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▸ David A. Patterson, Column Editor

Viewpoint
Global Perspectives of Diversity, Equity, and Inclusion

ACM luminaries describe how their experiences with DEI issues vary between the different continents where they have lived.

For this viewpoint, several ACM luminaries who have lived on multiple continents briefly discuss how diversity, equity, and inclusion (DEI) varies in their experience. Specifically, based on the life experiences of these six people, we see examples of how potentially marginalized communities—based possibly on race, ethnicity, gender, sexual orientation, physical ability, nationality, cultural background, religion, age, or other aspects—can be similar and how they can vary between different parts of the world.

—David A. Patterson

Luiz Andre Barroso (North America and South America, Eckert-Mauchly Award recipient). I grew up in Brazil, where I did my undergraduate in electrical engineering in the 1980s, as at that time undergraduate programs in computer sciences were still maturing. My own undergraduate EE class had approximately the same number of male and female students, which I believe was an anomaly for engineering classes at that time. The gender diversity numbers in computing today are not nearly as healthy. In 2018, women made up 60% of all bachelor degrees in Brazil, but when we narrow it down to STEM areas that number drops to only 14%. For computing in particular, a 2020 report by a Brazilian computing industry association (Brasscom) estimates women make up only 20% of the professionals in R&D and engineering. My impression is that Brazil is faring no better than the U.S. when it comes to increasing the representation of women in computing, despite several recent efforts to connect girls with computer science. It is difficult to compare Brazil with the U.S. when it comes to representation along racial groups because of differences on how people identify themselves in the two countries. For example, my understanding is that most Brazilians who describe themselves as brown (the term used in Brazil's census is "pardo") would be considered black in the U.S. I went to school with extremely few dark-skinned colleagues. Quotas in universities for students from underprivileged backgrounds and for black students in particular have only been in place for about a decade, and while they could have a significant impact in diversity, the opposition to such quotas systems remains fierce and therefore their staying power is yet unclear.

Tanzeem Choudhury (North America and South Asia, ACM Fellow). I went to one of the best all-girl high schools in Bangladesh. One classmate was the daughter of the head of school, and upon graduation she was married off at the age of 18. Growing up, I was told that "education is very important," but in reality, only if it didn't take away from a girl's responsibility to be a submissive daughter and later a good wife who dutifully takes care of her kids and husband's family. As a strong willed, ambitious, and vocal woman, I desperately wanted to come to the U.S. where I thought I could finally be myself and live my dreams. I did thrive in the U.S., attending a top university and later becoming a professor at an Ivy League college. I co-founded a healthtech startup and became a senior leader at a Fortune 500 company. In the U.S., I was never directly told how a woman should act or that my ambitions or dreams should be different from my male peers. But there have been many times when my ideas were assumed to have come from my male colleagues, my confidence and straightforwardness was labeled as being difficult, and there were times I was offered substantially lower salaries than my male counterparts by commercial for-profit tech companies. In Bangladesh, I learned how to confront explicit bias, but now I find confronting implic-

IMAGE BY MARINANY

it bias sometimes is much harder. We should help women and minorities be themselves and reward them explicitly for their contributions.

Manish Gupta (North America and South Asia, ACM Fellow). In the U.S., our company's goal was to create a level playing field for women and underrepresented minorities. When I moved back to India, it was clear that the primary focus must be on gender diversity as women in India face tremendous social challenges. As an example, parents would be more wary of letting their daughters attend coaching classes (to prepare for the entrance examination of the IITs) in the evenings or in other cities, which contributed to their underrepresentation in the IITs. The Indian Government later addressed this issue to some degree by introducing supernumerary seats for women. Beyond gender, one of my "aha" moments came from a discussion with a gay colleague who pointed out that simply having an environment of non-discrimination in our organization was not sufficient. Given the harassment and discrimination that the LGBTQ+ community face in society at large, it is important that we actively convey expressions of support and openly welcome our LGBTQ+ colleagues. There are many more dimensions of diversity in India, for example, religion and caste, that are also associated with underrepresentation and biases. We need to understand these problems at a deeper level and address them effectively.

Oyekunle Olukotun (Africa, North America, and Western Europe, ACM Fellow). Living in England, Nigeria, and the U.S. has given me a unique perspective on the role that DEI has played in access to computing. In all three countries, history and politics play an integral part in determining who gets access and who gets left out of computing. In the U.K., the racial and ethnic diversity comes from immigrants and their descendants from former British colonies (for example, India, Pakistan, Caribbean, Nigeria). These immigrants have had inequitable educational and economic opportunities and have therefore had less access to computing technology. This inequity has not been as pervasive as the systemic racism in the U.S., but it has had a definite impact of reducing the number of persons of color in computing in the U.K. There

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are some who would argue that the U.K. has also been slower than the U.S. to recognize the impact of these inequities and the harm they have caused. Nigeria is a diverse country comprised of four major ethnic groups with distinct languages and cultures and many minor ones. Nigeria has historically relied on the west for most computing technology. Access to this technology has favored those with a Western education and economic means. The colonizers came by sea, so Western education and technology has been concentrated on those ethnic groups (Igbo, Yoruba) close to the coast in southern Nigeria, which is also predominantly Christian. Northern Nigeria, which is further from the coast and predominantly Muslim, has traditionally been less focused on Western education, with some actively opposing education, especially for women. The result has been lower rates of literacy and much less access to and participation in computing and technology. Thus, even though there is almost no racial diversity in Nigeria, the significant linguistic/ethnic/religious diversity and the unequal distribution of education resources creates significant DEI challenges that transcend race, distinct from those in the U.S.

Raluca Ada Popa (Eastern Europe and North America, Grace Murray Hopper Award recipient). On the one hand, in Romania, the number of women in computer science and engineering seemed even to men. As an example, my high school "group" (a subdivision of a class with the same fixed curriculum) was an elite computer science group and our curriculum consisted of intensive programming, math, and science classes. We were selected entirely based on test scores and grades. The group actually had a few more women than men. I generally grew up thinking that both women and men pursue engineering degrees and jobs evenly. When I moved to the U.S., I was shocked at the disparity between the genders in computing. I heard for the first time, terms such as "gender gap" or "gender ratio." This demonstrated to me that cultural aspects highly influence the gender gap in computing. On the other hand, in Romania there is more discrimination against LGBTQ+ and other marginalized communities such as the Roma/gypsy people, which remains a significant problem.

Dawn Song (East Asia and North America, ACM Fellow). In China, in general, there is a high participation rate for women in the workforce, given that both parents usually work to provide for the family. As such, women are encouraged to excel in schools and at work. However, in STEM areas, China still sees significantly lower participation and representation of women than men. My high school class was particularly selected and assembled from the whole cosmopolitan region of my hometown to train for the Math Olympics. The class had less than 20% women. My physics class at Tsinghua University also had less than 20% women. The computer science class at Tsinghua at the time had a higher percentage of women, but still much lower than 50%. When we look at women faculty percentage in computer science at top universities in China, it is also very low. C

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There are so many different dimensions of diversity, equity, and inclusion. We would like to hear about the issues that impact where you live and work. Please consider writing your own contribution in the COMMENT space at the end of this column collection online (https://bit.ly/3ePteSM). We want to hear your stories!