



Council  
for Interior  
Design  
Accreditation

# Future Scan 2019

**Mega and Macro  
Trends Impacting  
the Interior Design  
Industry**

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# Trying to define a future vision for the interior design industry is no simple task.

As an industry, we are deeply entrenched in a new economy that is more open-sourced and technologically connected. We are living in an age of always-on social and knowledge networks that place a high value on the speed of connectivity, decision-making, and delivery. At the same time, the public is more aware of the power and potential of good design. With that acknowledgment comes high expectations for meaningful and measurable results. It's a new era for the design industry.

**That's where CIDA comes in.** We are here to ask the hard questions and to engage closely with interior design practitioners, educators, industry leaders and our allied partners to help define tomorrow's interior design industry. What does interior design education need to do—what must it do—to keep pace with a global economy? What's the job of interior design education and how can the education model evolve to align with changes in world? What must interior design education do to position and prepare interior design students for whatever tomorrow brings? What are the personal and technical skills and centers of knowledge that will best serve interior design students?

**This is where you come in.  
Sound intriguing? Let's get started.**

Please read through the results of CIDA's Future Scan with the objective of assessing the key trends that are influencing the field and imagining the impact these trends may have on the future of interior design.

After you're finished, we'd love to hear if the findings resonate or align with your world view and/or practice experience. What trends do you see as most critical? What's missing?

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# Introduction

Trends, by their definition, have a long trajectory. The impact they make can endure well beyond their lifespan as trends, as what once was new becomes integrated into the norm. This year's CIDA Future Scan gathers, synthesizes and updates a number of large-scale trends—some of which are well-established, others of which are currently emerging—identified in the Future Scans of the previous several years, in order to provide a Big Picture view of developments and forces that are or will be affecting the interior industry, profession and practice in the near future.

The trends presented in this report range from very broad changes (i.e., mega trends) occurring in global systems, large-scale populations, and societies, to those more specific to particular sectors or fields of endeavor (i.e., macro trends). They derive from a variety of subject areas, including economics, demography and sociology, ecology, technology, politics, healthcare, science, and education. In some cases, their effect on the interior industry, profession and practice will be more indirect than in others, but all require or will require designers to adapt and innovate to keep pace with a changing world.

Forecasts and projections are not certainties. Unexpected disruptors can shift trends or derail them altogether. Nonetheless, most of the mega trends identified herein are not likely to change in the next decade or so, barring some disruptor of enormous magnitude, because their causes alter very slowly. Some of the macro trends, however, are more susceptible to disruption because they are founded in attitudes or lifestyle preferences that can be swayed by shifts in public taste or opinion. At present, however, they are in line with other trends in related fields which are influencing them and thus should remain in force for some time to come.

Although design principles remain fairly constant, design practice has undergone substantial change in recent years. The following trends suggest it can anticipate even greater change in the coming decade.

## TREND 01

## Global Economic Volatility and Uncertainty

Economically, the countries and corporations of the world are growing evermore tightly interlinked. We rely on one another for natural resources, commodities, foodstuffs, materials, manufactured goods, and expertise, not to mention workers and customers for products and services. When certain links in the chain falter, it affects all the others, as demonstrated by the recent spate of global trade wars.

Because of these dependencies, economies are more susceptible to volatility and uncertainty within and among nations. Thus, for example, even though the U.S. economy is thriving at the moment, its trade policies are hurting the economies of other countries, pushing the global economy toward a possible recession in 2020 or 2021.

- “Trade uncertainty dragging down global growth” was the headline used by the Organisation for Economic Co-operation and Development (OECD) when it released its semiannual Economic Outlook report in May 2019. OECD chief economist Laurence Boone stated, “Trade tensions have disrupted growth. With uncertainty high and confidence low, investment has suffered, and the manufacturing sector has taken a hit.” According to the OECD, 14 million jobs in the US, 12 million in Germany and 9 million in Japan depend on exports. Increased tariffs mean consumers pay more for the products they buy, companies sell less, and jobs are lost, producing a downward spiral of deceleration. The OECD is not predicting a global recession, but does note that economic growth is extremely weak and the risk of recession could increase if the trade crisis worsens.<sup>1</sup>
- Half of a panel of more than 100 real estate and economic experts polled by real estate website Zillow said they expect the next U.S. recession to begin in 2020, with another third (35%) predicting the next recession to begin in 2021. Trade policy, a geopolitical crisis and a stock market correction were the most commonly cited reasons.<sup>2</sup>
- The most recent quarterly UCLA Anderson Forecast, produced by economists at the university’s Anderson School of Management, says U.S. economic growth, on a fourth-quarter-to-fourth-quarter basis, was reported at 3.1% in 2018 and is forecast to be 2.1% and 1.4% in 2019 and 2020, respectively. For 2021, they are forecasting a rebound to 2.1%. However, senior economist David Shulman cautioned that “when the economy slows to 1% growth, the risk of a recession becomes very real, with the second half of 2020 being most problematic.”<sup>3</sup>
- Analysis conducted by the Deloitte Global Economist Network projects the Canadian economy will grow by a weak 1.3% in 2019 and fare only slightly better in 2020, with 1.5% growth. In addition to the global slowdown, the economy has been impacted by a decline in residential construction and home sales as well as low business investment and consumer spending. They conclude, “The odds of a Canadian economic contraction without a U.S. recession or a hard landing in the global economy are very low. . . . However, a significant downturn could materialize should weakening domestic conditions coincide with a significant external shock.”<sup>4</sup>

Moreover, we are seeing a backlash against globalization with the rise of nationalism and populism within many countries. That is creating a strain on international relations that is rebounding on economic forecasts.

- Commenting on President Trump’s announcement in July that he would begin levying tariffs on all Chinese imports effective in September, Neil Shearing, group chief economist at Capital Economics, expressed his concern in a letter to clients that the trend threatens fundamental change to the interconnected global economy, adding, “Lingering in the background is a more fundamental concern—namely that we may be witnessing the end of globalization.” Should the trade war continue to escalate, Shearing speculated, it could result in the U.S. and China going their separate ways, each developing their own standards, tech platforms and payment systems.<sup>5</sup>

- Such a breakdown in global commerce would force other countries to choose whose goods and services they would support and create major rifts in existing trade relations and supply chains. China tech giant Huawei's announcement that it was releasing its own operating system for its cellular phones and other smart devices in order no longer to be dependent on Google's Android software—and thus effectively skirting around a U.S. embargo of its products—foreshadows how divisive “us vs. them” trade policies could become.<sup>6</sup>

Implications for Designers: Should the global economy go into recession or near-recession, that, in turn, likely will affect investment in, demand for, or production of long-range projects, such as in the building industry. Trade barriers could disrupt or cut off some supply chains for products and materials designers use in their projects. Designers are already beginning to feel the effects of the trade tensions between the U.S. and China:

- Reporting on how the trade war is affecting the industry, designer website The Business of Home states, “No matter what happens on the political front, the tariffs have already had an impact. Prices for a range of goods have risen, and will likely continue to go up throughout 2019. For interior designers who primarily earn from markup on product, higher prices might not seem like the end of the world. However, it's likely that disruptions to the global supply chain will lead to delays and backlogs—even for goods not manufactured in China.”<sup>7</sup>
- The American Society of Interior Designers recently asked members participating in its Interior Design Billings Index what impact, if any, tariffs were having on their business. Two out of three respondents (66%) said tariffs were having an impact in 2019, compared to only 15% in 2018. When asked to expand on their impact, respondents perceive that the tariffs are causing price increases in products such as steel, fabrics, furniture, and quartz countertops.<sup>8</sup>

## TREND 02

# Imbalance/Inequality

A number of current trends stem from efforts to address various forms of imbalance or inequality, including economic or financial inequality, wage inequality, gender inequality, race / ethnicity inequality, and resource inequality.

- In the U.S., Canada and globally, the disparity between the haves and the have-nots continues to grow, with more and more people falling into the have-not category. The repercussions of income inequality go well beyond basic standard of living, affecting the have-nots' access to healthcare, education, employment opportunities, and housing. Most of these individuals and families are just barely getting by and have little or no savings to buffer the loss that could arise from an illness, accident, job loss, or catastrophic event. As a result of poorer work and living environments, stress, lower standard of health care, diet and other consequences of low income, studies show, income inequality impacts a broad range of quality-of-life factors, including health (mental and physical), longevity and life expectancy, employment and employability, and work performance. A literature review of research on income inequality published in the journal *Social Science & Medicine* concludes that relative deprivation from income inequality correlates with higher rates of morbidity and mortality, obesity, teenage birth rates, mental illness, homicide, suicide, low trust, low social capital, hostility, racism, poor educational performance among school children, the proportion of the population imprisoned, drug overdose mortality, and low social mobility.<sup>9</sup>
- One of the consequences of the widening gap of income inequality is heightened attention to issues of inclusion and exclusion that affect the financial and general well-being of a wide spectrum of individuals traditionally marginalized by race/ethnicity, gender and sexual identity/preference, age, disability, religion, class, and country of origin. At the same time, the move toward greater acceptance and inclusion of these individuals has generated backlash from conservative, ultra-conservative and fundamentalist groups, as seen in the rise of leaders and interest groups promoting isolationist, nationalist, and exclusionist ideologies. Results of a Pew Research Center

2018 survey of global attitudes found on the whole people are strongly in favor of increased gender equality but share more tepid enthusiasm for increased ethnic, religious and racial diversity, and are not opposed to religion playing a more important role in society.<sup>10</sup>

- According to an organization called Share the World's Resources, the wealthiest 20% of the world's population enjoy nearly 83% of total global income, whereas the poorest 20% receive a mere 1%. In recent years, this concentration of wealth has become increasingly extreme, with one percent of the richest people in the world owning \$110 trillion — 65 times the total wealth of the bottom half of the world's population. As a result, millions of people live in extreme poverty or near poverty and lack access to food and other basic necessities, with conditions at their worst in sub-Saharan Africa, Asia and Latin America.<sup>11</sup>
- Information provided by Germany's main environmental protection agency, Umweltbundesamt, states, "The myriad social consequences of resource use are related to issues such as the distribution of raw materials, ready access to clean water, and worldwide food security. Per capita use of raw materials in the world's industrial nations is estimated to be four times greater than in less developed countries. However, while the lion's share of value-added from resource use is generated in industrial nations, less developed nations often bear the brunt of the ecological and social impact of raw material production."<sup>12</sup>

**Implications for Designers:** In addition to how they may affect hiring and employment practices in the industry, these issues also are coming to bear on the built environment in regards to both private and public structures, use of resources, cost and quality of housing, manufacturing and supply chains, and environmental impact. How can the benefits of good design be made available to more people? How can spaces be made more inclusive? In what ways can designers minimize the use of new resources, employ more repurposed materials, and create spaces that themselves can be more easily adapted or repurposed when their current use has been outgrown or is no longer needed?

### TREND 03

## Demographic Shifts

Within the United States, the aging of the population and the gradual diminishing of the majority white population are having and will continue to have a significant impact on housing, healthcare and public institutions. Accessibility and livability will increasingly become critical issues as aging Baby Boomers enter their 80s. Globally, other developed nations, notably Japan, also have aging populations, while developing nations such as China and India are under pressure from a growing middle class to keep up with the pace of urbanization and providing more desirable housing options, schools, healthcare facilities, etc.

- According to the U.S. Census Bureau's most recent population estimates, for 2018, the nation as a whole continues to age. Between 2010 and 2018 the median age increased by one year. More than 4 out of every 5 counties were older in 2018 than in 2010. The increase in median age is largely due to the aging of the Baby Boomer generation, the majority of whose members have now all crossed over the 55-year mark. The share of the population age 65-and-older was 16.0% in 2018, growing by 3.2% in the last year. The 65-and-older age group has increased 30.2% since 2010. In contrast, during the same period, the under 18 population decreased by 1.1%. For the first time in U.S. history, older adults are expected to outnumber children by 2035.<sup>13</sup>
- Although whites remain the majority (79%), the country is becoming more racially and ethnically diverse. Proportionately, between 2010 and 2018, Asians were the fastest-growing population group (up 28%), followed by Hispanics (up 18%), while the white population increased by less than 4%.<sup>14</sup>
- According to the World Population Review, Canada in 2019 has an estimated population of nearly 37.5 million, roughly a 5% increase since the last census was conducted in 2011. About 73% of the population is white, down from 86% in 1996. Canada's aboriginal people are growing at twice the national rate. While 4% of the population claims an aboriginal identity, another 16% belongs to a non-aboriginal visible minority. Nearly 22% of the population is now

foreign-born, and about 60% of new immigrants come from Asia, particularly China and India. The total population is projected to reach 37.6 million in 2020 and 40.6 million by 2030.<sup>15</sup>

- The world population is estimated to have surpassed 7.7 billion, based on data from the United Nations. By 2030, the world population is expected to reach 8 billion. Population growth will occur more quickly in developing than in developed nations, especially in Asia and Africa. India is on track to overtake China's position as the most populous country by the year 2030.<sup>16</sup>
- The majority of the world is going to face considerable growth in the 60-plus age bracket. This will put enormous strain on the younger age groups as the elderly population is becoming so vast without the number of births to maintain a healthy support ratio.<sup>17</sup> It also will overtax many governments' ability to maintain promised levels of pensions and other social supports, increasing the number of vulnerable elderly, especially among the oldest-old.
- Average life expectancy is set to increase in many industrialized countries by 2030. A study, led by scientists from Imperial College London in collaboration with the World Health Organization, analyzed long-term data on mortality and longevity trends to predict how life expectancy will change in 35 industrialized countries by 2030. The study included both high-end economies and developing countries. It found life expectancy will increase in all the countries studied, with South Korea likely to have the longest life expectancy by 2030 (a baby girl at birth could expect to live to age 90.8 and a baby boy to age 84.1).<sup>18</sup>
- While this trend reflects improved living conditions, it also adds urgency to the need to address how these societies will cope with aging populations. For many elderly, the high cost of living (health care, medicines, insurance, caregiving) is putting their long-term financial stability at risk. At the same time, the cost of social programs for the elderly (e.g. Social Security, Medicare) is skyrocketing as the number of younger workers who pay into

these programs is dwindling. Take Japan, as an example, where the cost of social services is expected to rise by 1.6 fold by 2040, and the cost of medical care will increase 1.7 fold.<sup>19</sup> At present, there are no proposed solutions to deal with this impending crisis.

- More than half the world's population is for the first time living in households earning enough to be considered middle or upper class, with five people joining their ranks every second, according to data compiled by the nonprofit organization World Data Lab. It concluded that 3.59 billion people make up the global middle class, and forecast that the group would grow to 5.3 billion by 2030. Almost 90 per cent of the new middle class is expected to be found in Asia. As their numbers and political clout grows, they will demand better living conditions and social services.<sup>20</sup>
- In the world's most advanced countries, however, the middle class is at risk, finds a recent OECD report, *Under Pressure: The Squeezed Middle Class*. The middle class (as defined by household earnings) has shrunk in most OECD countries as it has become more difficult for younger generations to make it to the middle class. Except for a few countries, middle incomes are barely higher today than they were ten years ago, the report finds, increasing by just 0.3 percent per year, a third less than the average income of the richest 10 percent. Middle-class households are struggling to maintain their economic weight and lifestyles as their stagnating incomes fail to keep up with the rising costs of housing and education, states the report.<sup>21</sup>

**Implications for Designers:** Population aging will require substantial renovation, retrofitting and redesign of many current homes, buildings and public spaces. New designs will need to take into account the needs of occupants who are older than what has been the norm in the past and who likely will live considerably longer as well. Greater racial and ethnic diversity will impact design preferences and tastes. The rise of the middle class in developing countries will create demand for better housing and other buildings, such as healthcare facilities and schools. On the other hand, the declining wealth of the middle class in advanced countries is creating a need for more affordable housing, healthcare and education, prompting builders and designers to find new ways to economize.

## TREND 04

## Environmental Stress

Climate change, diminishing natural resources, an overabundance of waste and refuse, pollution, increased severity of natural disasters, energy consumption, and globalization of commerce all are placing stress on the environment and ecosystems essential for life.

- As signs of the impact of global climate change increase (record hot and cold temperatures, droughts, floods, glacial melting, etc.), scientists have recalculated their forecasts as to when these effects may reach “crisis” levels and potentially become irreversible. At a high-level on climate and sustainable development held at the United Nations in March, General Assembly President María Fernanda Espinosa Garcés warned the gathering that the world’s leaders have only 11 years—i.e., until 2030—to avert environmental catastrophe.<sup>22</sup> Similarly, a policy paper released in June by an independent think tank in Australia called Breakthrough National Centre for Climate Restoration presented a scenario in which, if humans do not start addressing the cause of climate change now, by 2050 we could see irreversible damage to global climate systems resulting in a world of chaos resulting from massive, catastrophic shifts to the weather, agriculture and even the habitability of some areas.<sup>23</sup> Although some scientists say the “doomsday” scenario is exaggerated, most agree that the impact will be severe in many parts of the world.
- A new report from the World Resources Institute reveals a quarter of the world’s population is living in regions of extremely high water stress -- with “once unthinkable” water crises becoming common. In addition to threatening food supplies and health, states the report, water shortages are contributing to regional tensions and political instability in the Middle East and Africa, exacerbating both migration and conflict. Qatar is ranked as the world’s most water-stressed country, followed by Israel and Lebanon, Iran and Jordan. In Africa, Libya and Eritrea are suffering the worst shortages. In June, Chennai became the first major Indian city to face an acute water shortage, affecting millions of people.<sup>24</sup>
- The combined effects of climate change and water scarcity are threatening the world’s food supply, according to a report from the United Nations Intergovernmental Panel on Climate Change (IPCC). The report highlights that climate change is affecting all four pillars of food security: availability (yield and production), access (prices and ability to obtain food), utilization (nutrition and cooking), and stability (disruptions to availability). Food security will be increasingly affected by future climate change through yield declines, increased prices, reduced nutrient quality, and supply chain disruptions. The report states that different countries will experience different effects, but there will be more drastic impacts on low-income countries in Africa, Asia, Latin America and the Caribbean.<sup>25</sup>
- Researchers from the University of Cambridge and the United Kingdom’s National Bureau of Economic Research have published a study which indicates, contrary to some previous scenarios, that virtually all countries—whether rich or poor, hot or cold—will suffer economically by 2100 if the current trajectory of carbon emissions is maintained. The researchers acknowledge that economies will adapt to changing climates, but argue that their modeling work shows adaptation alone will not be enough to offset the effects of rising temperatures. Heat, flood, drought or freeze, when scaled up, these are the effects that will create economic losses at the national and global levels, even in advanced and allegedly resilient economies, say the researchers.<sup>26</sup>
- Eco-strategist Andrew S. Winston, in an article for the MIT Sloan Management Review on megatrends that will evolve between now and the year 2030, predicts, “We will be forced to more aggressively confront resource constraints. To keep volumes of major commodities (such as metals) in line with economic growth, we will need to more quickly embrace circular models: sourcing much less from virgin materials, using recycled content and remanufactured products, and generally rethinking the material economy.”<sup>27</sup>

- Adding to the world's environmental woes are the after-effects of more intense natural disasters resulting from global climate change. The New York Times recently reported on new research showing that flooding, fires and other climate-related disasters are releasing toxins into the environment by knocking chemicals loose from soil, homes, industrial-waste sites or other sources, and spreading them into the air, water and ground. Disasters like these appear to be exposing people to an array of physical ailments including respiratory disease and cancer, the research finds. These toxins tend to be long-lasting and can spread well beyond the immediate disaster area to affect large populations for years to come.<sup>28</sup>

Implications for Designers: With regards to the built environment, sustainability and resiliency will need to be threshold requirements for any new or renovated structures. In addition, more attention will need to be given to the sourcing and life cycle of products and materials specified, as well as to implementing methods and techniques that reduce environmental damage or stress.

#### TREND 05

## Extreme Mobility

The demographic shifts and environmental stressors mentioned above, along with various forms of inequality and hostility, will produce mass migrations of populations within the coming decades. This trend is manifesting itself already in the migrations occurring in Europe from Africa and the Middle East and in the United States and Canada from Latin America.

- Drawing on data from several organizations, an article in *The Guardian* states that migration in 2017 reached a record high. About 258 million people, or one in every 30, were living outside their country of birth in 2017. The latest revised projection, at the time of publication, was that there will be 405 million international migrants by 2050.<sup>29</sup> It should be noted that many of these are legal immigrants, students studying abroad, and workers both permanent and temporary who relocate for better job opportunities.
- A 2018 Gallup World Poll survey found that 15% of the world's population—roughly 750 million people—would migrate if they could. Many of these would-be migrants want to escape from conflicts, famine and natural disasters in their home countries, but even among leading nations, people would consider migrating in search of better economic opportunities or to have the experience of living in another country. Areas that had the highest proportion of respondents who said they would be willing to permanently move to another country included sub-Saharan Africa, Latin America and the Caribbean, Europe (outside the European Union), and the Middle East and North Africa. Top favored destinations for migrants were the United States, Canada, Germany, France, and Australia.<sup>30</sup>
- By mid-2018, the global refugee population reached a record 25.7 million, more than 300,000 more than in 2017, primarily due to forced displacement and humanitarian crises, according to a United Nations report produced for the 2019 G20 Summit. Although media attention has been largely focused on refugees seeking to enter either the United States, Italy or Spain, Turkey hosted the largest number of refugees, followed by Germany and France. Individuals and families from Afghanistan, Eritrea, Iraq, Somalia and the Syrian Arab Republic make up half of all the world's refugees. In Latin America, refugees are largely Salvadorans, Guatemalans and Hondurans. Within the past year, nearly 3 million Venezuelans have left the country, which is in crisis of collapse.<sup>31</sup>
- Data compiled by the Internal Displacement Monitoring Center reveals that, during the first six months of 2019, extreme weather events, such as floods, landslides and cyclones, displaced a record 7 million people from their homes. "In today's changing climate, mass displacement triggered by extreme weather events is becoming the norm," the center said in its report, adding that the numbers represent "the highest midyear figure ever reported [since 2003] for displacements associated with disasters."<sup>32</sup>

At the other end of the socio-economic spectrum, more sophisticated forms of transportation combined with wireless and mobile technologies have untethered workers from their workplaces and individuals from their countries, creating an ever-more-fluid global citizenry in need of temporary places to live and work that meet certain basic standards no matter where they are in the world.

- The explosion of smartphones and tablets has created a new way of living and working, say experts with global human resource consultancy Deloitte. An estimated 70 percent of workers are not sitting behind their desks everyday, and more are using mobile devices in their jobs. The experts project that within the next 5 to 10 years these employees will be 100 percent mobile-connected, untethered from their desks and PCs.<sup>33</sup>
- In article on “digital nomadism” for Forbes, Beth Altringer, who lectures at the Graduate School of Design at Harvard University, states, “Several key trends are boosting the appeal of a life of working while traveling. Wifi access is improving dramatically even in remote regions. Fierce competition for digital talent, particularly in engineering, is giving some workers the power to decide to be based wherever they want, as long as they get their work done. The cost of living in many major cities is exorbitant and continues to rise. And young people in particular are placing a higher priority on flexible professional lifestyles and personally meaningful work.”<sup>34</sup> A 2016 survey found 41% of millennials are willing to move overseas for work, even at the cost making personal sacrifices.<sup>35</sup> And, a study by PriceWaterhouseCoopers projected the number of professional international assignments would double between 2010 and 2020.<sup>36</sup>

**Implications for Designers:** As the number of refugees rises, the burden will be placed on the recipient countries to provide appropriate living conditions for these immigrants as well as public facilities for delivering health care and social services. In addition, widespread migration, for whatever reason, will increase multiculturalism within countries and reshape attitudes and tastes regarding the design of the built environment. It

may also cause designers from developing countries to relocate to wealthier countries in search of employment or clients. Increased worker mobility and the ubiquitous “office” (e.g., coffee shops, hotel lobbies, airport lounges) have already given rise to new developments in hospitality, workplace, and multifamily residential construction and design. Whether it's a need for hoteling or co-working space, or affordable living quarters for temporary workers, international and multinational companies will need to provide suitable environments for these employees.

#### TREND 06

## Breakdown of Institutions

Upheavals resulting from the trends mentioned above — demographic shifts, mass immigrations, environmental stresses, pushback against various forms of inequality — are eroding the foundations of the institutions of government and international accord that have shaped the world since the end of the Second World War. Around the globe democracies are faltering, international treaties are being undermined or scrapped altogether, and alliances among nations are becoming dysfunctional or unable to respond adequately to conflicts or humanitarian crises.

- The World Economic Forum released a report in 2015 on the future of the civil society that identified global trends, both positive and negative, shaping civil roles and relationships, including the following, which have grown or accelerated in recent years:<sup>37</sup>
- Global institutions are no longer fit for purpose. Members of civil society and business have noted the decline of traditional institutions that have been in place since the end of World War II, and their guiding rules of engagement. Business, government and civil society leaders now want more socially inclusive models of governance and economic policy.
- The world is becoming hyperconnected. The power of the individual as a virtual citizen is on the rise. The scale of social networks has shifted the paradigm of citizen expression. Civil society, along with business, government and international organizations, are challenged to respond to, represent, and engage this

proliferation of voices online in a way that leverages the power of connectivity. Governments are using such connectivity to experiment with different forms of public engagement and consultation.

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- There is reduced certainty of funding size, sources and modes from traditional donors and a rise of new socially driven financial actors. As traditional funding streams shrink, new sources of finance are emerging, such as the rise of emerging market philanthropists, social entrepreneurs, and social investment products. New mechanisms to access finance are also emerging, such as crowd-sourced funding.
- There is a widening trust deficit towards institutions and between sectors. The rise of citizen protest reveals a reduction in level of trust by the general public in institutions around the world such as business and government.
- Governments facing fiscal pressures are scaling back social service provision. Recent concerns over government debt and attempts to restore competitiveness after the global financial crisis of 2008 have resulted in austerity measures that cut public spending on social services.
- Private sector players are increasingly developing strategies to address social and environmental challenges. A number of leading businesses and entrepreneurs are today reorienting their activities with the objective of bringing positive impact to complex societal challenges as a core part of their business and organizational strategies.
- New patterns of economic and political power are creating a shift in the axis of development. The traditional North-South development dynamic is being challenged by geopolitical and economic shifts, including foreign direct investment of emerging economies such as China's outward investment in Africa; changing focus of donor countries from aid to trade with key emerging market economies; and the new map of the fastest-growing economies in Africa, Asia and Latin America.
- Rising violence and human rights violations. This year's Global Peace Index, compiled annually by the Institute of Economics & Peace, finds global peacefulness has declined nearly 4% since 2008. Terrorism and internal conflict have been the greatest contributors to the global deterioration in peacefulness. One hundred and four countries recorded increased terrorist activity, while only 38 improved, and the total number of conflict deaths increased by 140% between 2006 and 2017. All three regions in the Americas recorded a deterioration in peacefulness in the 2019 GPI, with Central America and the Caribbean showing the largest deteriorations, followed by South America, and then North America. Increasing political instability has been an issue across all three regions, exemplified by the violent unrest seen in Nicaragua and Venezuela, and growing political polarization in Brazil and the United States.<sup>38</sup> Although efforts to curtail human rights abuses are increasing, in various parts of the world violence against women has increased, as has violence against journalists, immigrants, and certain ethnic groups. Violation of personal privacy has become a major concern as the use of digital technology becomes more widespread.<sup>39</sup>
- Democracy is in retreat around the world, concludes the nonprofit organization Freedom in the World, whose 2019 report records the 13th consecutive year of decline in global freedom. Among other findings, the report states, "Governments have increasingly shed the thin façade of democratic practice that they established in previous decades, when international

incentives and pressure for reform were stronger. More authoritarian powers are now banning opposition groups or jailing their leaders, dispensing with term limits, and tightening the screws on any independent media that remain. Meanwhile, many countries that democratized after the end of the Cold War have regressed in the face of rampant corruption, antiliberal populist movements, and breakdowns in the rule of law. Most troublingly, even long-standing democracies have been shaken by populist political forces that reject basic principles like the separation of powers and target minorities for discriminatory treatment.” The reversal, says the report, has spanned a variety of countries in every region, from long-standing democracies like the United States to consolidated authoritarian regimes like China and Russia.<sup>40</sup>

**Impact on Designers:** At present, these trends appear not to have impacted the built environment directly to any large extent. Should they continue or worsen, however, they could lead to disruptions in supply chains, decreased demand for services as social unrest inhibits new projects, and a lack of cooperation or support for firms to work internationally.

#### TREND 07

## Fourth Industrial Revolution

Robotics, artificial intelligence, advanced haptics, big data, nanotechnology, 3D printing, and other technological developments are transforming manufacturing, distribution and delivery of goods and services. Although nearly all experts agree that the increasing deployment of these technologies will create disruptions in nearly every industry and field of endeavor, they differ as to their predictions of whether the result will be widespread displacement of human workers followed by high levels of unemployment or a period of reeducation, readjustment and realignment of human workers into less repetitive, laborious and dangerous jobs.

- As many developing technologies are maturing and becoming more widely available, one of the burgeoning areas of innovation is looking at ways these different technologies—like big data, robotics and AI—can be combined to produce more sophisticated machines, devices and products capable of “learning” and more autonomous and interactive activities.

Consulting group Gartner refers to this entwining of people, devices, content, and services as “the intelligent digital mesh” and sees it as the foundation for the next generation of digital business models and ecosystems.<sup>41</sup>

- Industry insiders say robotics technologies are advancing rapidly and that robots will soon permeate most areas of our lives, from the workplace to our homes. Robotics is being taught in schools in many countries, and a number hold national or international competitions to encourage young people’s interest in the field. Engineers are combining robotics with artificial intelligence (AI), virtual reality (VR) and sensor technology to create more “intelligent” and responsive machines. A 2017 Pew Research Center study, “Automation in Everyday Life,” found that 76% of Americans who have heard of the concept worry that in 50 years time robots and computers will “probably” or “definitely” be performing most of the work currently done by humans. And the same proportion believes that the consequences or impacts will be more negative than positive.<sup>42</sup>
- Futurist Richard Watson thinks that humans are selling themselves short in their projections of how much human activity will be replaced by automation. He predicts that even by 2050 applications and devices employing artificial intelligence will NOT be able to replicate a number of key human abilities, such as common sense, abstract thinking, navigation of physical spaces, learning from small data sets, emotional intelligence, creativity, humor, compassion / empathy, sense of mortality and fear of death, sense of presence / being with another, and love.<sup>43</sup>
- Authors of a 2018 report on the future of the construction industry prepared for the World Economic Forum in collaboration with the Boston Consulting Group state, “Only recently have digital technologies begun to enter the industry, gradually changing how infrastructure, real estate and other built assets are designed, constructed, operated and maintained. These technologies, including building information modeling (BIM), prefabrication, wireless sensors, 3D printing and automated and robotic equipment, are

affecting the entire industry. Their economic and social impact could be substantial, given that the construction industry accounts for 6% of global GDP.” They assert current business models, strategies and capabilities will not be sufficient to meet the challenge and changes of the future. “Any future scenario requires talent with substantially different skills than today’s workforce,” they note.<sup>44</sup>

- Designing for, with and by robots, as well as designing spaces that are themselves intelligent interactive environments will become more commonplace in the near future. A paper delivered at the 15th International Design Conference, DESIGN 2018, presented a case study of a cross-disciplinary approach to the design of robots and the designed environments they will inhabit and the objects they will operate in applications of social and service robotics.<sup>45</sup> A presentation at DIS ’19, the 2019 Designing Interactive Systems Conference, described a lab experiment in which a designer and a robot collaborated on solving a design problem.<sup>46</sup> Professor Keith Evan Green, with the department of Design + Environmental Analysis (DEA) at Cornell University and author of *Architectural Robotics: Ecosystems of Bits, Bytes, and Biology*, has established the Architectural Robotics Lab (ARL) at Cornell to focus on “making our physical surroundings interactive and adaptive to help us do what we do: work, play, learn, roam, explore, create, interconnect, heal, and age.” Combining design, robotics and psychology, projects developed at the lab create built environments embedded with robotics to support the activities they were designed for. One such project is the Animated Work Environment (AWE), a user-programmable, robotic work environment that can change shape to adapt the configuration for different work and play needs, such as collaborating, composing, presenting, viewing, lounging, and gaming. One of his graduate students is developing a prototype of what he calls a “space agent,” an intelligent interactive environment that can sense, respond to and anticipate the needs of occupants.<sup>47</sup>

**Impact on Designers:** These innovations already have begun to be applied to the built environment and will have even greater impact in the near future on the materials, methods and speed with which structures will be built and, to some degree, furnished. Designers will need to learn both how to design in collaboration with robots and/or intelligent interactive devices as well as how to design for them, so that spaces function well for both the humans and the machines that will move about them.

#### TREND 08

## Digital Reality - The Fourth Dimension

More and more, the digital world is taking on a life of its own. There is the 3-D world people live in with their families, friends, loved ones, coworkers, neighbors, etc., and then there is the fourth “D,” the digital dimension in which people have virtual relationships and virtual experiences — and more commonly, virtual personalities — quite separate from other parts of their lives. People’s digital lives are tightly tied to their smart devices and the content and interactions they provide. With the integration of flat screens, interactive panels, sensors, cameras, virtual and augmented reality, and other technologies, the digital world has begun encroaching into the built environment as well.

- Social psychologist Richard Kensinger proposes that in addition to the two types of self recognized by sociologists—the private-self and the public-self—in the digital age we have now developed a third type, the digital-self. For most people, this is an idealized self. Observes Kensinger, “Maslow refers to the essential needs for recognition and approval. This also is confirmed by my observations that we want others to see us in the most positive way. In regards to the digital self, we now have an opportunity to amplify our positive traits.” This can lead to a false impression of others, their accomplishments, and their quality of life. “The digital world is a virtual world where we can more readily alter the presentation of the self,” says Kensinger. “We can move from factual to fantasy more readily and easily when we are so inclined.” One consequence, he points out, is a growing phenomenon of people transforming themselves from the ordinary to celebrity through the content they generate and the likes and followers they accumulate.<sup>48</sup>

- Aside from the consciously crafted digital self is the “shadow” digital self—the constant collection and aggregation of data about us through our digital devices that produces a digital profile that services, advertisers and others use to define and motivate us. “Only a few decades ago, the digital self wasn’t much more than your email handle and the contents of your inbox,” says Andrew Hill, founder of Textile, a company that focuses on digital user privacy and openness. “Today, your digital self spans everything from your text messages to your sexual preferences, your brand loyalties, your family’s pregnancy statuses, your point-to-point trips, your recent and upcoming job status, and many other significant and insignificant points in between.” Moreover, he explains, “While you may know that these digital representations are nothing like you, your opinion doesn’t really matter to those technologies that interact with your digital self.” Hill projects that the demand for new dimensions of personal data will continue to increase exponentially as algorithms and the technologies that use them become more sophisticated.<sup>49</sup>
- According to the Entertainment Software Association, over 164 million adults in the United States play video games, and three-quarters of all Americans have at least one gamer in their household.<sup>50</sup> It is estimated that some 2.5 billion people worldwide play video games. In addition, more than 5 billion people (roughly two-thirds of the world population) own a mobile phone, which, as a recent report on radical innovation from the European Commission states, “acts like a window through which the user can see the world with virtual objects overlaid on top of it.”<sup>51</sup> The next digital transformation, already underway, reports Deloitte, is digital reality: “It will change how we engage with technology, through augmented-, virtual-, and mixed-reality, 360 video, and immersive experiences that are at once intuitive and data-rich, and which put the human user at the center of design.”<sup>52</sup> The European Commission report presents on possible scenario for the application of AR:
  - “While such devices are still far, companies are cautiously investing in this direction. For productivity, instead of being tied down to a PC monitor, a whole wall could serve as a desktop workspace. Teleconferencing would be as easy as looking across the table

to the virtual representation of your colleague. For people working on site, plans for modifications would be overlaid directly in the room.”

The authors of the report observe, “With seamless AR, every human would see his or her personalized version of the world. . . . However, with everyone seeing things their own way there is no telling how society would change.”

Implications for Designers: Interior designers increasingly will be called upon to design for the integration of the digital dimension into the spaces they create. A&D firms are already collecting large amounts of data on occupants and using that data to create occupant profiles, which raises issues of data and privacy protections. Firms could be held liable if data is stolen or misused.

#### TREND 09

## Happiness is Well-Being

People’s criteria for what constitutes happiness has changed over the centuries. Up until a few years ago, the dominant trope for happiness in the modern world was material wealth and comfort. In the aftermath of the Great Recession, that view began to shift. Today, the yardstick for measuring happiness in the developed world is one’s sense of well-being. People are less preoccupied with accumulating possessions and more concerned about their health and wellness. They seek experiences that will nurture them and help them grow mentally, physically and spiritually rather than opt for more traditional forms of indulgence and luxury. They want workplaces that are safe and healthy and will support them in their work activities and provide respite from the demands of their jobs. Patients want healthcare facilities that are welcoming, safe and promote healing, not make them sicker.

- Nielsen reports, “In recent years, health and wellness has elevated in importance for countless consumers, largely due to a convergence of factors, including rising health care costs and an aging population. Consumer health risks are also evolving. As Americans are living longer, chronic diseases are also on the rise, meaning consumers are looking to new, affordable and convenient formats to address their ailments, such as in-store retail clinics.” As a result, for many Americans wellness has become a way of life, affecting not only their health behaviors and fitness routines, but also diet, use of transportation, and choices of recreation and travel. In addition, consumers now have access to an array of tools to monitor their health and wellness indicators, allowing them to assess and improve their health on their own, without waiting for an annual physical checkup.<sup>53</sup> Among some of the wellness and happiness trends identified for the 2018 Global Wellness Summit were eating for happiness, having a healthy gut and gut happiness, and happy fitness.<sup>54</sup>
- An article in Forbes on the retailing of luxury wellness products and services states, “Consumers are placing more value on health and wellness than on material objects these days, and the definition of health and wellness has evolved. . . . And in an era in which so many catalog their lives on social media, looking great, feeling good and sleeping well are the new luxuries that consumers want to enjoy and flaunt.”<sup>55</sup>
- An article for Hotel Management cites research findings from the Global Wellness Institute that wellness tourism or travel associated with maintaining or enhancing personal well-being is growing twice as fast as global tourism. Author Mia Kyricos, with Hyatt Hotels, adds, “Today, it’s clear that wellness is permeating the walls of the hotel, not just the walls of the hotel gym or spa, given the growing quest for well-being in today’s hyperconnected, time-starved world. . . . Consumers are becoming more sophisticated in the historically less tangible states of mind, emotional or even spiritual well-being. This makes offerings of wellness, whether via physical facilities, branded programs or service rituals, more exciting and yes, more daunting.”<sup>56</sup>
- Advocating that “happiness should be a top priority of organizations,” an article in Entrepreneur, equating happiness with well-being, states, “While the traditional workforce had a different vision for their wellbeing, this generation’s employees are more conscious about health and hygiene. . . . Most employees want to improve their wellbeing by addressing every area of health, in ways that work for them, according to their unique challenges and goals.”<sup>57</sup> A 2018 Fellowes Workplace Wellness Trend Report, cited in Forbes, found employees want to work in a healthy environment. An overwhelming majority (87%) of workers would like their current employer to offer healthier workspace benefits, with options ranging from wellness rooms, company fitness benefits, sit-stands, healthy lunch options and ergonomic seating.<sup>58</sup>
- Healthcare technology media website PatientEngagementHIT reported on a 2018 Health Ambitions survey of 1,000 adult healthcare consumers conducted by insurance giant Aetna that found patients are increasingly embracing a holistic view of their own health, focusing on elements of overall patient wellness and mental health. Asked about their own personal healthcare goals, most mentioned better eating and fitness (58% and 54%, respectively); a noteworthy number of patients also expressed interest in reducing their stress (40%) and improving their mental health (36%). In a related Aetna survey of 400 doctors, 70% of clinicians in a value-based care agreement (ones that center on overall patient wellness and delivering care that is based on value, not volume, of services) said they are encouraging patient wellness by recommending their patients set their own wellness goals.

Implications for Designers: Numerous research and case studies have demonstrated the various ways in which the design of interior environments impact occupants health, wellness and well-being. Homeowners, employers, hospitality providers, and healthcare and educational institution administrators are engaging designers to create spaces that safeguard occupant health and improve wellness. As a result, designers are being involved much earlier in projects and being given more of a voice at the table to ensure projects deliver on intended health and wellness outcomes. This trend

is likely to continue due to the public preoccupation with wellness and building owners' concerns about environmental health, the high cost of health care, and occupant behavior (such as productivity, absenteeism, engagement, etc.)

#### TREND 10

## Reassessing the Role of Higher Education

For some time now, enrollments in community colleges, colleges and universities have been dropping. Multiple factors are contributing to this trend, such as the skyrocketing cost of education and accumulation of substantial student debt, the weak job market following the Great Recession, changing demographics (especially among the middle class), the rise of the tech entrepreneurial and freelance culture, and the intransigence of some Baby Boomers to make room for younger professionals. As a consequence, various factions have come to question the value of higher education and/or whether the traditional model of higher education is still relevant in today's society. Particularly for many millennials and members of GenZ, what is valued is not having a degree or institutional pedigree but knowledge, experience and ability. Young people today have many ways of acquiring those without taking the traditional path of earning a degree from an institution of higher learning.

- Reporting on results of the AGB 2018 Trustee Index, a study conducted by the Association of Governing Boards and Gallup, Stephanie Marken, executive director for education research for Gallup, writes:

Confidence in higher education in the U.S. has decreased significantly since 2015, more so than for any other U.S. institution that Gallup measures. This drop in confidence in the higher education industry comes after Gallup detected a similar decline in the public's view that higher education is available to those who need it, suggesting that access—and more specifically, rising costs—may be affecting the public's view of the industry more generally.

Concerns about the future of higher education also exist within academia. College and university trustees and board members . . . remain concerned about the industry's future, despite being more confident in their own institution's future. . . . Three in four trustees (74%) are concerned or very concerned about the future of higher education in the U.S. Their concerns remain focused largely on one main challenge: affordability. . . . In fact, over half of trustees (58%) say their top concern about the future of higher education in the U.S. is the price of higher education for students and their families.<sup>59</sup>

- Another Gallup study, conducted with Northeastern University, called Facing the Future, solicited the views of 10,000 adults in Canada, the U.S. and the U.K., as well as chief human resources officers in 10 major corporations, to measure perceptions of the impact of artificial intelligence on jobs, as well as the education choices respondents would make in response and their confidence in higher education, government and business to plan for widespread AI adoption. Among other findings, only 17% of Americans said they thought colleges were doing a good job preparing workers for the current workforce. Only 22% say they agree colleges are adequately preparing their graduates "for future jobs involving technology."<sup>60</sup>
- An article published in June 2018 in The Atlantic considers whether, as one futurist forecasts, institutions of higher education have hit their peak and enrollments will continue to decline in the years ahead. If so, suggests the article, either government entities will need to invest more in higher education or some institutions will fold due to insufficient enrollments.<sup>61</sup>
- A June 2018 article in The Chronicle of Higher Education states that, on top of declining enrollments, colleges and universities are experiencing on average a one-third loss of freshman-year students, causing administrations to renew efforts to beef up retention rates. A Chronicle special report presents a case study of one college that has used a holistic approach that combines financial support with enhanced advising, earlier identification of struggling students, and a focus on fostering a sense of belonging to keep freshman from leaving.<sup>62</sup>

- Writing in Forbes about the results of a 2019 Kaplan University Partners-QuestResearch study, Brandon Busted, president of Kaplan University Partners, states the biggest disruptor to higher education in the next decade will be the shift from high school graduates going to college in order to get a good job to a substantial number (roughly a third) choosing instead to go straight to work for employers that offer a good job along with the opportunity to earn a college degree and ultimately a path to a great career. Says Busted, “This disruption is being driven by several converging forces: the unsustainable rise in college tuition, a change in consumer demand among prospective students, extreme negativity about the work readiness of college graduates, an unpacking of what makes college effective (work-integrated and relationship-rich), and emerging talent attraction and development strategies by employers.”<sup>63</sup>
- A recent Pew Research Center survey found that, even though most Americans believe that a college degree is important in helping young people succeed in the world and most college graduates say their degree helped prepare them for the workplace, there is a growing undercurrent of dissatisfaction – even suspicion – among the public about the role colleges play in society, the way admissions decisions are made and the extent to which free speech is constrained on college campuses. Moreover, the study indicates that these views are increasingly linked to partisanship. About four-in-ten American adults (38%) say colleges and universities are having a negative impact—up from 26% in 2012, with almost all of the increase in negativity coming from respondents who identified themselves as Republicans.<sup>64</sup>
- Despite these rather gloomy assessments of the current and possible future state of higher education, Paul Freedman, CEO and co-founder of the Entangled Group, a venture capital firm focused on changing the education ecosystem through innovation, argues the demise of traditional colleges is over exaggerated. He points to a number of ways that colleges are responding to better meet students needs, such as online learning, skills bootcamps, integrating new technologies into the classroom, and new financing options. He concludes, college leaders “are learning from the disruptors — and, in time, they may well create new disruptions all their own.”<sup>65</sup>

Implications for Designers: These trends clearly have implications not only for interior design degree programs but also for professional standards and ensuring that public safety and well-being are protected. If young designers choose to forgo a traditional four- or five-year degree in favor of practicing independently or directly going to work for a firm, how will they complete the education needed to advance in their careers? Would they ever be qualified to be licensed? Would they attempt to undertake projects for which they are not qualified, thus potentially putting clients and occupants at risk?

#### TREND 11

## Built Environments in the 21st Century

The built environment industry historically has been slow to change. But during the past decade, it has been driven to adopt new technologies, approaches and methods to combat rising costs, accelerate project schedules, enhance occupant health and wellness, and meet clients' more demanding expectations. Buildings today are held to higher standards of construction and performance, and builders are employing a range of new tools and strategies to meet them. Moreover, emerging trends such as climate change and its effects, public safety, an aging population, and inclusivity are adding to the list of the many ways buildings in the 21st century will have to adapt to a changing world.

- The big sea change in construction, architecture and design in the past decade or so has been toward an occupant-centered focus. Previously, business owners and employers were interested in how interior environments affected behavior (e.g., productivity, purchasing) and business targets (e.g., profitability, employee retention). Now, in all areas of the built environment, the emphasis has shifted to putting the health, safety and well-being of occupants first. As the professionals whose work most directly impacts occupants, interior designers have become more valued contributors to project teams, but they also face higher expectations from clients. Developments such as environmentally-conscious design, evidence-based design, inclusive design, design for wellness, and the application of neuroscience and behavioral

psychology to design stem from this emphasis on how the interior environment impacts or affects occupants' biology and cognitive function.<sup>66</sup>

- In May 2017, *The Architects Newspaper* featured an article on how the growing awareness of the importance of occupant health and wellness is impacting workplace architecture and design. It states, "The concept of wellness in many ways is an extension of the environmental movement, as it expands the ideals of building performance to the human experience. There are several programs that fall under these formulas, such as Fitwel, developed by the General Services Administration (GSA) and Center for Active Design (CfAD), and the Living Building Challenge by the International Living Future Institute." Among the factors examined in designing for wellness in several recent projects examined in the article are air quality, water quality, environmental comfort (thermal, visual, acoustic, ergonomic, and accessibility), quality nourishment offerings, and fitness (including design to encourage movement).<sup>67</sup>
- "Responsibility, humanity and impact are now more entrenched than ever in the corporate sector," states leadership strategist Susan McPherson in an article for *Forbes*, adding "one of the key shifts we've seen in recent years is a move toward 'values.'"<sup>68</sup> It is not surprising, therefore, that more and more A&D firms are positioning themselves as providing value in creating buildings and interiors that improve the quality of the experience for occupants. For example, Perkins Eastman has adopted the slogan "Human by Design," declaring, "Design can have direct, positive impact on people's lives. We design places and spaces that put the user at the heart by employing best practices, sustainability, and a thorough understanding of our clients' missions and operations."<sup>69</sup> In its mission statement, HOK declares, "We use design to enrich people's lives and help organizations succeed. . . . HOK's mission is to deliver exceptional design ideas and solutions for our clients through the creative blending of human need, environmental stewardship, value creation, science and art."<sup>70</sup> Firms are sending a clear message to potential clients that they will deliver not only a well-constructed, high-performance building, but also one that is both humanly and socially responsible.
- In regards to the environments they create, how they design, and how they work, technology has had the biggest impact on architects and designers. From smart and interactive spaces to integrated project and design software such as Building Information Modeling (BIM), to new manufacturing methods like 3D printing, to advanced 3D visualization tools such as augmented reality (AR) and virtual reality (VR), to the use of mobile devices and collection of big data in programming, new and emerging technologies are altering the design process and stretching the boundaries of design practice. Surveys of creative professionals and employers conducted by job recruitment and placement firm Robert Half found employers increasingly seek candidates with proficiency in areas such as data science and machine learning for a variety of creative roles. Nearly nine in 10 creative professionals said it will be challenging to keep their skills up to date as they advance in their careers.<sup>71</sup>
- Productivity and affordability have increasingly become major issues in construction, especially in home construction. One approach to reducing costs is modular construction. A new report on developments in modular construction from industry consultancy McKinsey and Company states, "Modular (or prefabricated) construction is not a new concept, but technological improvements, economic demands, and changing mind-sets mean it is attracting an unprecedented wave of interest and investment. If it takes hold, it could give the industry a huge productivity boost, help solve housing crises in many markets, and significantly reshape the way we build today."<sup>72</sup>
- A related trend is the move toward greater flexibility in construction. In a white paper entitled "Buildings of the Future: Science Fiction or Science Fact?" global engineering and design consultancy Aurecon Group predicts that to keep up with the speed of transformation, "*Buildings of the future will no longer be rigid structures that can't change: by design, they will adapt and their spaces will be adaptable without significant building modifications.*" *Modular construction using 3D printing presents new opportunities in how building designers will create, relocate and shape buildings of the future, the paper says, adding that 3D printed buildings will likely be a reality within 10 years.*

*Looking ahead to the future, the paper concludes, "Those working on buildings in future will need to maintain an appetite for new and advanced technology, materials and methodologies if they want to stay relevant."<sup>73</sup>*

- Thanks to the use of sensors and the Internet of Things (IoT), building management systems today can adjust lighting and ventilation in meeting rooms and operate a range of facilities. Combine that technology with artificial intelligence and big data processing and you get intelligent buildings. According to the Scottish tech news website FutureScot, in the not-too-distant future, "Intelligent buildings become self-learning to the point where individual needs can be predicted based on the analysis of occupancy profiles and preferences, measured by movement sensing and data collection from people's personal devices. In a large workplace, for example, heat maps will tell staff where they can find empty desks or whether air quality is better in certain areas. Visitors will no longer have to 'sign in' when they enter a building because face recognition technology will confirm their identity."<sup>74</sup>

Implications for Designers: Although it is often conflated in the public mind with architecture, interior design today is more widely recognized for its potential to improve occupant experience in the built environment across a spectrum of health, wellness, behavior and performance factors. In turn, that is placing higher expectations and more responsibility on designers to validate and demonstrate that their proposed designs or solutions will, in fact, function as they claim. Design is becoming more grounded in formal research and quantitative data, and designers need to know how to gather, analyze, interpret, and communicate those findings to clients and stakeholders. They also need to keep pace with the rapid development and innovation in technologies that are being employed in the built environment and in the design and rendering of the built environment. Acquiring and mastering these abilities, skills and knowledge areas will increasingly separate design professionals from those practicing more traditional forms of design.

## Conclusion: Business Trends in Interior Design

Interior design business has more or less recovered post Great Recession. After hitting a low point in 2009 at around 40,000 jobs, interior design employment has increased each year since (except for a small dip in 2012), and topped 57,000 last year.<sup>75</sup> According to the ASID Interior Design Billings Index (IDBI) 2019 Second Quarter Report, interior design employment in May 2019 was up 800 jobs over May 2018.<sup>76</sup> However, most of that hiring was done in the first quarter, and hiring appears to have leveled off as the pace of business growth has slowed.

Previous IDBI reports, which include residential and non-residential practices, indicate that growth was strong in 2017 but more erratic in 2018, with the IDBI reporting five months of negative growth. In January and February 2019 it again registered negative growth but has been in positive territory since. The current six-month forecast is for sustained positive growth but at a slower pace than in the previous two years. The International Interior Design Association (IIDA) recently released its 2018 Commercial Design Index Report, which looks at number of project starts, types, and sizes rather than firm billings. It found “robust expansion” in 2018 compared to 2017 across all regions of the United States. The hospitality and workplace sectors saw the most growth nationwide, outpacing education, health care, and other commercial projects.<sup>77</sup>

Within the past several years, there has been considerable consolidation among A/E/D firms and within the profession. Between 2017 and 2018, large numbers of interior designers changed locations, according to the most recent U.S. Bureau of Labor Statistics (BLS) data. Half of all states reported fewer employed interior designers in May 2018 than in May 2017. In 2015, only eight states reported fewer employed interior designers than in the previous year. That number rose to 13 in 2016 and to 17 in 2017. In 2018, it jumped to 25, an unprecedented number, higher than in the wake of the Great Recession. Perhaps as a result of increased hiring in those years, many of the designers appear to have migrated to a handful of states with some of the highest concentrations of designers in the country.<sup>78</sup>

While the number of employed designers has grown in recent years, the number of self-employed designers has declined. In 2015, about one-in-four interior designers (17,017) were self-employed. In 2017, the proportion had dropped to one-in-five (13,152). However, the most recent BLS estimate states there were 75,400 interior design jobs in 2018.<sup>79</sup> Allowing for growth in employed designers from May 2018 to December 2018, that would suggest the proportion of self-employed designers has rebounded since 2017 to about one-in-four.

The interior design profession could soon be facing its own aging crisis. According to the ASID 2019 Outlook and State of the Industry Report, about a fourth of all practicing designers are age 55 or over, and one in four designers has more than 20 years of professional practice.<sup>80</sup> At present there appear to be enough new interior design graduates to fill current staffing needs, but the profession could experience a leadership vacuum in the coming decade. Many older designers own or are partners in their firms, so it is hard to know how impending retirements or semi-retirements may affect the profession.

Overall, the interior design profession and the interior design industry are doing well. Many of the trends and developments covered in this report suggest it will continue to do so, barring an unexpected severe economic downturn. Design has the potential to address many pending human and social issues, and the practice is evolving in ways that will make it a critical component in the built environment in the decade ahead.

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