Statement of Commitment to Diversity --- Daniel S. Drew

When you are a white male in a STEM field it is easy to become numb to, or ignore, the reality — that there is a severe lack of representation from women and people of color, from the students around you all the way up to the faculty leading the department. It is exciting to be where we are as a society today, where open discussions with colleagues from underrepresented groups can do something to open my eyes to this reality. It is all around us: when you step out with a group of colleagues to get lunch during a conference and realize that there is *one* woman in the group of ten; when you can narrow down the exact graduate student you are thinking of by remembering he is the only black one in that year. Doing something to change this will require hard work from every single person in academia. We need to do more to encourage, to support, and to inspire.

As a first generation college student I was not really aware of the opportunity offered by a graduate education. I didn't know that, even as an undergraduate, I should be seeking out research opportunities as soon as I could, and finding academic mentors to champion my career, and finding robotics competitions to win. I applied to a summer REU on a whim and was rejected. A week later, one of the organizers emailed me, saying that they liked my application and that there was a slot for me with a different program, the MIT Summer Research Program (MSRP). I was not positive how I would fit in with this program aimed at underrepresented groups in graduate education, but I gratefully accepted; doing so changed my life, and here I am.

This seemingly dumb stroke of luck showed me the transformative power of an opportunity like an REU. I have since participated on the admissions board for MSRP, as well as sitting on a graduate student panel for the E3S summer REU (the one I originally was rejected from!) the past three offerings. I helped mentor an REU student this past summer, and I have worked with multiple undergraduates pulled from university-wide recruitment messages. The Bay Area Graduate Pathways to Stem (GPS) program I participated in this fall as a Peer Advisor helps students from all types of undergraduate institutions plan for and apply to graduate school. There is a lot we can do to increase awareness and access to the kinds of opportunities that lead to graduate school, and I look forward to continued participation. My future research group would benefit immensely from having participation in REUs and mentorship of undergraduate students become something deeply ingrained into our lab culture.

Unfortunately, it turns out that we actually lose many of our students *before* they get to college. Studies show that women begin to "lose interest" in STEM as early as middle school. The obstacles people in disadvantaged socioeconomic groups face in reaching and graduating from college are well documented. During my undergraduate years I participated in outreach activities with the Virginia Tech Center for Engineering Education Diversity (CEED), including picnics and college visits from groups of high school students from underrepresented demographics in STEM. The Ingenuity Lab at the Lawrence Berkeley Hall of Science, where I have volunteered the past three years, targets hands-on science education at students ranging from primary all the way to high school. I think outreach opportunities that include a component of hands-on activity, not just information sessions, are an incredibly valuable tool. If I did not think it was a genuinely exciting way to spend my time I would not want to be in STEM; it only makes sense that we should demonstrate our own excitement as we look to encourage others to follow our path. It seems there are growing numbers of opportunities for me to get involved, and as a faculty member I would love to collaborate in creating some of my own outreach opportunities. I have seen that students of advisors that get involved in activities like this seem to get more involved themselves, so one of the best ways I can make a difference and nurture these programs is to stay active in this area throughout my career.

Even once students get to college there is an issue with retainment and graduation. Thought leaders in the field speak to two key components of changing this: the importance of making the broader impact of the work clear from the beginning, and explicitly incorporating design and creativity into the curriculum. My interest in teaching interdisciplinary, practice-focused coursework with an emphasis on user-centered design is compatible with these goals. Outside the classroom I could do more to emphasize the broader impacts of my own (and related) research in public or interdepartmental venues as a way to get more students involved and interested. I think stressing the fact that modern engineering is largely a creative practice is a great way to get students past that hurdle of "just not being good at math/science/programming." This is something that can be effectively communicated to varying degrees in every single lecture, meeting, and presentation. The more we can diffuse this idea out into the collective consciousness the sooner we can remove this type of self-defeating obstacle. No student should feel like they are somehow predisposed to being worse at any subject, or that unfamiliarity with any narrow field precludes them from participating in science or engineering.

The struggle of many students does not just end once they get to graduate school. People from underrepresented groups often struggle with a heightened sense of "imposter syndrome," implicit bias affecting their daily interactions, and lack of appropriate support structures. Making sure that my group members feel comfortable discussing these topics, with me and each other, is crucial. Ideally, I would be able to get these kinds of conversations started by

signalling receptivity and by my presence and involvement in events like those outlined above. Ultimately though, I understand that I cannot be what every student needs. I think it will be important to establish a coalition of diverse mentors among staff and faculty so that I can point students in the right direction. The burden should not be on the student to identify these resources, but on the mentors who want to see them succeed. With commitment, persistence, and some creativity, I think that we can make a difference in the representation problem in STEM — and that there will be tangible benefits to our research and to our society.