Why diversity?

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Despite the constant stream of TED Talks, books, blog posts, and corporate initiatives, there is surprisingly little consensus about what the latest statistics and trends in diversity in Science Technology Engineering and Math (STEM) mean, or how to address the issues they raise. However, there is consensus that diversity matters: enhancing through innovation and technology will require a far more diverse talent pool in science and engineering fields than the alarmingly resilient one running it today. A more diverse STEM population produces huge benefits to technological innovation at large. For example the National Center for Women & Information Technology survey [1] reports a 40% increase in the number of U.S. information and technology patents filed by mixed-sex teams compared to all-male teams. This is a simple example, easy to quantify, but diversity is beyond gender: race, ethnicity, sexual orientation, socioeconomic status, age, physical abilities, religious beliefs, political beliefs, or other ideologies.

The lack of diversity is a missed opportunity, with a cost. Although STEM offers well-paid and reasonably resilient careers, these seem to attract self-similar demographics. In the U.S. surveys report that both women and under-represented minorities do not pursue careers in engineering because they are attracted to professions in which they can contribute directly to the welfare of others. Engineering has an image problem to resolve to attract diversity. We find Dilbert funny, but it is time to move on: caricatures and the cubicle culture turn off demographics engineering needs. Engineering is a profoundly creative profession. Creativity is not something that just happens. It is the result of making unexpected connections between things we already know. Creativity depends on our life experiences. Without diversity, the life experiences we bring to an engineering problem are limited. As a consequence, we may not find the best, most elegant engineering solution. In engineering conservatism and creativity are always in tension. Incremental changes from previous designs do not meet much resistance, but the most original and innovative design is subject to thorough scrutiny. Immediately after the most creative moments, engineers always begin looking for flaws. The external image of engineering reflects the introspective side more than the creative side. We need to show off the creative side, as well as abandon the negative stereotypes.

Recruiting a diverse workforce is only the beginning though. First diversity and inclusions are needed to provide a more fertile environment, not to comply with some regulation or target. Inclusion of a diverse workforce does not mean transforming it into the rest of the self-similar workforce. We need to create an environment all are comfortable to bring their ideas forwards and where all listen and respect all contributions. The diverse populations must be supported, while avoiding any tension that may disrupt overall engagement, and cause all (not just the diverse population) feel disconnected from being influential. To do this requires development tools and resources to maximize talent engagement, advancement, workplace performance, and overall satisfaction.

Take-aways: innovation needs diversity; diversity is a lot more than gender.

[1] C. Ashcraft, A. Breitzman, *'Who invents IT?'*, Women's Participation in Information, Technology Patenting, 2012 Update