Introduction

Every day, civil engineers worldwide work to enhance the quality of life of the communities where they serve. The ASCE Code of Ethics has stood as a guide for civil engineers since 1914 to promote the ethical execution of the profession and to protect the public. Over the years, the Code has been updated and revised; most recently, “Canon 8: Treating All People Fairly” was added to the existing Code of Ethics [4]. Until July 2017, the Code of Ethics had not been revised since 2006, making the addition of a new canon a monumental moment for the profession. Though Canon 8 may seem like simple common sense, the timing and message of the newest canon are particularly important because of the current public dialogue and global trends. The #MeToo movement, the global refugee crisis, the increase in nationalism around the world, and the Harvard Affirmative Action Lawsuit are just some of the current events relevant to Canon 8, which cannot therefore be separated from this historical context.

Canon 8 provides economic and social benefits to the civil engineering profession. The economic value of the Canon can be seen in the levels of innovation and profitability that come with diversity. The social value is evident due to the shifting demographics within the United States (and globally), the need to promote accessible design, and the imperative to recognize and address implicit bias. Finally, promoting diversity, equality, and inclusion through the eighth canon will help to achieve both the ASCE Vision 2025 and the United Nation’s Sustainable Development Goals while enhancing the global quality of life.

Economic Value

Canon 8 creates a precedent for engineers to “encourage equitable participation” and “include diverse perspectives, in the planning and performance of their professional services” [4]. Diverse perspectives often lead to more innovation and better decision making. An article published in the Harvard Business Review discusses two different types of diversity that are important to note: inherent and acquired. As the names suggest, inherent diversity refers to the diverse traits individuals are born with (gender, ethnicity, race, etc.) while acquired diversity refers to experience gained (international work, travel, etc.). Both are important in creating diverse groups and increasing innovation. Companies with both types of diversity were 45% more likely to report increased market share and 70% more likely to capture a new market [8].

The need to improve and innovate in civil engineering is becoming increasingly important as both population and demand grow while resources remain limited. Groups that are diverse can process and consider information with greater depth and accuracy than groups that are homogeneous [7]. Diversity requires members of a group to consider numerous perspectives and more thoroughly process information that is presented to them. This is important for civil engineers as they plan and perform their work, which will have lasting impacts on communities. Working
with diverse groups and communities will help to drive innovation that will revolutionize the future of the industry.

Diversity also correlates to greater profitability. The *Wall Street Journal* reported that companies with diverse executive teams were more profitable than their rivals [6]. A 2015 study done by McKinsey & Co. found that the most racially and ethnically diverse companies and gender diverse companies are respectively 35% and 15% more likely to have higher returns than their corresponding industry medians. Companies that were the least diverse underperformed [9]. Furthermore, diversity contributes to greater economic prosperity within communities: U.S. cities with higher foreign-born populations are on average more economically successful [7]. There are, of course, challenges that come with diverse groups and success could be said to attract diversity instead of being caused by it. The sustained success of high foreign-born populations throughout the years, however, would suggest that the diversity does imply at least some causality. Though not a silver bullet for instant economic success, the benefits of diversity are apparent and worth undertaking a conscious and consistent effort to implement Canon 8.

### Social Value

Canon 8 is not the first canon in the Code of Ethics to have significant social value. In fact, each canon holds social value in protection of the public, the profession, and individual reputations. “Treating all people fairly,” however, adds a timely, new level of social value that the first seven canons do not fully provide [4]. The newest canon places the responsibility on engineers to include the diverse perspectives of not only other engineers, but also the communities where they work. This canon has value as the demographics within the United States change and the need for accessible design increases. The canon can also help in overcoming implicit bias. Addressing the changing demographics and overcoming implicit bias will contribute to an overall more equitable society and better civil engineering design.

Demographics within the United States are changing rapidly. The U.S. workforce growth will be increasingly driven by immigrants as the number of births to U.S.-born women declines [2]. Without immigration and births to immigrant women, the working-age population, which is vital to the overall economy, will decrease. With a growing proportion of immigrants, there will be an increasingly diverse community to consider in design work. There is, however, currently a general lack of ethnic and gender diversity within the civil engineering profession, which requires engineers to make an extra effort to include the diverse perspectives of their communities. In 2016, approximately 86.6% of civil engineers were males and about 81.5% were white (including Hispanic) [3]. Canon 8 adds emphasis to the need for inclusive and diverse considerations in civil engineering.

There are two other important demographic trends to note. One is that urban and suburban populations continue to rise, meaning there are more people living much closer together [10]. This poses a unique challenge for civil engineers to design and build infrastructure that can handle the increase in a sustainable way. The second is the aging population within the U.S. By 2030, the U.S. Census Bureau projects that 20% of the U.S. population will be of retirement age, with that
percentage increasing to nearly a quarter by 2060 [11]. This has massive implications for accessible design.

With an aging population, accessible design continues to be an important consideration that Canon 8 helps to address. In 2016, the percent of people 65 or older with a disability was 35.2% [5]. Assuming this rate holds true going forward, the increased population of individuals 65 and older will require more accessible infrastructure design. This will affect urban, suburban, and rural areas, as each segment has seen an increased percentage of 65+ residents [10]. Canon 8, category (c) provides the mandate for civil engineers at all levels to include these considerations in their designs.

One of the major social benefits that Canon 8 provides all civil engineers is a heightened awareness of implicit (and explicit) biases. Regarding explicit bias, the new canon provides grounds for ethical evaluations of engineers who are openly biased or “engage in discrimination or harassment in connection with their professional activities” [4]. There is no place for this kind of treatment anywhere, and it should not be tolerated, especially amongst those who seek to improve quality of life such as civil engineers. Implicit bias is much subtler and more widespread than many may realize. Implicit bias “refers to the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner” [13]. Canon 8 should cause each engineer to reflect on his or her implicit and explicit biases to truly consider how to best plan and perform their professional duties to create the greatest value for communities. Becoming aware of and working to overcome individual biases will help the individual engineer be more effective in meeting the diverse needs of communities.

The Future

Canon 8 will help as the role and influence of civil engineers expand. The canon helps to support and drive two important sets of goals: the ASCE Vision 2025 and the United Nations Sustainable Development Goals. The canon supports the ASCE Vision 2025 by allowing for increased perspectives and greater responsibilities of civil engineers. The canon and responsibilities of civil engineers also directly relate to 10 of the 17 U.N. goals.

The ASCE Vision 2025 addresses the increased leadership and professionalism that will be required of civil engineers. The needs that the Vision addresses include mastering new and expanding knowledge and skills, innovating, becoming stewards of the environment, managing risk, and leading policy [1]. This wide range of future responsibilities and skills required of engineers will demand inclusion of diverse thought, personalities, and talents. Canon 8 creates a basis for the variety of expertise that will be needed to realize the Vision 2025.

The U.N. Sustainable Development Goals are meant to provide “a shared blueprint for peace and prosperity for people and the planet, now and into the future” [12]. Civil engineers already play a direct role in improving 8 of the 17 goals, which relate to water, energy, infrastructure, cities, climate, the environment, and more. The addition of Canon 8 creates an opportunity for improving another two: gender equality and reduced inequalities. The U.N. goals
and the ASCE Vision 2025 fit well together with the addition of Canon 8 in helping civil engineers strive to reach greater heights within the profession and to create a better world.

Implementing Canon 8

The addition of Canon 8 to the ASCE Code of Ethics has the potential to drive economic and social value for civil engineers to achieve some of the profession’s and the world’s loftiest goals. How can student chapters and working engineers effectively use the canon to realize that potential? For student chapters, the principles of treating all people fairly, having equitable participation, and including diverse perspectives can improve the leadership and activities of the chapter. Three of the last six BYU ASCE chapter presidents have been women, and the leadership teams are consistently about half women and include multiple ethnic groups. This has led to a variety of activities appealing to the diversity of interests within the chapter. The diversity within leadership roles and the comradery that has been cultivated within the civil engineering department by embracing that diversity may contribute to the consistent rise in women joining the department, with 39% of enrolled freshmen being women compared to just 26% of enrolled seniors.

In industry, Canon 8 can be used in a similar way. The canon is a standard for the equitable and fair treatment of all people as well as a strong measure to prevent harassment and discrimination. The canon will also help encourage engineers to be actively involved in their communities to better understand the individuals and needs there. Too often in the past, racial, ethnic, gender, and other minorities have not had a say in the development of their communities, but Canon 8 will increase each engineer's awareness of the diversity within their communities. The civil engineering industry will be a leader in diversity and equitable treatment as it seeks to implement more fully the mandate created by Canon 8.

Conclusion

Civil engineers are working to improve the world, and the addition of Canon 8 to the ASCE Code of Ethics will help them be more effective. Canon 8 creates additional economic value for civil engineers by creating opportunities for more diverse perspectives that drive innovation and profitability. Canon 8 also creates positive social value by setting a standard of no harassment or discrimination against any persons. The canon directs engineers to respect and treat all people fairly, which will improve the quality of work and the level of civility that exists within communities. This new canon also directs engineers to plan and perform work that will consider the diversity of communities, leading to better outcomes and improved standards of living for more people. The value created by the eighth canon also supports the vision and goals of leaders within the civil engineering community and throughout the world. Thus, as the canon is embraced and implemented at all levels of civil engineering, from student chapters to industry, the quality of life for communities and individuals throughout the world will be enhanced.
References


