

Introduction

The socio-political climate has seen dramatic changes in the previous two years. Individuals and groups that were mostly silent have found a new voice, forcing moderately-viewed Americans to identify themselves when they once thought there was no need. The American Society of Civil Engineers (ASCE) has done exactly that with the addition of Canon 8 into their code of ethics on July 29, 2017 (ASCE 2017). Canon 8 of ASCE's Code of Ethics requires those in the engineering profession to treat all persons "with dignity, respect, and fairness"; not to "engage in discrimination or harassment," and "to include diverse perspectives...in the performance of their professional services," (ASCE 2017). Although this canon may have been added in response to the current socio-political climate, the efficacy of diversity in the workplace has been studied for decades and the engineering community stands only to benefit from its ratification. Specifically, the consideration of "the diversity of the community" and the inclusion of "diverse perspectives, in the planning and performance of their professional services" requires engineers to examine a broader, more holistic approach to problem solving, thereby optimizing the quality of work provided to the client.

Diversity: A Definition

Intuitively, we all have some basic understanding of diversity and what it means when we are told to include diverse perspectives, but diversity has many levels that must also be considered. Some professionals call diversity a "subjective phenomenon" that is created by a group to label "others as similar or dissimilar" (Mazur 2010). Others define it simply as individuals with socially identifiable differences (O'Reilly et al. 1998). Loden and Rosener take it a step further by categorizing these differences into primary, secondary, and tertiary dimensions that cover a

variety of social, economic, and educational differences (Loden and Rosener 1991). Generally speaking, diversity includes all of the differences, large or small, that make each human unique. Furthermore, diversity can be found in any culture, subculture, or small group regardless of how homogeneous it may seem. These are the exact differences on which the engineering community must capitalize.

Diversity in Other Canons

Many of the Canons in the ASCE Code of Ethics overlap one another. This is for good reason as any one Canon may rely on another to provide the engineer with a complete ethical outlook. The same is true for Canon 8 as it strengthens Canon 1, subsections *e* and *f*. Engineers can “advance the well-being...” and “enhance the quality of life of the general public,” (ASCE 2017) only by including ideas representative of the general public. Therefore, it’s reasonable to assume that a group of like-minded engineers is less capable of providing creative engineering solutions than a diverse group of engineers. Furthermore, Canon 7 urges engineers to continue their professional development throughout their careers (ASCE 2017). Restated, an engineer is committed to lifelong learning. Webster defines “learn” as the act of gaining “knowledge or skill by studying, practicing, being taught, or experiencing something,” (Merriam-Webster 2018). This means that learning, by its very nature, is the acceptance of information or skills that were not previously held by the individual. In other words, the act of learning requires the consideration of diverse ideas.

The Business Case for Diversity

There are many reasons to embrace diversity in the workplace. One of those reasons is that it is just the right thing to do; however, this is subjective and difficult to quantify. The more straightforward reason is one that puts feelings aside and makes the business case to embrace diversity. Simply put, diversity is financially advantageous. T.J. Cox posits that diversity in groups encourages the flow of ideas and increases creativity and innovation, which improves financial performance. A multicultural group is also likely to generate more useful solutions as multiple perspectives are examined throughout the problem-solving process (Cox 2008). When evaluating the overall performance of a firm, women in management have a greater effect on financial performance than does market share, capital intensity, and employee compensation. It is even argued that the investment into female managers is the most enduring predictor of profitability (Cordeiro and Stites-Doe 1997).

The positive correlation between racial diversity and sales revenue was quantified by Cedric Herring. Results of his study showed that mean revenues of firms with low levels of racial diversity were approximately \$52 million, while high-diversity firms reported mean revenues over \$761 million (Herring 2009). Gender diversity also shows a positive correlation with sales revenue where low-levels of gender diversity report \$45.2 million, and high-levels reported over \$644 million (Herring 2009). This same pattern is repeated when it comes to number of customers, percentage of market share, and average profitability (Herring 2009). Furthermore, increasing racial and gender diversity by only one percent yields a nine percent and three percent increase in sales revenue, respectively (Herring 2009). These numbers cannot be ignored when it comes to assigning a value to diversity in the workplace.

Diversity in Engineering: A Case Study

Oregon's own, CH2M, a world-class engineering firm with over 26,000 employees, understands the importance of diversity in the workforce. CH2M, "values the ability to effectively represent a diversity of clients and to be able to draw on different perspectives to provide the best possible solutions," (Diversity Leadership Group 2015). Diversity is embraced at CH2M through the creation of networks designed for the inclusion of all employees. These networks are the Black Employee Network Group (ENG), Hispanic ENG, Disability Group, LGBTQA Group, Junior and Mid-Level Professionals Network, Multicultural ENG, Veteran's Network, and the Women's ENG (Diversity Leadership Group 2015). The groups are open to all employees with the goal of sharing knowledge and experience to aid individual development. Each group also has its own yearly-operating budget of which they are encouraged to spend over 90% (Diversity Leadership Group 2015). Clearly, CH2M has made a diverse workforce a top-priority across the company, but where is the return on this investment?

As an engineering firm competing in the global market, CH2M understands that diverse groups are better equipped to work with the diverse clients of the world (Mazur 2010). Diversity in the workplace exposes employees to different cultures on a daily basis. This frequent exposure provides employees with a foundational understanding of cultural differences and prepares them to work in cultures other than their own. Diverse groups are also better problem solvers as they are more capable of seeing the same problem through a variety of lenses, thereby producing the best possible solution for each client (Mazur 2010). An individual's life experience will oftentimes dictate how they see a particular problem, which leads them to a unique solution. Complex problems, as often seen in engineering, require a thorough investigation of all factors to

find desired solutions. A group of engineers is only able to create solutions that are representative of the sum total of their collective life experience. Thus, a multicultural group of engineers has the advantage as the collective life experience is greater in both breadth and depth. CH2M has obviously tapped into something special and proved the value of a diverse workforce when they were purchased by Jacobs Engineering for \$3.3 billion on December 15, 2017 (Chuang 2017). The world's largest engineering firms have clearly found the value in the addition of Canon 8 and have made its embrace a company-wide objective.

Conclusion

The addition of Canon 8 and the inclusion of diverse perspectives into the ASCE Code of Ethics advances the field of engineering by optimizing the quality of work provided to clients. Diversity is the summation of differences, both large and small, that make each human, and group of humans, unique. The value in diversity provided by Canon 8 has been studied for decades and strengthens both pre-existing Canons 1, subsections *e* and *f*, and Canon 7. The impact of diversity on business performance has also been studied at length and is responsible for a tenfold increase in sales revenue. Finally, following the purchase of CH2M, Jacobs has become the top performing engineering firm in the world (Engineering News-Record 2018) and is ranked in the top 25% in Forbes' Best Employers for Diversity (Jacobs 2019), proving the true value of a diverse workforce. The ASCE Code of Ethics has guided professional engineers for over a century and the addition of Canon 8 empowers all who have a passion to create and solve problems; keeping us at the forefront for the next 100 years.

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