

Future-proofing 101

DESIGN STRATEGIES TO ADDRESS 21ST CENTURY HIGHER EDUCATION CHALLENGES

By Craig Applegath and Thomas Hirschmann

DIALOG[®]

DESIGN STRATEGIES TO ADDRESS 21ST CENTURY HIGHER EDUCATION CHALLENGES

Introduction and Abstract

Universities and colleges face a growing number of challenges and the pace of disruptive change is accelerating.

Over the past couple of years we have immersed ourselves in a research project to better understand the issues that will affect the planning and design of post secondary education facilities and campuses going forward. We have interviewed a number of our Ontario-based clients and colleagues in the higher education sector and have conducted secondary research. A number of important updates have been made since the new government has taken power.

This project validates our understanding of some continuing trends and challenges. It also gives us an opportunity to explore many new ones that are emerging. In response, we have developed a variety of strategies to help higher education planners and facility leaders work towards future-proofing their campuses.

We are also continuing to monitor a couple of issues that we're not quite ready to cement into our "emerging challenges" section but remain wary of: increasing global uncertainty is an overarching challenge that may have sweeping implications in higher education but it's difficult to determine the effect; and creeping anti-education sentiment fuelled by populists which could become a big challenge for higher education if it becomes more entrenched or widespread—we're already experiencing this to a degree in Ontario with the new government.

We hope this document will be helpful in shaping the way you prepare for the future. We welcome any further comments and insights you might have—these challenges and strategies will continue to evolve.

And to those clients and colleagues who have already generously contributed to the project, we would like to express our deep appreciation.

Let's continue the conversation.

Part 1

CONTINUING & EMERGING CHALLENGES IN 21ST CENTURY HIGHER EDUCATION FACILITY DESIGN

Continuing Challenges

BURSTING OF A DEMOGRAPHIC BUBBLE

The number of Canadians in the 18-24 age range—historically the demographic that is the largest contributor of students to colleges and universities—is declining precipitously, in a way not seen since the baby boomers moved into the workforce. A recent report to the Ontario Government by PricewaterhouseCoopers⁽¹⁾ suggested that many colleges may have to cut staff, increase tuition, deliver more education online, and receive more government funding if they are to survive a decade of declining enrolment. The province's University Sustainability data (2017) suggests that the population of 18-20 year olds will not "recover to 2015 levels until the year 2033".⁽²⁾ The firm went so far as to suggest some colleges may need to be shuttered. Yet the issue may be more long-term: Statistics Canada predicts that the percentage of Canadians aged 15-64 will largely continue to decline though 2061, even in a high growth scenario. We can also no longer count on an influx of foreign students to fill the gaps as competition grows increasingly fierce. The Chinese government aims to have 500,000 international students enrolled in China's higher education system by 2020.⁽³⁾ India, Singapore, Malaysia and

South Korea are spending hundreds of millions to keep their own students home and attract students from abroad. Germany has made tuition free for international students and the number of American students studying there increased by 20% between 2013 and 2015.⁽⁴⁾ Currently Canada is benefiting from U.S. immigration policy, but this could reverse in the next election and the long-term trend is toward increased international competition for students.

BIG CAPITAL & BUDGET RESTRAINTS

Funding from the Province continues to decline as a percentage of university and college budgets and this trend has accelerated under the new government—it wasted no time cutting \$305 million in funding promised by the previous government for three new innovative, university/college collaborative campuses in the rapidly growing regions of Brampton, Markham, and Milton.⁽⁵⁾ Province has the largest debt of any non-sovereign borrower in the world (it carries twice the debt load of California which has a population similar to all of Canada). We believe the scale of this debt

(1) PricewaterhouseCoopers. Fiscal Sustainability of Ontario Colleges. January 2017. <http://www.collegesontario.org/policy-positions/position-papers/Fiscal%20Sustainability%20of%20Ontario%20Colleges%20Final%2004.01.16.pdf> Accessed January 17, 2018.

(2) Weingarten HP et al. University Sustainability Signal Data. January 24, 2017.

(3) The Times Higher Education. China 'will teach 500,000 international students by 2020'. December 19, 2017. <https://www.timeshighereducation.com/news/china-will-teach-500000-international-students-2020> Accessed January 17, 2018.

(4) BBC. How US students get a university degree for free in Germany. June 3, 2015. <https://www.bbc.com/news/magazine-32821678>. Accessed December 19, 2018.

(5) The Globe and Mail. Doug Ford government cancels funding for three new GTA university cam-puses. October 23, 2018. <https://www.theglobeandmail.com/canada/article-doug-ford-government-cancels-funding-for-three-new-gta-university/> Accessed December 17, 2018.

(6) Deseret News. Copying Harvard too costly, colleges need new model, say Clayton Christensen and Henry Eyring. June 17, 2011. <https://www.deseretnews.com/article/700144970/Copying-Harvard-too-costly-colleges-need-new-model-say-Clayton-Christensen-and-Henry-Eyring.html> Accessed January 17, 2018.



Governments are investing strategically in universities and colleges, focusing on certain areas of the curriculum—most notably Science, Technology, Engineering and Mathematics (STEM) related curriculum.

burden means capital and budget restraints are likely to become even more constrained in the coming years. Part of the challenge according to Harvard business professor Clayton Christensen—whose work on innovation inspired Steve Jobs at Apple—is that universities continue to try to mimic the Harvard model.⁽⁶⁾ Harvard's massive endowment and enormous research funding put its model out of reach for all but a few. Those of us who are not planning with Harvard-sized budgets, need to be more agile, more efficient and more flexible to future needs.

CURRICULUM-FOCUSED FUNDING

Governments are investing strategically in universities and colleges, focusing on certain areas of the curriculum—most notably Science, Technology, Engineering and Mathematics (STEM) related curriculum. The previous government of the Province of Ontario invested heavily in STEM, partly in an attempt to woo tech giants like Amazon and similar info-tech companies into the region. The Province announced in October of 2017 that it wanted to increase the number of STEM graduates by 25% over the next five years, and plans to give \$30 million to the Vector Institute to boost the

number of graduates in Artificial Intelligence (AI) to 1,000 annually.⁽⁷⁾ The Government of Canada also signaled its intent to promote innovation and STEM education in its 2017 budget including \$50 million over two years to teach young Canadians to code.⁽⁸⁾ While the current provincial government may not emphasize or support this curriculum focus as much as the previous government, we believe that in the long term STEM education will most likely continue to grow in importance for governments as they seek to create a globally competitive workforce.

AGING & DETERIORATING FACILITIES

Most Ontario university and colleges have numerous buildings and significant parts of their infrastructure in need of repair or replacement. The generally accepted industry standard of re-investment in building renewal is typically 1.5% of the current re-placement value yet funding value under the provincial government's Facilities Renewal Program historically floats just above the 0.1% mark.^{(9) (10)} Without a significant change, it is only a matter of time before campus buildings are compromised by serious deterioration.

(7) CBC News. Ontario commits \$30M for A.I. grads in bid to woo Amazon. October 18, 2017. <http://www.cbc.ca/news/canada/toronto/amazon-google-ontario-toronto-technology-stem-1.4360106> Accessed January 17, 2018.

(8) CBC News. Federal budget 2017: Highlights of Bill Morneau's 2nd budget. March 23, 2017. <http://www.cbc.ca/news/politics/federal-budget-highlights-2017-1.4032898> Accessed January 17, 2018.

(9) Council of Ontario Universities. Ontario Universities' Facilities Condition Assessment Program. December 2014. <http://cou.on.ca/wp-content/uploads/2015/06/COU-Facilities-Condition-Assessment-Program-as-of-May-2014.pdf> Accessed January 17, 2018.

(10) Council of Ontario Universities. Ontario Universities' Facilities Condition Assessment Program. March 2016. <http://cou.on.ca/wp-content/uploads/2016/06/COU-Facilities-Condition-Assessment-Program-Report-2015.pdf> Accessed January 17, 2018.

Emerging Challenges

TECHNOLOGICAL TRANSFORMATION

Technology is poised to transform the way students learn, with digital courseware and adaptive learning products allowing for a much more personalized approach to higher education. Technology is also poised to change the way universities run as large amounts of data can be processed to show, for example, which courses are generating the best financial returns. Online education is already asking questions of higher education, and Artificial Intelligence could disrupt the entire system of both education and work. The jobs of tomorrow will clearly not be like the jobs of today and universities and colleges may have to shift their focus from training those entering the workforce to retraining those forced out of the workforce. A recent report by Finance Minister Bill Morneau's economic growth council suggests the Government of Canada will need to help adults acquire new skills to prepare for the impacts of new technologies by investing an extra \$15 billion annually by 2030.⁽¹¹⁾ Finally, it's becoming clear that the Internet of Things (IoT) has the potential to radically change the way we interact with information, and Power-over-Ethernet (PoE) the way we power our technologies. And, over the next decade, Artificial Intelligence (AI) will transform both instruction and learning in ways we have yet to imagine. The question is: how will universities and colleges best adapt to, and keep pace with current, let alone future, levels of technological disruption?

SHIFTING PEDAGOGICAL METHODS

The way we use university and college facilities is changing, driven primarily by quickly evolving information technologies. For example, "flipped classrooms" are enabled by digital technologies

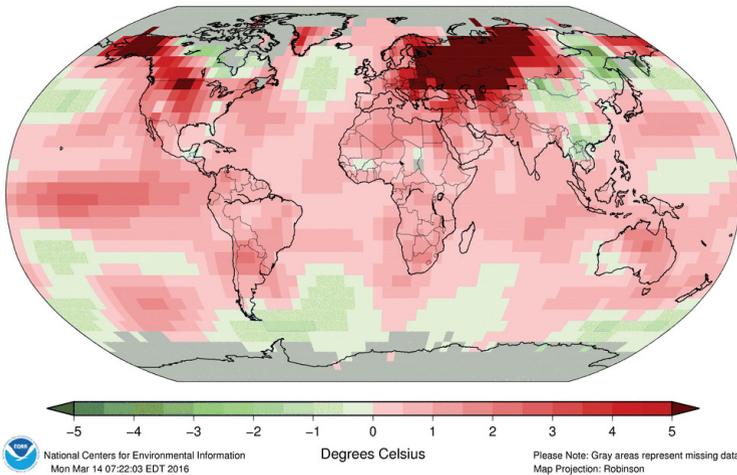
to deliver the traditional lecture outside of the classroom allowing the classroom space to be used to bring students together to work on problems or apply their learning. This "flips" not only the pedagogy but also the infrastructure that supports it. Facilities shift from a focus on spaces for teaching to a focus on spaces for collaboration and self-learning. As a result, all areas of a building will need to be adaptable to this changing pedagogy, from classrooms to corridors.⁽¹²⁾ Given the current trajectory of online learning, including MOOCs like Coursera and edX, university and colleges will have to answer the question: "What should be the purpose and role of higher education institutions and their bricks-and-mortar facilities?"

DECREASING CARBON EMISSIONS

It is now essential for campuses to have a carbon reduction strategy in place. The previous provincial government set a target in its Climate Change Action Plan to reduce greenhouse gas emissions by 37% by 2030 using its cap and trade system. The new provincial government has scrapped the cap and trade system and is suggesting it will achieve a 30% reduction by 2030 using other, unspecified means. The federal government has suggested this will not be enough as the 30% target is pan-Canadian and it plans to impose a carbon tax, one that four premiers plan to challenge in court. What's certain is that, with a new carbon emissions reduction rulebook agreed upon at COP24, the reduction in carbon emissions is a trend that is not going away even if there are bumps in the road.

(11) CTV News. Internal CSIS note details 'mega trends' set to alter economy, society, security. June 14, 2018. <https://www.ctvnews.ca/mobile/politics/internal-csis-note-details-mega-trends-set-to-alter-economy-society-security-1.3759106> Accessed January 17, 2018.

(12) Edudemic. The Teacher's Guide To Flipped Classrooms. <http://www.edudemic.com/guides/flipped-classrooms-guide/> Accessed January 17, 2018.



**LAND AND OCEAN
TEMPERATURE DEPARTURE
FROM AVERAGE FEB 2016**
[WITH RESPECT TO A 1981-2010 BASE PERIOD]

Source:
NOAA 2016 / Data Source: GHCN-M version 3.3.0
& ERSST version 4.0.0

INCREASINGLY SEVERE WEATHER

There are also direct impacts of Climate Change—the evidence is strongest for the rise in heat waves, coastal flooding, extreme precipitation events and severe droughts according to the Union of Concerned Scientists.⁽¹³⁾ As a result, colleges and universities will have to make investments in preparation for severe weather events as a consequence of Climate Change—and this is not something that many universities have incorporated into their campus planning to date.

A MENTAL HEALTH CRISIS

Universities and colleges across the country are facing a mental health crisis on campus, with a huge spike in demand for services from students who feel hopeless, depressed and suicidal. A survey by the Canadian Association of College and University

Student Services of over 43,000 students from 41 Canadian institutions showed a significant increase in serious mental-health crises—13% of students surveyed said they had seriously considered suicide, up 3.5% in just 3 years.⁽¹⁴⁾ Interestingly, the American Psychiatric Association has linked Climate Change to deteriorating mental health—worry over the impacts of Climate Change can lead to stress that can eventually result in stress-related disorders like depression or anxiety.⁽¹⁵⁾

INCREASINGLY COMPLEX SECURITY ISSUES

Potential terrorist threats are now a reality for the 21st century campus, and we are not completely immune here in Canada to the gun violence that is such a major issue on campuses in the United States. To add to this, clashes between campus groups on the extreme right and left are increasing.⁽¹⁶⁾

(13) Union of Concerned Scientists. Infographic: Extreme Weather and Climate Change. <https://www.ucsusa.org/global-warming/science-and-impacts/impacts/extreme-weather-climate-change.html#.Wip9nlWsyhQ> Accessed January 17, 2018.

(14) Montreal Gazette. Crisis on campus: Universities struggle with students in distress. May 27, 2017. <http://montrealgazette.com/news/local-news/mental-health-on-campus> Accessed January 17, 2018.

(15) Quartz. We need to talk about “ecoanxiety”: Climate change is causing PTSD, anxiety, and depression on a mass scale. April 3, 2017. <https://qz.com/948909/ecoanxiety-the-american-psychological-association-says-climate-change-is-causing-ptsd-anxiety-and-depression-on-a-mass-scale/> Accessed January 17, 2018.

(16) Newsweek. The Alt-Right’s Next Target? Liberal Canada. October 3, 2017. <http://www.newsweek.com/how-alt-right-groups-are-attempting-spread-white-supremacism-canadian-campuses-675742> Accessed January 17, 2018.

All of these elements combine to create a very different security climate on campus with implications for the planning and design of physical assets. Sexual harassment and assault also remain real issues on campus with the recent #MeToo campaign shining an even brighter spotlight on these issues. Data from 2015 show that among female undergraduate students, almost 1 in 4 experiences rape or sexual assault through physical force, violence, or incapacitation. ⁽¹⁷⁾

INCREASING CULTURAL & GENDER DIVERSITY

Campuses are becoming increasingly diverse places, particularly as universities and colleges compete to bring in foreign students to make up for enrolment shortfalls—for example, the University of Toronto now has students from 190 different countries.⁽¹⁸⁾ In Canada, between 2008 and 2015 the number of international students in Canada grew by 92% to 353,000 and while one third of these students were from China in 2015, Nigeria represented the fastest growing group at 25%.⁽¹⁹⁾ The indigenous population in Canada is growing four times faster than the general population yet indigenous youth are much less likely to achieve a degree.⁽²⁰⁾ Campuses are already

embracing the creation of indigenous spaces and programs yet there is much more yet to be done to help indigenous youth access and succeed at higher education. Meanwhile, transgender students face a number of challenges on campus including a lack of inclusive programming, housing, bathrooms and locker rooms, and access to support services, counseling and healthcare.

THE RISING TIDE OF REFUGEES

According to the United Nations High Commissioner for Refugees, an unprecedented 65.6 million people around the world have been forced from their homes as of mid-2017, including nearly 22.5 million refugees, over half of whom are under the age of 18.⁽²¹⁾ By 2050, the UN predicts that there will be 250 million refugees as a result of Climate Change.⁽²²⁾ Between January 2011 and November 2017, Canada Border Services Agency and Immigration, Refugees and Citizenship Canada processed 58,290 asylum claimants with 2017 already representing the highest number of claimants in the past seven years at over 1000 a month.⁽²³⁾ Given the rising number of young refugees, we believe that sooner or later colleges and universities will be required to devise strategies to help integrate refugees into Canada.

(17) Rape, Abuse & Incest National Network. Campus Sexual Violence: Statistics. <https://www.rainn.org/statistics/campus-sexual-violence> Accessed January 17, 2018.

(18) University of Toronto. ArtSci. International Students. <http://www.artsci.utoronto.ca/international/> Accessed January 17, 2018.

(19) Canadian Bureau for International Education. Facts and Figures. <http://cbie.ca/media/facts-and-figures/> Accessed January 17, 2018.

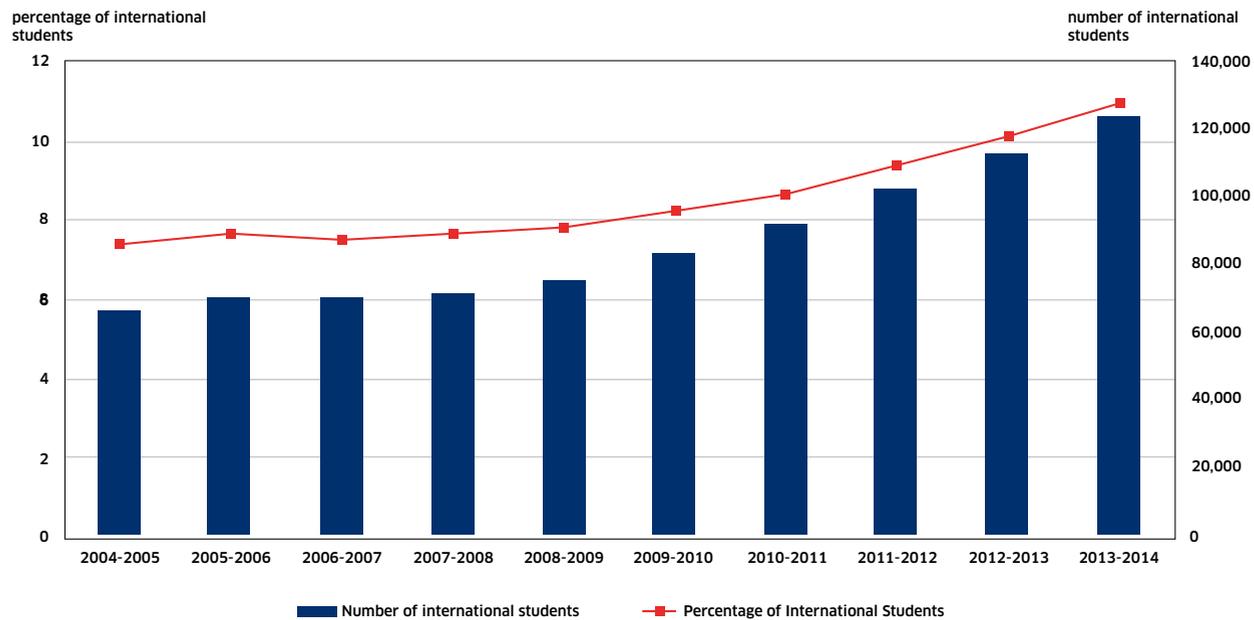
(20) Global News. Canada's Indigenous population growing 4 times faster than rest of country. October 25, 2017. <https://globalnews.ca/news/3823772/canadas-growing-indigenous-population/> Accessed January 17, 2018.

(21) UNHCR. Figures at a Glance. <http://www.unhcr.org/figures-at-a-glance.html> Accessed January 17, 2018.

(22) The Guardian. UN drops plan to help move climate-change affected people. October 7, 2015. <https://www.theguardian.com/environment/2015/oct/07/un-drops-plan-to-create-group-to-relocate-climate-change-affected-people> Accessed January 17, 2018.

(23) Government of Canada. Asylum Claimants Processed by Canada Border Services Agency (CBSA) and Immigration, Refugees and Citizenship Canada (IRCC) Offices, January 2011 - November 2017. <https://www.canada.ca/en/immigration-refugees-citizenship/services/refugees/asylum-claims/processed-claims.html> Accessed January 17, 2018.

NUMBER AND PERCENTAGE OF INTERNATIONAL STUDENTS IN ALL UNIVERSITY PROGRAMS CANADA, 2004-2005 to 2013-2014



Source: Graph courtesy of Statistics Canada, Post-secondary Student Information System (PSIS), 2004-2005 to 2013-2014

Part 2

FUNDAMENTAL PLANNING & DESIGN ADAPTATION STRATEGIES TO HELP FUTURE-PROOF 21ST CENTURY HIGHER EDUCATION FACILITIES

The following planning and design strategies have been developed in consultation with a number of our current higher education clients and augmented by our own research. Although we in no way believe that the following future-proofing strategies solve all of higher education's problems, nor address all of the interconnected complexity of the challenges described above, they do provide facility leaders and managers with a practical toolkit for dealing with those aspects of the challenges that can be addressed through the planning and design of the physical assets of a university or college.

DESIGNING FOR FLEXIBILITY

Given the rapid pace of change in all dimensions, one of the most important future proofing strategies is designing for future flexibility. Designing for flexibility has been a key strategy in facility design and campus master planning over the past few years. Our experience indicates that planning strategies such as standardization, modularity and circulation routes that do not inhibit future changes of program should all be key considerations when planning new facilities. And it is critical that buildings are designed so that technologies can be easily updated. Technologies

can now become out-of-date in the time between planning and installation. In the future, however, the current definition of flexibility—allowing spaces to be reconfigured both in short and long term as pedagogy, programs and technologies change, may be too limiting. In the future, flexibility may be better defined as the ability to expand and/or contract spaces. Increasingly restricted capital budgets could require us to design buildings with extra space that is roughed in and ready to be fitted out if need arises, or to design buildings with exterior walls that are temporary or expandable.

(24) Washington State News. Landscaping counts when students pick their schools. September 2, 2005. <https://news.wsu.edu/2005/09/02/landscaping-counts-when-students-pick-their-schools/> Accessed January 17, 2018.

(25) Author Steven Johnson writes about the notion of Liquid Networks like these in his book *Where Ideas Come From: The Natural History Of Innovation*. He suggests that these kinds of spaces allow people of different backgrounds to gather, converse, share ideas and create new ones - driving innovation.

An even greater challenge is designing for contraction: shifting demographics may require campuses to contract for periods and designing for this contraction—without leaving great empty spaces that ruin the campus experience—will be critical. There is also a connection here to low carbon and low energy. For example, DIALOG has designed projects that are photovoltaic-ready, meaning the building is wired and the roof prepared to carry the load of the PV panels but the panels are not installed. At such a time as it makes financial sense to implement a PV system, the panels will be installed. An investment of less than 5% of the total costs for a PV infrastructure can prepare a building for a renewable energy future, eliminating the need to retrofit at greater expense later on. This kind of flexibility to future needs is probably the most important strategy for future proofing buildings for low carbon.

DESIGNING FOR EXPERIENCE

Universities are now competing for students, and using their physical assets as a competitive advantage. Campus aesthetic is crucial—62% report making their decision on which institution to attend based on the appearance of buildings and landscape.⁽²⁴⁾ Youth today are focused on experience now more than ever, with images posted to social media being the new social currency. For example, retail design is currently focused on creating “Instagrammable” spaces where young people are encouraged to take photos and post them online. Campuses that leverage their physical assets to help create extraordinary

experiences that students are attracted to and enjoy will amplify their brand globally. These spaces also need to be genuinely convivial. There is a real need to plan and design facilities as places of community building and networking, not unlike the coffee shops or the shared workspaces that have proliferated throughout our cities. Much of the innovation that happens in Silicon Valley starts in the coffee shop where ideas bounce around and reconfigure into new ideas that lead to world-changing innovations.⁽²⁵⁾ Places like the Centre for Social Innovation in Toronto offer use of workspaces and common areas that allow work to happen in a communal and social environment, augmenting the work of each individual or group. Common to both these types of environments is that they are attractive, quality spaces that people want to be in. Higher Education spaces should aim to be more effective at mimicking the atmospheres of these vibrant and beautiful environments where people want to linger and converse.

DESIGNING FOR LOW CARBON & LOW ENERGY

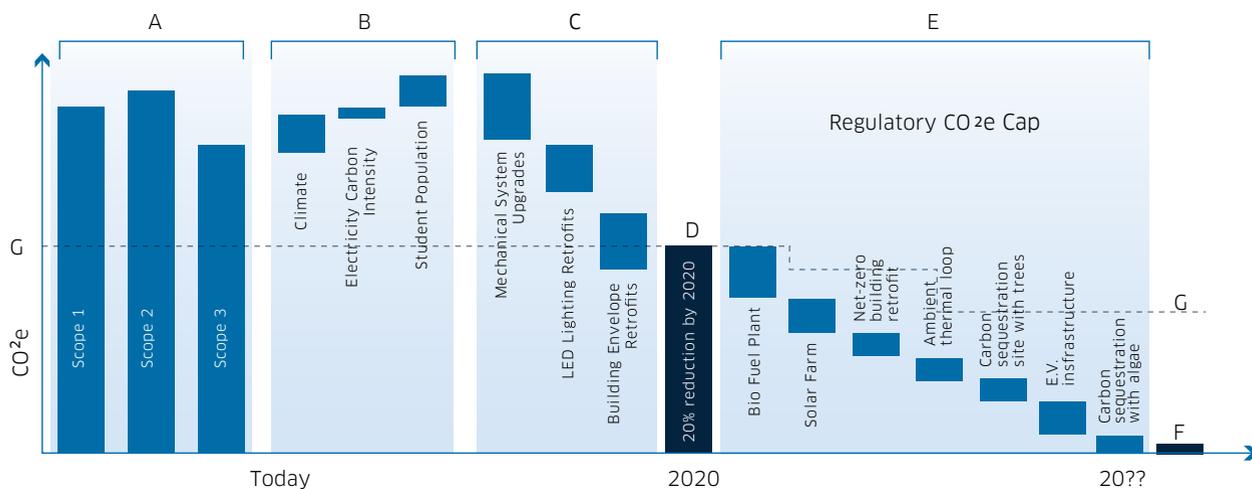
The 2018 International Panel on Climate Change (IPCC) special report states that we have just 12 years to get emissions under control.⁽²⁶⁾ Various levels of governments have signaled that regulations and requirements will become increasingly stringent, with increasing pressure on anchor institutions like colleges and universities to become leaders in the transition to a low carbon future. As mentioned previously, we believe that even with the change in provincial government

(26) Simon Fraser University Adaption to Climate Change Team. Low Carbon Resilience: Best Practices for Professionals. December 18, 2018.

this trend will continue in the medium- to long-term. This challenge represents a tremendous opportunity for higher educational institutions. While many campuses have already taken steps in this direction—particularly in the area of reducing energy demand and low-carbon transportation—universities will need a suite of strategies to achieve the vision for a low carbon future. For example, campuses may need to generate their own renewable energy, either on site or at a satellite site. Shifting energy may play a larger role, whether it is peak-energy shifting which involves buying energy at off-peak and storing it, or building-to-building energy shifting where

buildings share excess energy with other buildings via a central plant. Carbon capture and removal via emerging technologies will also become viable on campus as will carbon offsetting (working with a carbon partner that can set aside forest area to offset emissions that cannot otherwise be offset on campus). Together, these strategies should be part of a holistic approach to reducing carbon and energy, viewing buildings and landscapes as a system rather than a set of individual components. Planners need to establish a baseline for the entire campus and then test the relative benefits of carbon strategies and scenarios over time to allow realistic future-casting and target setting.

LOW CARBON CAMPUS ROADMAP



The above diagram is a framework to assist universities and colleges develop a comprehensive low carbon campus roadmap strategy. It plots the current carbon inventory (A), external forcing factors that will potentially increase or decrease carbon over time (B), near-term (D) and long-term (F) carbon emission goals, and then the types of near-term (C) and long-term (E) projects that will provide opportunities to reduce the campus carbon emissions over time. It also shows the regulatory limits over time (G) Key in the roadmap planning is setting both short-term and long-term carbon emissions goals.

DESIGNING FOR CLIMATE ADAPTATION & RESILIENCE

According to Federal Minister of Environment and Climate Change Catherine McKenna, “we are the first generation to broadly experience the impacts of Climate Change...and the last generation who can prevent the worst effects.” It is now very clear that the impacts of Climate Change will be felt by university and college campuses across Canada. Campuses near water or in flood prone zones will need to determine if they are at greater risk for severe weather flooding events, and if so, what plans will be required to address the increased risks. For example, new buildings can be designed to be raised above new flood levels, and older buildings renovated to be resilient to potentially more frequent water inundation. Depending on location, facilities may also need to be retro-fitted against high winds and/or intense heat. The former can be addressed by hardening infrastructure—for example placing decorative screening over windows that also serves to protect against flying debris—while the latter will be aided by passive cooling strategies such as louvres on buildings and trees near facilities which can reduce heat through both shading and evapotranspiration. There are many co-benefits to be had when designing for resilience in combination with low carbon strategies. A recently released report by the Adaption to Climate Change team at Simon Fraser University outlines a series of strategies for adaptation to climate change. In conclusion the report states that by applying its Low Carbon Resilience strategy “as a lens on all planning and decision-making for all orders of government, professions, the private sector, and civil society organizations has the potential to increase opportunities to achieve transformative, systemic change.” ⁽²⁷⁾

DESIGNING FOR DIVERSITY

For the past several hundred years, universities have been designed for upper-class white men and even though campus demographics are undergoing a seismic shift the design of facilities has failed to keep pace. Universities, colleges and their architects are now being called upon to respond to a broad range of cultural and gender needs on campus, some of which may conflict. And this may require that we take another look at functional elements that are typically given short shrift in the design process. A good example is washrooms. One issue is the ongoing debate as to how to accommodate transgender students while another challenge is responding to how students from other cultures use washrooms—both concerns need to also take into account physical accessibility. It’s clear that we need to rethink how we design washrooms, broadly engaging across gender and cultural groups to deploy functional, accessible, and equitable solutions. Going forward, universal washrooms that can be used by all students and staff will be the starting point.



Facility planning and design must therefore respond to a broad range of cultural and gender needs on campus, some of which may conflict.

DESIGNING FOR SAFETY

There are several trends that are reshaping the way we think about safety on campus including: terrorism; violence; sexual harassment and assault; and polarized politics. The threat of terrorism and on-campus violence demands a shift in the way we currently think of security, suggesting we borrow design techniques from places already designed to defend against these types of attacks. A couple of examples include embassy design where pools of water can help dissipate the force of an explosion, and using trees strategically as vehicle barriers to protect public spaces (the city of Copenhagen is exploring this). On-campus clashes between groups on the extreme left and right also demand that we rethink design for large groups where conflict can arise. And designing spaces that help mitigate the dangers of sexual harassment and assault requires that we move beyond lighting and communication solutions toward a more holistic view of design for safety.

DESIGNING FOR STRATEGIC LAND DEVELOPMENT

Land is one of the biggest assets for many universities and colleges and, in the current budgetary climate, one of the biggest opportunities. Although land can be sold to generate one-time revenue, an alternative strategy is to develop the land and create uses that benefit both the institution and the community at large. Such developments, like UniverCity at Simon Fraser University, generate revenue while at the same time break down the boundaries between school and city, making the campus more porous and integrated in the community. The most effective kind of development is strategic, aligning development with the institution's vision. For example partnering with private or community-based organizations to develop incubators or tech clusters within a mixed-use development can create a dynamic space where top minds at the university or college can interact with the best and brightest of the community, amplifying impact.

DESIGNING FOR WELLBEING

The notion that design can foster wellbeing is increasingly acknowledged. In *The Chief Public Health Officer's Report on the State of Public Health in Canada 2017 - Designing Healthy Living*, Dr. Theresa Tam suggests that "It is possible to improve or worsen the health of populations by changing our physical world." Choosing to bike or walk over other forms of transportation has been associated with decreased stress levels, according to the American Psychiatric Association. Campuses that support biking and walking support better mental health. Research also shows that time spent in nature is associated with better mental and physical health. We should, therefore, not only be looking at how to maximize nature outdoors—at

ground level but also on roofs, walls and terraces—but also look for innovative ways to incorporate nature inside structures, such as living walls and atria filled with native plants. Campus design can significantly benefit from designing for biophilia—a love of nature. There is still much to learn about the connection between design and wellbeing. DIALOG has recently completed conducting research with the Conference Board of Canada on indicators of community wellbeing and developing a framework specifically for design professionals. The framework is intended to re-shape the purpose and function of design, allowing designers to proactively consider wellbeing within a project from its early stages, measure the impact of completed projects, and guide design decisions throughout a project's lifecycle.



Conclusion

Colleges and universities will continue to face complex challenges throughout the 21st century. The bursting demographic bubble, fiscal restraint, and aging facilities are still placing a financial strain on higher education. And new funding is more curriculum-focused and less flexible. In addition to these well entrenched challenges, new challenges are emerging. The technological transformation that is shaking up society is also having a significant impact on colleges and universities, and both facilitating and demanding new pedagogical methods.

Higher education institutions must also now find a way to transition to a low carbon/energy future and at the same time brace their infrastructure for the mounting impacts of climate change. Security issues are increasingly complex on campus. Mental health issues are on the rise. Cultural and gender diversity is expanding. The number of refugees is growing.

How will universities and colleges respond to these challenges?

From our discussion with university and college professionals like yourself, we believe that if you plan and design for flexibility experience, diversity, safety, wellbeing, low carbon/energy, climate impacts, and strategic land development, you will have a better chance of addressing many of the issues we now face. These challenges are not static or fixed. The pace of change is accelerating at an exponential rate. To address this, we will continue to work with you and your colleagues across North America to design a better future for higher education.

Let's start today.

Craig Applegath

capplegath@dialogdesign.ca

Endnotes

Council of Ontario Universities. Ontario Universities' Facilities Condition Assessment Program. December 2014. <http://cou.on.ca/wp-content/uploads/2015/06/COU-Facilities-Condition-Assessment-Program-as-of-May-2014.pdf> Accessed January 17, 2018.

Council of Ontario Universities. Ontario Universities' Facilities Condition Assessment Program. March 2016. <http://cou.on.ca/wp-content/uploads/2016/06/COU-Facilities-Condition-Assessment-Program-Report-2015.pdf> Accessed January 17, 2018.

Forbes Magazine. Nick Morrison. Will AI Be The Next Big Thing In The Classroom?. <https://www.forbes.com/sites/nickmorrison/2017/09/13/will-ai-be-the-next-big-thing-in-the-classroom/#405aead844ed>

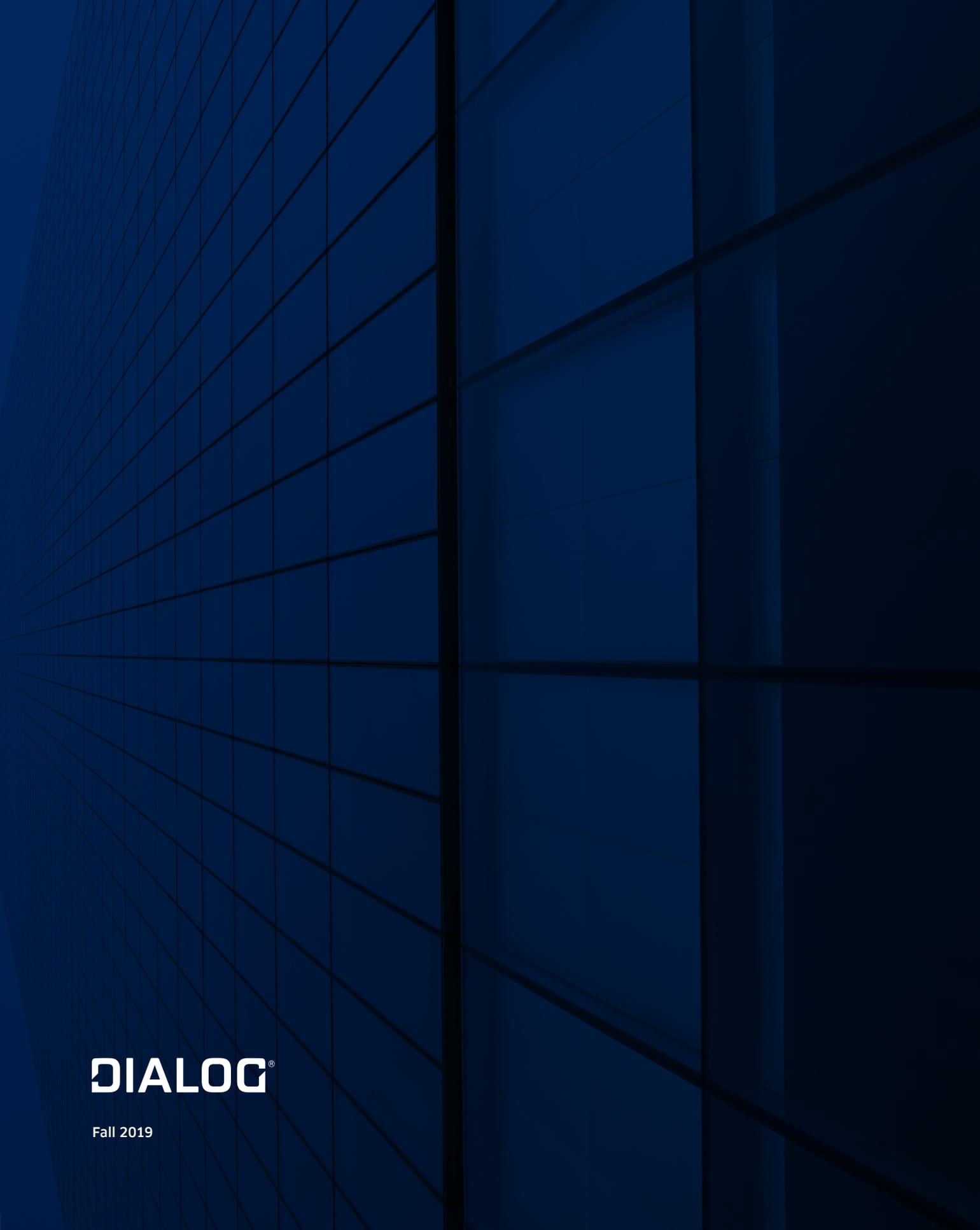
Engineering News-Record. Ontario Infrastructure Boost To Weigh Climate Change. December 20, 2017. <https://www.enr.com/articles/43679-ontario-infrastructure-boost-to-weigh-climate-change> Accessed January 17, 2018.

Union of Concerned Scientists. Infographic: Extreme Weather and Climate Change. [<https://www.ucsusa.org/global-warming/science-and-impacts/impacts/extreme-weather-climate-change.html#.Wip9niWsyhQ> Accessed January 17, 2018.

UNHCR. Figures at a Glance. <http://www.unhcr.org/figures-at-a-glance.html> Accessed January 17, 2018.

DIALOG believes great design can change the world.

DIALOG is an integrated design practice with studios in San Francisco, Vancouver, Calgary, Edmonton and Toronto.



DIALOG®

Fall 2019