in particular ways? There are many unknown questions to be explored from the research I have already conducted. However, as I explore these questions, there are ways to support women in computing. For instance, this spring I will have a female undergraduate completing an independent study on a project studying programming environment interfaces and how they support learners. Working with

undergraduates and graduates with diverse backgrounds not only helps diversity efforts, but broadens the view and scope of research projects.

As a faculty member, I hope to continue undergraduate and K-12 outreach to bring more women and minorities into computing. However, I also see more systemic places where I can make a difference. Recent research by the National Academies highlights how institutional policies that attempted to deal with the growing enrollments negatively impacted the percentage of women in computing[2]. For instance, limiting enrollments based on measures of prior computing experience has been found to unduly affect the percentage of women and minorities entering the discipline, despite aptitude for computing. As a future faculty member, I want to make sure that our institutions do not lock women and minorities out of our society. Just as important as outreach are efforts to guide department, college, and institutional policy to promote inclusivity.

References

1. Bart, A. C.. “My Grace Hopper '13 Experience.” Acbart Portfolio, Sep 9, 2014, https://sites.google.com/a/vt.edu/acbart-eportfolio/blog/mygracehopper13experience
2. National Academies of Sciences, Engineering, and Medicine. 2017. "Assessing and Responding to the Growth of Computer Science Undergraduate Enrollments". Washington, DC: The National Academies Press. https://doi.org/10.17226/24926.
3. Bart, A. C., "Motivating Introductory Students with Pedagogical Datasets", Dissertation. March, 2017.