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Reinventing paradise

Achieving deep sustainability in our built environment

> Rod Oram's presentation to the Eco Design Advisors Conference Wellington, March 20th, 2018





Agenda

- Planet
- Cities
- Aotearoa



Home



- All water: 1,390 km diameter (All fresh surface water: 62 km)
 All air: 1,999 km across
 - Dr Adam Nieman <u>www.adamnieman.co.uk</u>





A story map We are Living in The Age of Humans

of Earth's land surface outside of ice sheets is managed by humans.

The map at left, developed by the Wildlife Conservation Society, reflects patterns of roads, urban concentrations, agriculture and other factors to show the extent of human modification of the landscape. Green represents minimal human impact; orange, red and purple reflect a high degree of human activity.

CLICK on the locations below to see examples of highly managed landscapes:

The Netherlands is home to this geometric array of fields and villages called the Zuiderzeewerken, an expanse of reclaimed land created by diking and draining portions of the Zuiderzee, a shallow inlet of the North Sea.

British Columbia, Canada has been transformed by intensive clear-cut logging. Vast woodland tracts in western Canada and the United States have become



Biggest risks

- Climate change
- Water crises
- Biodiversity loss and ecosystem collapse
- Extreme weather events
- Natural catastrophes
- Food crises
- ...these are ecosystem issues caused by the way we live
- …we have to learn to work with the ecosystem, not against it





Monumental challenges

- Are there technological and economic pathways for big cuts in global emissions in next 20 years?
 - ...driven by massive R&D and business investment?
- Electricity? Yes!
- Transport? Yes!
- Industry & buildings? Yes!
- Agriculture? ...emerging!



United Nations

UNIVERSITY OF MINNESOTA

Driven to Discover-

Agenda

- Planet
- Cities
- Aotearoa



A TATE MODERN EXHIBITION 20 JUNE - 27 AUGUST 2007

EN

-

Contractor Bullion Hales





Cities will have to change fundamentally

- ...to bring nature back into cities
- ...making them largely sufficient for energy, food and other resources
- ...be delightful, inspiring places to live and work
- ...to restore our relationship with the ecosystem





Living Buildings

- The world's greenest commercial building
- Self-sufficient for energy and water
- An exemplar of the Living Building Challenge
- <u>https://ilbi.org/lbc</u>
- The first The Bullitt Centre, Seattle

Vertical farming

- ...an example in New Jersey: AeroFarms, <u>http://aerofarms.com</u>
- New Yorker magazine Jan 2017
 http://www.newyorker.com/magazine/2017/01/09/the-vertical-farm





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We Are Transforming Agriculture

We grow delicious, nutritious leafy greens and herbs without sunlight, soil, or pesticides. Our crops get the perfect amount of moisture and nutrients misted directly onto their roots in a completely controlled environment. With our patented technology, we take indoor vertical farming to a new level of precision and productivity with minimal environmental impact and virtually zero risk.



SEEDS OF GOOD ANTHROPOCENES

Identifying socially-ecological bright spots that could grow & connect to produce a better anthropocene



https:// goodanthropo cenes.net/

about

seed collection map of collected seeds

eds contribute a seed

the anthropocene

WHAT ARE SEEDS?

Seeds are existing initiatives that are not widespread or wellknown. They can be social initiatives, new technologies, economic tools, or social-ecological projects, or organisations, movements or new ways of acting that have that appear to be making a substantial contribution towards creating a future that is just, prosperous, and sustainable.



We are gathering soude





Bunker Hill, Los Angeles, 1962 Bunker Hill, Los Angeles 2014



Walt Disney Concert Hall, Bunker Hill, 2014



Chicago, 1968

Chicago, 2014

Pullman District, Chicago 2015 Pullman District, Chicago 2015

Hope in Aotearoa

<u>bwb.co.nz/books/three-cities</u>

Three Cities

Seeking Hope in the Anthropocene

Rod Oram

Orthodox is obsolete; conventional is kaput. We thought we knew how we make economics, politics, technology and nature work for us. But increasingly, they are failing to run by the rules and systems we've honed over recent decades. Boombust economies, fractured and destructive politics and a deeply degraded ecosystem are just some of the symptoms.

Pioneers around the world are seeking new values, systems and technologies. Thus equipped we might achieve the unprecedented, speed, scale and complexity of change we need to meet the immense challenges of the twenty-first century.

In this BWB Text acclaimed business journalist Rod Oram travels to Beijing, London and Chicago to meet some of these pioneers and report on their setbacks and progress. Because if 10 billion people are going to live well on this planet in 2050, we're going to have to fundamentally change the way we do things.

DOUGHNUT ECONOMICS

Seven Ways to Think Like a 21st-Century Economist

KATE RAWORTH

"I read this book with the excitement that the people of his day must have read John Maynard Keynes's *General Theory*. It is brilliant, thrilling and revolutionary' George Monbiot

Raworth rewrites the OECD's charter

1960

...achieve the highest sustainable rate of growth and employment and a rising standard of living in member countries.

2020

...create regenerative and distributive economies that enable humanity to thrive, whether or not they grow.

For 21st century progress, pick your paradigm. Neither is easy, nor proven.

"Today's uber-capitalism demands maximum growth"

(as summed up by Branko Milanovic)

- People are greedy, insatiable & competitive.
- The metric of success is money and everyone wants more of it.
- This can't be changed in any foreseeable future.
- Hence pursuing wellbeing calls for maximizing. GDP growth.
- Achieving this depends upon overcoming environmental limits to growth – and, thanks to technology, it can be done.

"Tomorrow's thriving future must be growth agnostic"

(as summed up by Kate Raworth)

- People are greedy and generous, competitive and collaborative – and it's possible to nurture human nature.
- The metric of success is to meet the needs of all within the means of the planet (aka get into the Doughnut)
- This is essential for humanity's common future.
- Hence pursuing wellbeing calls for distributive and regenerative economies – with GDP adjusting in response.
- Achieving this depends upon overcoming today's financial, political and social addictions to GDP growth – by no means easy, but it can be done.

The Global Commission on the Economy and Climate, and its flagship project The New Climate Economy. have been set up to help governments, businesses and society make better-informed

THE GLOBAL COMMISSION ON THE ECONOMY AND CLIMATE

ATLANTA'S BUILT-UP AREA

BARCELONA'S BUILT-UP AREA

0 10 20 (km)

| ULATION: | 5.25 MILLION | POPULATION: | 5.33 MILLION |
|--|-----------------------|---|---------------------|
| BAN AREA: ANSPORT | 4,280 KM ² | URBAN AREA: TRANSPORT | 162 KM ² |
| MISSIONS: R PERSON + PRIVATE ANSPORT) | 7.5 | CARBON EMISSIONS: TONNES CO2 PER PERSON (PUBLIC + PRIVATE TRANSPORT) | 0.7 |

POPULATION: URBAN AREA: TRANSPORT CARBON EMISSIONS: TONNES CO₂ PER PERSON (PUBLIC + PRIVATE TRANSPORT)

Globally, labor-productivity growth lags behind that of manufacturing and the total economy

1 Based on a sample of 41 countries that generate 96% of global GDP.

SOURCE: OECD; WIOD; GGCD-10, World Bank; BEA; BLS; national statistical agencies of Turkey, Malaysia, and Singapore; Rosstat; McKinsey Global Institute analysis




Industry Agenda

Shaping the Future of Construction A Breakthrough in Mindset and Technology

Prepared in collaboration with The Boston Consulting Group





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"... the shift... will be profound and widespread"

- "...the shift from the old economy to a new, low-emissions economy will be profound and widespread, transforming land use, the energy system, production methods and technology, regulatory frameworks and institutions, and business and political culture."
- New Zealand Productivity Commission Low carbon economy, August 2017









Low urban density

- Makes good infrastructure more expensive
- Reduces network effect of wealth generation
- ...and we invest piecemeal, behind the growth



Auckland dwelling consents...woefully inadequate



Figure 4-2 Dwelling units consented in Auckland



Figure 2.4 A global comparison of Auckland's emissions per person (Tonnes of CO_2e per person) N.B. Copenhagen aims to be carbon neutral by 2025

Glimmers of hope



















Ōtākaro Avon...from city to sea

- ...an umbilical cord reconnecting people and ecosystem
- ...healing many great hurts and injustices



Map Five: New Zealand Deprivation Index, 2013.



The Ōtākaro Avon's impact on Christchurch...and wider • Transformative change...creating a 21st century city by:

- Bringing nature back into the city
- Triggering environmental, social, cultural, political & economic revival
- Developing new processes, technologies and models
- Achieving strong resilience and deep sustainability
- Restoring people's relationship with the ecosystem
- Enlivening the city, New Zealand...and the world

Community

- Issues are increasingly global...
- ...solutions are increasingly local
- ...to achieve an unprecedented speed, scale and complexity of change
- Solutions require very strong, learning communities
- Some attributes:
 - Common sense
 - Common purpose
 - Common wealth
- Places where individuals are valued, helped, encouraged
- ...in return, they participate, change











Our energy use: 2007: 15,205 kWh equivalent (40% was gas for heating)
2017: 5,500 kWh for the house + 2,250 kWh for 1 EV +1 PHEV

1 x Auckland household...2007 vs. 2017

- <u>2007</u>
- Gas: \$780
- Electricity: \$2,136
- Petrol: \$3,850
- Total energy cost: \$6,766
- 2017 w/ inflation: \$8,000

- <u>Adopting new</u> <u>technology in a</u> <u>73-year-old house</u>
- Solar hot water
- PVs
- Heat pump
- Insulation
- Double glazing
- LED lighting
- 1 EV + 1 PHEV

- <u>2017</u>
- Gas: None
- Electricity: \$1,650
- Petrol: \$450
- Total energy cost: \$2,100
- Total energy use for house: minus 65%
- Total petrol use for 2 cars: minus 90%
- Total energy cost for 1 house + 2 cars: minus 75%
- Total carbon emissions for 1 house + 2 cars: minus 98%







LIVING FUTURE Collaborative NEW ZEALAND









Conditioning the mind

• "The city is a fact of nature, like a cave, a run of mackerel or an ant-heap.

But it is also a conscious work of art, and it holds within its communal framework many simpler and more personal forms of art.

Mind takes form in the city; and in turn, urban form conditions mind."

The Culture of Cities Lewis Mumford, 1938




