the futures foundation
engaging all Australians in creating a better future...

Volume 16, No. 6, December 2016

FUTURE NEWS

TO CONNECT, TO INFORM AND TO INSPIRE

IN THIS EDITION

futures foundation Australia • Ross House, 247 Flinders Lane, Melbourne 3000 • Phone: 03 9029 5787

ONE SURPRISING SECRET WEAPON AGAINST NATURAL DISASTERS?

As extreme weather events become commonplace, landscape designers are helping cities lessen the impact.

by Meg Miller

In an era when cities are ravaged by drought, flooding, wildfires, and more, infrastructure projects tend to get most of the attention when it comes to resiliency. But good landscape design can be powerful, too. This week, the American Society of Landscape Architects, or ASLA, published an an online guide designed to help its members plan for, and even prevent, the worst.

"We actually tried to do this a couple years ago, but found there wasn't a wealth of cases to point to," says Jared Green, ASLA's senior communications manager who produced the guide. "Sadly with so many disasters recently—seeing [Hurricane] Sandy and all the money put into rebuilding parts of New York—we went back to look at it again."

ASLA 2016 Honor Award, General Design Category. Bishan-Ang Mo Kio Park by Ramoll Studio Dreiseitl. - [Photo: Lim Shiang Han]

This time around, they found plenty of material to work with—in the form of landscape projects that successfully mitigated extreme weather purely by necessity. The projects worked in tandem with nature rather than against it. In Medellin, Colombia, for example, planners turned the areas around the outskirts of town, which are most susceptible to landslides, into a 46-mile parkt hat circumvents the city and ensures that no one builds on unsafe land. Meanwhile, in a park in Bishan, Singapore, located in a floodplain, designers managed flooding by letting the park's river run free of the concrete canal put in decades earlier. When the city floods, the park acts as a conveyance system carrying the water downstream.

Green points out that the idea of working with nature to design resilient public spaces is not a new idea. In fact, the famed 19th century architect Frederick Law Olmsted pioneered the concept of using urban vegetation for heat and storm water management, even if he wasn't talking about it in those terms. But in the face of climate change, these are things all landscape architects should be thinking about with every project they take on. "Any good designer designs for many things at once," says Green. "Designing for resilience is now something they need to factor in."

If mitigating natural disasters is to become an inextricable part of a landscape designer's job, the ASLA's 'Resilient Design Guide' is meant to be a guiding resource for those designers, as well as a tool for advocacy.

HEATWAVES ARE DANGEROUS, BUT GREEN SPACE CAN HELP

ASLA 2016 Honor Award, General Design Category. Bishan-Ang Mo Kio Park by Ramoll Studio Dreiseitl. [Photo: Public Utilities Board]

According to NASA and the National Oceanic and Atmospheric Administration, 2015 was the warmest year on record, continuing a long-term trend of global warming that has seen earth's temperature rise 1.8 degrees Fahrenheit since the late 19th century. The effects of this temperature rise is exacerbated in cities, where pavement absorbs and traps heat.

Yet, as Green describes, "When you walk off the hot streets of New York in the summer and into Central Park, there's a noticeable temperature difference." It's an example of one of the guide's core tenets—that trees, parks, green roofs, and other green spaces create natural cooling by providing shade and releasing moisture. But these forms of vegetation don't just provide their own cooled-down microclimates—they also have the potential to actually decrease a city's temperatures if done in a comprehensive, systematic way.

For example, Central Park by itself is not going to cool down all of New York City, but a citywide strategy that incorporates Central Park could. Green also pointed to the city of Adelaide, Australia, which committed to planting100,000 square feet of greenery by 2020 as a strategy for naturally cooling the city as global temperatures rise. Then there's Los Angeles, which in 2014 mandated that new and renovated homes install "cool roofs" that are made of light-colored materials that reflect sunlight. Last year, Nature reported that doubling the city's cool rooftops could lower temperatures by up to 2°C.

Meanwhile, the city of Stuttgart, Germany, cools their streets by orienting new buildings in such a way that better leverages wind. The guide contends that merging those types of citywide efforts with increased green space could lower temperatures significantly.

TO MANAGE DROUGHT, LOOK TO THE PAST

Increasing global temperatures, as well as the unpredictability of rainfall, also affects cities by causing droughts, like the one ongoing in California. The repercussions of drought include more than just dried lawns—they also threaten economic security. (As of 2015, California had suffered $2.7 billion in losses in agriculture because of the drought.) And as temperatures get worse, it's a problem more and more cities will have to face.

In areas prone to drought, the guide recommends looking to acequias, the earthen canals that Hispanic communities have used for centuries to sustainably manage water. That's what planners and designers in San Antonio, Texas, did for Phil Hardberger Park, which opened in 2010. In the park, a "grand acequia," lined with limestone gabion and weathering steel, captures and collects all of the parking lot runoff.

Green says that changing people's attitude and behavior toward water usage is also important. For example, an aesthetic movement in Texas called Brown Is Beautiful is working to encourage people to replace unsustainable flora in lawns with plants that require less water or go dormant during certain months of the year.

GIVING FLOODWATERS A PLACE TO GO

When Louisiana was hit by catastrophic flooding last month, the storm destroyed 60,000 homes and temporarily displace more than 30,000 people. Green says that one of the major design problems of a place like Baton Rouge, Louisiana, for example, is that urban sprawl has a way of isolating certain areas, unlike street grid systems like New York City's. Roads that end in cul-de-sacs, or homes that people can only access through one road, don't give water anywhere to go, and they cut people off from help and resources when disaster hits.

Green spoke to Louisiana-based landscape architect Wes Michaels about the flooding for an ASLA blog post, and he brought up the need to redesign roadways so they're porous to the flow of water—asphalt essentially acts as a conveyor system for water, moving it around but not absorbing it. But until that happens, designing in roadside trees and green spaces can mitigate some of that runoff. Green also points toward the Historic Fourth Ward Park in Atlanta that was recently designed so that flood water from the surrounding neighborhood would flow into its five-acre pond. The pond replaced an earlier initiative for a $40 million underground tunnel to remove rain water.

The guide recommends these types of nature-centric initiatives over building walls or raising homes up on stilts, which are expensive, disruptive to nature, and not guaranteed to work. Where many cities turn to infrastructure, landscape can often do a better job. "A lot of communities are still concerned with the idea of partnering with nature, because many of these ideas are still novel," says Green. "It's important to show that people have been doing these projects, and they've turned out to be a safer route."

The original article appeared in FastCo Design, and is reproduced with permission.

FUTURISTS IN ACTION

WOMEN OF FORESIGHT

CHANGES IN EDUCATION FOR FUTURE STUDENT SUCCESS

by Dr Liz Alexander

Education. A topic that remains hotly debated all over the world. Especially now, as we struggle to find our footing as our futures hurtle towards us, faster and more profoundly different than ever before.

What changes do existing schools and colleges need to make to better prepare students for the trends we already see? Together with those "weak signals" that suggest other, possible futures? In "trying to adapt education for what the American economy is evolving into," is mandating "coding classes" part of the answer? Are we doing enough to take into account contrarian perspectives like this one? Who gets to decide what the purpose of education should be?

These are just some of the questions everyone–from policy makers to parents, academics to students themselves–need to think about.

Intrigued as to what the global futurist and foresight communities might be thinking, I posed them the following question:

If there was one thing I could change in education to better prepare students for the future of work, it would be…

The twenty women that responded to my call are either professional futurists or apply foresight in their roles as leaders in global firms and consultancies, think tanks and foundations. They're from countries as geographically disperse as Australia, Egypt, Germany, India, New Zealand, Norway, United Arab Emirates, United Kingdom, and United States.

(If you're wondering why I only asked women, it was a deliberate move to broaden commentary on "our futures," so people don't think it's the sole purview of older, white men. Also, because I believe women's natural inclinations toward relationships and collaboration, communities and mutual support, are the future!)

One of the participants was Australian futurist Maree Conway who said:

"Use the future to underpin what we learn and how we learn it, putting people at the centre of our education system and moving away from today's structures and systems derived from the past. Putting the future at the core of education will mean students have skills and knowledge that they need not only for work today but that will also sustain them as the future of work emerges, whatever that may be."

Maree Conway is a Strategic Foresight Practitioner and Researcher at Thinking Futures in Melbourne, Australia.

Another was

Furoozan Sharaf works as a Director of Corporate Support Department for The Executive Office of Dubai. This is the think tank office of the Ruler of Dubai, whose main mandate is to seek the prosperity of the City of Dubai and the welfare of its people.

who argued:

"Add to every school's curriculum emotional intelligence (EI) and resilience skills, to help students cope with life's challenges and be prepared for tomorrow's world of work. Many students lack the basic skills for how to control their reactions, how to build relationships, and how to resolve conflicts. Teaching students how to regulate their emotions will definitely help boost their levels of resilience and confidence, while trying to get onto the first rung of their career/professional ladder. Not to mention that it would be an ultimate solution to societal and parental concerns about violence, bullying, harassment, school dropouts and mental health problems. Social and emotional learning is the right of every student on this planet and must be taught as a sustainable practice at an early age."

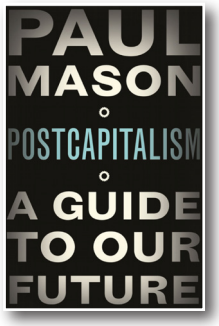
The entire article, together with an opportunity to become involved in the discussion can be found here:

http://leadingthought.us.com/2016/08/20-women-futurists-education-student-success/

Book Review

by Charles Brass – Chair, futures foundation

POSTCAPITALISM:
A Guide to Our Future
by Paul Mason



As an economic journalist Paul Mason has travelled the world exploring how economic systems work in different countries. He is by no means the first to suggest that the so-called capitalist or neo-liberal economic system has reached its use by date, but in this book he makes this case powerfully based on his personal experience and his deep immersion in economic theory.

Mason is unequivocal. His first chapter is titled "Neo-liberalism is broken" and he devotes the first third of his book to explaining why "capitalism is a complex, adaptive system which has reached the limits of its capacity to act" (pxiii). He particularly examines the economics of Marx and Kondriateff and concludes that, although both are largely discredited today, they actually have something useful to say both about why the current system is broken and what a post-capitalism system might look like.

I am tempted in this review to move quickly past the first third of the book because the real value is in the next two-thirds. But it is relevant to note that it is the financialisation of capitalism that Mason chiefly blames for its demise (as well as acknowledging its inestimable value over the past two hundred years).

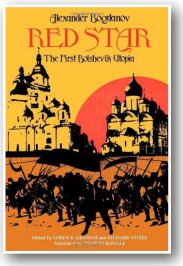
Mason is convinced that the very success of capitalism contained the seeds of its downfall. At the core of capitalism was the power of the market to set prices that optimise the allocation of scarce goods. Too much of this power has ended up in the hands of a global elite, and too many of the products in the modern world are based on information which is abundant not scarce. And he concludes that these trends are not reversible, and hence the need for a post-capitalist system.

As he says:

"postcapitalism is possible because of three impacts of the new technology in the past twenty five years. First, information technology has reduced the need for work, blurred the edges between work and free time and loosened the relationship between work and wages. Second, information goods are corroding the market's ability to form prices correctly. That is because markets are based on scarcity while information is abundant. The system's defence mechanism is to form monopolies on a scale not seen in the past 200 years – yet these cannot last. Third, we're seeing the spontaneous rise of collaborative production: goods, services and organizations are appearing that no longer respond to the dictates of the market and the managerial hierarchy"(pxv).

The final 200 pages of the book are devoted to exploring how such a post-capitalism system might work, and more importantly how we might successfully transition into such a system without a violent revolution.

As Mason points out many 'prophets of postcapitalism' have existed, though most have been dismissed as doomsayers as capitalism has adjusted to the many disruptions witnessed in the past 200 years. However, "just as economists got busy explaining how (the) 'third kind of capitalism' works, they ran into a problem; it doesn't (p111). The second third of this book justifies this statement by looking in detail at the world's economic experience over the past 100 years or so. Mason particularly traces the history of workers and workplaces to make his point that physical labour is overwhelmingly being replaced by human created and controlled technology. He concludes this section by suggesting: "The appetite for radical economic change is clear. The next question is: what to do to achieve it?" (p213).



Part III of this book then looks at the transition from an economic system that has dominated human experience for over 200 years to one more in keeping with the realities of a twenty-first century world. Like many authors before him Mason uses a science fiction novel – Red Star – written in 1909 by Alexander Bodganov as representative of a number of utopias written over the years to describe post-capitalist economies[1].

[1] He could also have used the more recent: "Voyage from Yesteryear" by James P Hogan, or the much older "Erewhon" by Samuel Butler

The problem unaddressed by all similar utopias is the transition from a capitalist to a post-capitalist system.

Mason chooses this particular work because it was actually written before the Russian revolution in 1917 that actually ended up introducing a new economic system to the world – centrally planned socialism – as its reaction to what were seen at the turn of the twentieth century as the failings of capitalism.

He points out that Marxist socialism was by no means the only option canvassed by thinkers and politicians in early twentieth century Russia, and attempts to tease out why it ended up dominating that country for over 80 years. He points out that both Marx and Keynes (whom he uses as an exemplar of a capitalist economic thinker) envisaged a time when: "there will be enough goods to go around and the economic problem will be solved" (p237) but obviously each envisaged a different route to arrive at just where Mason argues we now are, at least in the so-called developed world.

This extended quotation sets out Mason's argument about how the last great transition (ie the creation of an industrial economy out of a feudal economy) happened: "The feudal model of agriculture collided first with environmental limits and then with a massive external shock – the Black Death. After that, there was a demographic shock; too few workers for the land, which raised their wages and made the old feudal obligation system impossible to enforce. The labour shortage also made technological innovation necessary. The new technologies that underpinned the rise of merchant capitalism were the ones that stimulated commerce (printing and accountancy), the creation of tradeable wealth (mining, the compass and fast ships) and productivity (mathematics and the scientific method)" (p242).

Pervading this tradition is what Mason sees : "also destined to become the basis of the new-post capitalist system – money and credit" (p242), although he thinks we will need to think very differently about wealth.

Mason argues that the major source of new wealth in the future will be things we currently dismiss as externalities – "the free stuff and well-being generated by networked interaction" (p243). This is, he says, best seen in: "the rise of non-market production, of un-ownable information, of peer networks and unmanged enterprises" (p243).

In his final chapter Mason sets out what he thinks a large-scale post capitalist project might involve. He invokes five guiding principles:

- understand the limitations of human will power in the face of a complex and fragile system – the transition requires harnessing the power of the network not finding charismatic leader
- ecological sustainability
- recognition that the transition is not just about economics it will have to be a human transition
- attack the problem from all angles
- maximise the power of information.

He sets out the top four aims of the project:

1. Rapidly reduce carbon emissions so that the world has warmed by only two degrees Celsius by 2050, prevent an energy crisis and mitigate the chaos caused by climate events.

2. Stabilize the finance system between now and 2050 by socializing it, so that ageing populations, climate change and the debt overhang do not combine to detonate a new boom-bust cycle and destroy the world economy.

3. Deliver high levels of material prosperity an dwell-being to the majority of people, primarily by prioritizing information-rich technologies towards solving major social challenges, such as ill health, welfare dependency, sexual exploitation and poor education

4. Gear technology towards the reduction of necessary work to promote the transition towards an automated economy. Eventually, work becomes voluntary, basic commodities and public services are free, and economic management becomes primarily an issue of energy and resources, not capital and labour. (p269).

and he devotes the final 30 or so pages to highlighting some of the main elements needed to achieve these goals.

Finally, he says: "we have to learn what's urgent, and what's important, and that sometimes they do not coincide" (p242).

And he presents a compelling reason for needing to change and act quickly:

"If it were not for the external shocks facing us in the next fifty years, we could afford to take things slowly: the state, in a benign transition, would act as the main facilitator of change through regulation. But the enormity of the external shocks mean some of the actions we take will have to be immediate, centralized and drastic" (p242).

Personally, I don't think I have read a better put together and more compelling case for creating a new economic system that will work for everyone, not just a rich few.

Signals in the Noise

ETHICIST CITES FIVE CONSIDERATIONS FOR A TRANSFORMING SOCIETY

by Madeline Bell

Self-driving cars, such as this model developed by Carnegie Mellon University, offer potential traffic and safety benefits. But the programming that determines the routes these cars follow brings up questions about their effects on society. Credit: Carnegie Mellon University

New technology often raises new ethical questions—and those questions only multiply as technology advances.

"As robots go out into the world, the moral and ethical challenges change"

Up until now, technology has largely remained dependent on action by a user, often in a particular setting. But in the age of co-robots, devices are breaking free of that model, interacting with people other than their users, and with other pieces of technology. They're also beginning to act in ways beyond what their users—or even their programmers—have determined. That creates the possibility of more adaptable and useful robots, but also raises new questions.

"Co-robots are robots that interact with humans in more complex, social ways," said Patrick Lin, an associate professor of philosophy and the director of the Ethics + Emerging Sciences Group at California Polytechnic State University, San Luis Obispo. "They can work and move alongside us, not just on highways but in our neighborhoods and homes. As robots go out into the world, the moral and ethical challenges change."

As robots become increasingly integrated into daily life and give people abilities that would have been considered "superpowers" not long ago, researcher Lin says now is the time for scientists, policymakers, industry representatives, and the public to start thinking through the ethical dilemmas they raise. Lin and his group are funded by the National Science Foundation (NSF) in support of the National Robotics Initiative.

"Once drones, cars, and other co-robots are living among us, these technological superpowers will challenge our basic values, such as privacy, due process, liberty and more."

The role of an ethics researcher, Lin said, is not necessarily to answer all these questions, but to help society prepare for what's next.

"It's not so much to stop research as it is to guide responsible innovation, which seems better than a public backlash after a new technology is introduced. Ethics provides an important framework to tackle these challenges and make sure the co-robots work for us."

As researchers continue to explore those issues, Lin described five categories of ethical considerations that could help guide the adoption of co-robots.

Signals in the Noise

ETHICIST CITES FIVE CONSIDERATIONS FOR A TRANSFORMING SOCIETY

"If a co-robot must make a choice that will kill someone, how does it decide whom to kill?"

1. RESEARCH AND DEVELOPMENT PRACTICES

How should industry and society govern the development and testing of technology? When and how should regulators have input into technological design that affects the broader public?

With cutting-edge technology now present in everyday life, how can society make sure that developers can innovate while the public remains safe?

"As our world becomes increasingly connected, technology's effects on us can also be more direct, physical and impactful than before," Lin said. "This may create new obligations for developers as they test their technologies out in the real world."

2. MORALITY AND THE ROBOT

Nearly seven decades ago, Isaac Asimov was one of the first to consider robot morality when he laid out the Three Laws of Robotics in the novel, "I, Robot."

- One: A robot may not injure a human being, or through inaction allow a human being to come to harm.
- Two: A robot must obey orders given it by human beings except where such orders would conflict with the First Law.
- Three: A robot must protect its own existence as long as such protection does not interfere with the First or Second Law.

These laws seem reasonable, but real life leads to much more complicated situations. What if, for example, a self-driving car faces a crash situation where at least one person will be hurt no matter what it does?

"Risk trade-offs are everywhere in driving," Lin said, "from the obvious life and death choices to everyday decisions that may increase risk to others, such as moving toward the edge of your lane to stay clear of a big truck."

Researchers believe self-driving cars will reduce accidents and prove safer than those now on the road, but even autonomous machines won't always be able to avoid causing injury. If a co-robot must make a choice that will kill someone, how does it decide whom to kill?

Another major ethical and legal question underlying this issue is whether the driver, the car company or the programmer who wrote the code far in advance in a distant location will be held liable.

A video Lin created for TED-Ed gives concrete and dramatic examples of how tricky these choices are.

3. A ROBOT'S USEFULNESS MAY LEAD TO A LOSS OF SKILLS OR INTEREST

Imagine you could have a robot to help you around the house. It can help you tidy up. It can feed the dog, pet the cat, and water the plants. It can respond to human voices and can alert you if something is going wrong in your house. So far, this all sounds wonderful. But what if this robot is so good at its job, you feel comfortable leaving your children home alone with it? Or you trust your grandmother's robotic caretaker so much you feel you don't need to check on her quite so often?

Signals in the Noise

ETHICIST CITES FIVE CONSIDERATIONS FOR A TRANSFORMING SOCIETY

"In Japan, the population is aging rapidly and many see service-robots as part of the solution, taking care of the elderly and babysitting children," Lin said. "The robots themselves might not present the ethical challenge—it is how we are using them. Are we avoiding our basic human responsibility to care for the young and elderly? Are these machines capable of providing the emotional support that people need? Should they override the autonomy of a patient who does not want to take her pills?"

He added: "These are important questions that need to be asked ahead of time, not after damage has been done."

"The robots themselves might not present the ethical challenge—it is how we are using them"

4. HUMAN IMPROVEMENT TECHNOLOGIES

From hearing aids to a brain-computer interface that can allow someone with locked-in syndrome to communicate, researchers have made great advancements in returning bodily functions to those who have lost them. Few dispute the ethics of technologies that would return the use of a hand to an Iraq War veteran or would keep a heart beating with a pacemaker.

But what about technology that could take the body beyond its current limitations? What if a robotic battlesuit could give a soldier super-strength or an implanted device could improve a pilot's response time?

"There may be an ethical line between repairing a body and enhancing it, even though the line may be fuzzy at times," Lin said. "By using technology to go beyond therapy, we need to be more sensitive to safety concerns, societal fairness, and other issues."

5. ANTICIPATED AND UNANTICIPATED SOCIETAL CHANGE

As co-robots become normal parts of life, they will have far-reaching effects on society.

"Self-driving cars will be the first co-robots on a societal scale," Lin said.

Some of the effects are predictable. For example, navigational systems connected to the internet will provide directions for self-driving cars. These systems might allow restaurants and other retailers to pay to have drivers routed by them. These same cars might send drivers around neighborhoods with high minority populations either because the algorithm deems these neighborhoods to be "unsafe" or just because it is picking up and amplifying the behaviors of other drivers.

Is the programming reinforcing stereotypes and societal biases, even hurting property values and business revenue? What about programming that routes cars through small neighborhoods on roads not built for such traffic—a scenario that already emerged thanks to current GPS technology?

"The cumulative effects of all these navigation decisions could be substantial and there will surely be winners and losers," Lin said.

Researchers like Lin and others continue to explore ethical considerations in tandem with responsible robotics research to help mitigate such conflicts with NSF support.

The original article was published here: http://phys.org/news/2016-07-ethicist-cites-considerations-society.html#jCp, and is reproduced with permission.