

Rod Oram's presentation to the
New Zealand Association for Environmental Education
Hamilton, January 20th, 2012

Steer!...don't drift!

Charting a course to sustainability

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Agenda

- The End
- Choice
- Course
- Paradox
- Response
- The Beginning

(The beginning of) The End

Weep, Harp, the end of that exquisite Place
That every circling Planet did outface;
Mother of Streams and Mountains, Vales and Trees,
And every Prospect that the Lens could please:
Cradle of Man, and his sustaining Nurse,
Whether for better or, in this case, worse.

Long time that Orb turned tranquilly and bright,
Blue-shining like a Marble in the Night
Long time all hunky-doryish appeared,
But Man was greedier than had been feared:
Flatt'ning the Forests, and, with grasping Hand
Pumping out oil from every Desert Land.

Then anxious Greens announced that Doom was nigh,
Tho' all the rest, uncaring, wondered: "Why?"
And to consumerism blithely turn'd,
Tapping their iPhones while the Planet burn'd;
Checking each Bleep of instantaneous Chat
Until they hardly knew where they were at.
And so, o'erheated and in quite a Tangle,
Poor Earth was now beset from every Angle.

Ann Wroe, obituaries editor, *The Economist*



...(the middle of) The End

This the wise *Maya* long ago foresaw:
That in the Age of tricky *Seven Macaw*
(Or, to put Finger firmly onto Fact,
In twenty-twelve, Dec. 21st exact)
History's great Wheel would tumble to eclipse
Quicker than e-mail thro' the *Aether* zips;
For fiery *Sun* with *Milky Way* align'd
Would make a pretty Mess of things combin'd.

The *Poles* would flip, and old terrestrial
Time Fade out within *Eternity's* vast clime;
The law of Gravitation, grown effete,
Would scarce secure an Infant in his Seat;
And all that normal seem'd, the Day before,
Would now essay the Air, or hit the Floor.

Then monumental Panick spread abroad,
Skins to preserve, and Groceries to hoard,
For tho' the Mathematicks seem'd obscure,
No Body's Fate might be consider'd sure;
So Petroglyphs of Rockets upside-down
Were scrutinised in every part of Town.



...(the end of) **The End**

And some to *Bugarach* in *France* repair'd,
Where, it was said, their Lives would all be spar'd
By Alien Beings in a Cave confin'd;
But "Bugaroff" declar'd that Mayor, unkind.

A few were saved. For such Escapes must be,
As shewn forth on Reality TV,
Where jabbing Digit points towards the Door,
But some survive into Round twenty-four;
And so the Wise soared up to Realms of Dreams,
Bathed by Galactic Synchronisation Beams.

The rest, when pulling on their morning Socks,
Ask'd what the *Hell* was wrong with all the Clocks,
And why each Mug would from the Table rise,
Floating about before their bleary Eyes
And why their Phones no Signal would receive
Save the implicit one that they should leave.
Craz'd, then, the uninform'd or unprepar'd
Rushed to the Street, and round them wildly star'd,
Seeing approach an overwhelming Snow
Before they had worked out which way to go;
And they were buried deep, the Ice beneath,
With crumbs of Croissant still between their teeth.



Agenda

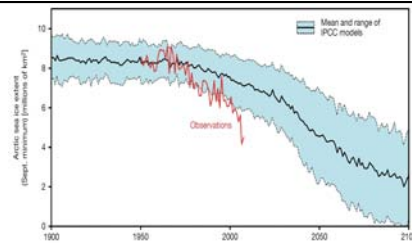
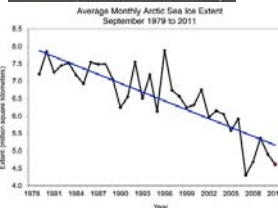
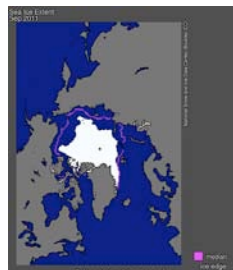
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Drifting

- Drifting down a river is very relaxing...and very easy...
 - ...when the river is wide, deep and slow...and there are no hazards
- But we have no control over where we go...the current sweeps us along
- Humankind is drifting...we are letting powerful currents sweep us along...
 - ...environmental, resource, energy, economic, values and the like
- If some people see some of the hazards, most of them think we've time enough to set things right
- But we don't...the damage we're doing to the ecosystem is accelerating...
- ...the ecosystem is responding far faster than we expected...
 - e.g. Arctic sea ice is melting much more quickly than forecast.
- We think human impact is slow...250 years of industrialisation and population growth
- But in Earth-time, 250 years is a fraction of a second in its 4.5bn year history to-date...our impact is like a blast from a shotgun

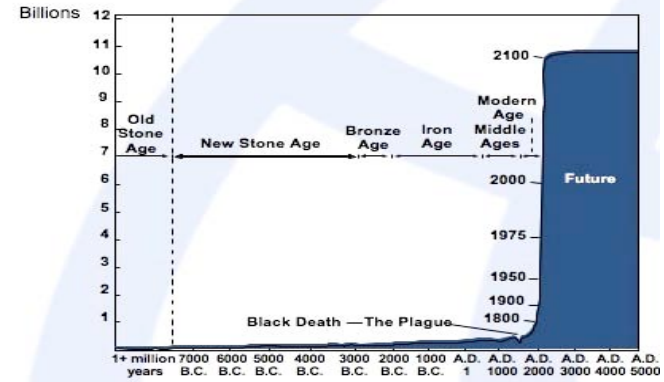
Arctic sea ice



Observed (red line) and modelled September Arctic sea ice extent in millions of square kilometres. The solid black line gives the mean of the 13 IPCC AR4 models while the dashed black lines represent their range. (From Stroeve et al. (2007)). The 2011 minimum was at 4.61 million km², the second lowest year on record, well below the IPCC worst case scenario

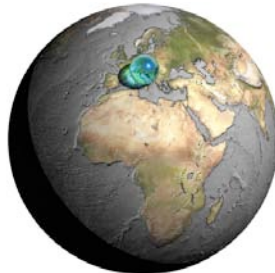
People

- The world's human population will quadruple in my lifetime
- ...to 10bn people in 2050



Planet

- But resources won't quadruple
 - All water: 1,390 km diameter (All fresh surface water: 62 km)
 - All air: 1,999 km across; Source: Dr Adam Nieman www.adamnieman.co.uk



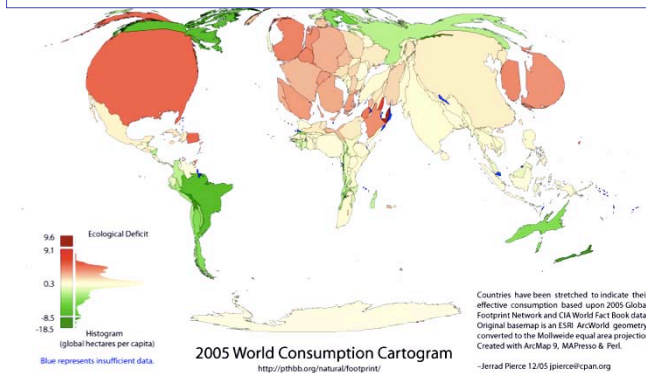
All the water in the world (1,4087 billion cubic kilometres of it) including sea water, ice, lakes, rivers, ground water, clouds, etc. Shown on the same scale as the Earth.

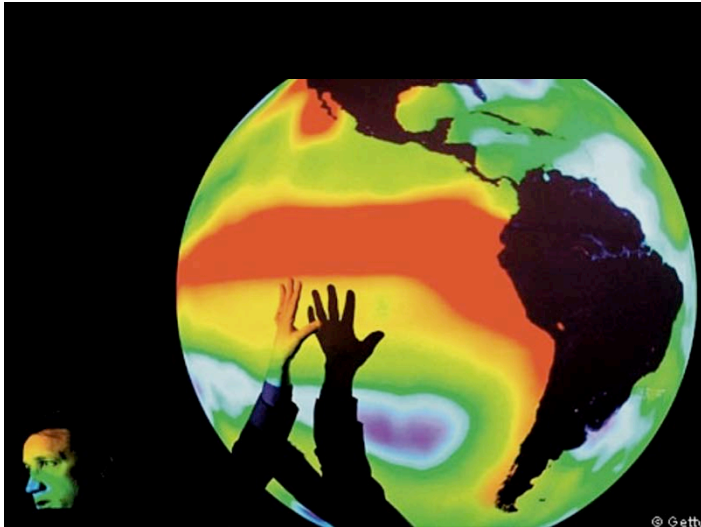


All the air in the atmosphere (5140 trillion tonnes of it) gathered into a ball at sea-level density. Shown on the same scale as the Earth.

Resources

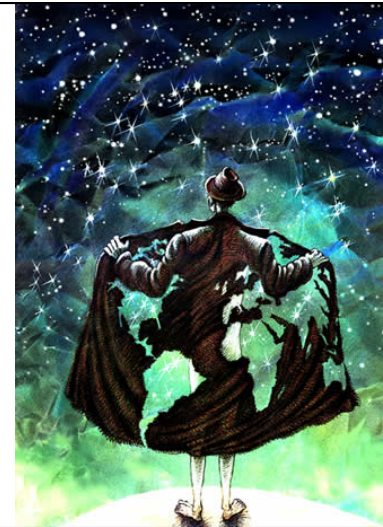
"The world will no longer be divided by the ideologies of 'left' and 'right', but by those who accept ecological limits and those who don't"
Wolfgang Sachs, Wuppertal Institute





Universe 'n' us

- One man's view:
 - Mikhail Zlatkovsky,
Russian political cartoonist



Steering

- If we paddle even just $\frac{1}{2}$ a knot faster than the current...
- ...we can chart our own course, avoid dangers, land where we want to land
- So what course shall we chart?
- How will we navigate
- How will we paddle together?

Agenda

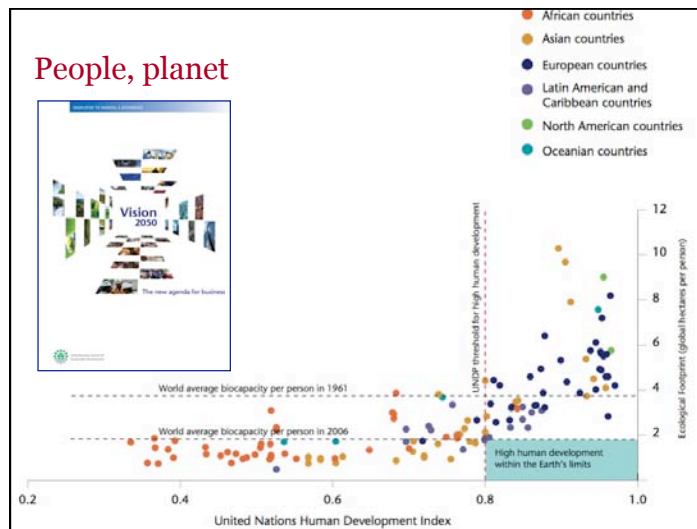
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People, planet

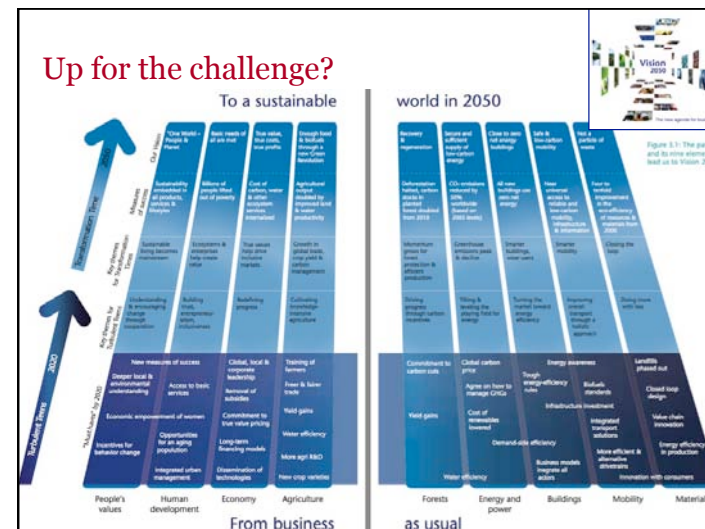
- Vision 2050
- A very challenging roadmap for corporate development by World Business Council for Sustainable Development



People, planet



Up for the challenge?



Small...but exciting



- Figure 1.11 – Real production GDP per capita**



Output per hour worked
OECD per hour worked = 100 (Source: Groningen Growth and Development Centre and Conference, Total Economy Database 2005)

Hours worked per capita (OECD Average = 100)

Output per hour worked (OECD Average = 100)

Scatter plot showing Output per hour worked (Y-axis, OECD Average = 100) versus Hours worked per capita (X-axis, OECD Average = 100). The plot compares various countries, with New Zealand highlighted by a green box and a green arrow pointing to it. The data points are as follows:

Country	Hours worked per capita (X)	Output per hour worked (Y)
Iceland	~98	~125
Canada	~100	~110
Switzerland	~110	~110
USA	~130	~110
Japan	~95	~105
Australia	~100	~105
Greece	~80	~98
Spain	~95	~98
UK	~105	~98
Sweden	~108	~95
Finland	~115	~95
Denmark	~120	~95
Ireland	~135	~95
Italy	~108	~88
Austria	~125	~90
Netherlands	~130	~85
Germany	~125	~80
Belgium	~140	~80
France	~145	~75
New Zealand	~85	~105

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Paradox

Abundance

Scarcity

Re-invention

Scarcity

Abundance

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Poverty

1. Cows

Scientists

Wealth

1. Scientists

Cows



New science...an example

- **Global Research Alliance on Agricultural Greenhouse Gases**
- Proposed by NZ government at Copenhagen in 2009...to:
 - Reduce emissions; increase food production
 - Help developing countries to join global climate change frameworks
- Alliance now has 36 countries + 3 observers including the EU
 - = 70% of global agricultural GHGs; agriculture = 15% of total GHGs
- Three main workgroups:
 - Livestock, led by NZ and Netherlands, 483 projects identified to-date
 - Croplands, led by US, 429 projects to-date
 - Paddy Rice, led by Japan, 60 projects to-date
 - Secretariat: NZ
- NZ Agricultural Greenhouse Gas Research Centre: \$48.5m over 10 years
 - Four main workstreams: Mitigate methane; mitigate nitrous oxide; increase soil carbon; deliver farming solutions



Poverty

2. Individuals

Communities

Wealth

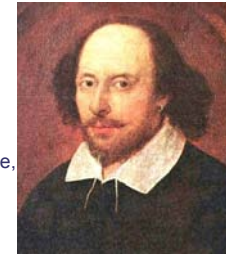
2. Communities

Individuals

As Will says...

Hamlet:

"What a piece of work is man,
How noble in reason,
How infinite in faculties,
In form and moving how express and admirable,
In action how like an angel,
In apprehension how like a god!
The beauty of the world,
The paragon of animals..."



But Hamlet is deeply depressed about humankind...so he goes on to say...

"...and yet, to me, what is this quintessence of dust?
Man delights not me -- nor woman neither"

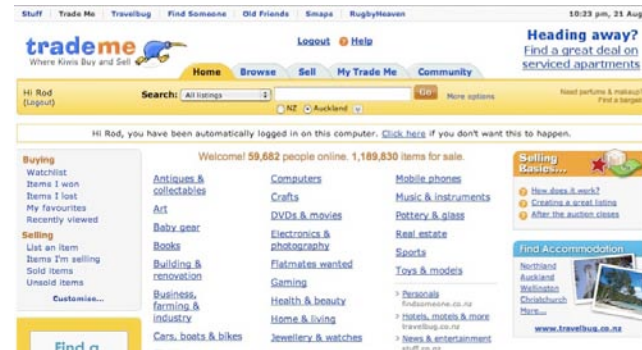
If we lose our faith in humankind, we're doomed

Communities...evolving fast

- From physical connection.....to virtual connection
- From well-honed conventions....to fast-evolving behaviour
- From shared values.....to shared interests
- From proximity.....to "remote intimacy"
- From a few people.....to many
- From self-help.....to collective help
- From local standards.....to global standards
- From local prospects.....to global prospects

New ways of being communities

- Radically different ways to connect with people
- Trade me is a stunning example...
- ...far more than a trading site...it's a community of communities



...at home

...yet intimate

...very intimate

Strong communities

- Issues are increasingly global...
- ...solutions are increasingly local
- 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
- Challenge:
 - Building confident, fast-changing communities across the country

We can do it

“What a great time to be born.
What a great time to be alive.

Because this generation
gets to completely change
the world.”



Paul Hawken

Poverty

3. No.8

Game-changers



Wealth

3. Game-changers

No. 8

YikeBike: radical reinvention

- Grant Ryan's radical re-think of the bike
- All-electric; no pedals; 10kg; 20 km/h; 10 km range; ABS brakes; regenerative braking; 45-minute recharge
 - Folds in 15 seconds; Guinness Book of Records

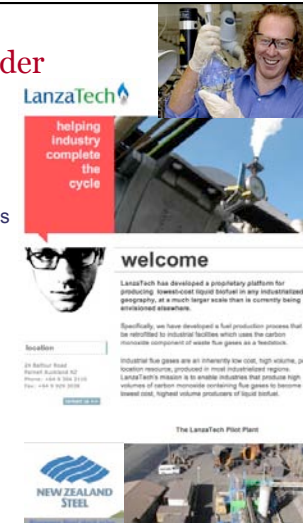


China produced 22m electric bikes last year



LanzaTech...clean tech leader

- Signed commercialisation agreements at the Expo with:
 - Chinese Academy of Sciences
 - Baosteel; next pilot plant in China
- Makes biofuel from industrial waste gases
 - Turns greenhouse gas liability into profit
 - World pioneer of the science
- Auckland-based; NZ Steel pilot plant
- Big venture capital backing
 - Latest round US\$18m
 - NZ: Stephen Tindall
 - US: Vinod Khosla
 - China: Qiming Ventures



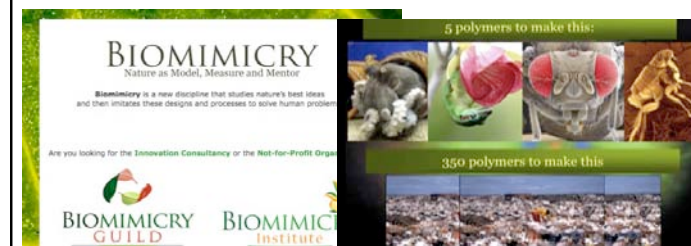
Re-conceiving...footprints

- Positive footprints
- ...the insight of Michael Braungart
 - www.braungart.com
- If we change our technology so our resource use benefits the ecosystem
- Then the more we consume...
 - ...the richer the environment
- Waste = food
- Four positive footprints:
 - Fabric of Airbus aircraft seats becomes compost for growing food
 - Formway's bio-plastic chair
 - Carbon positive farming
 - Ants vs. Humans
 - Positive role in ecosystem vs. negative...how do we make it positive?



Re-conceiving...biomimicry

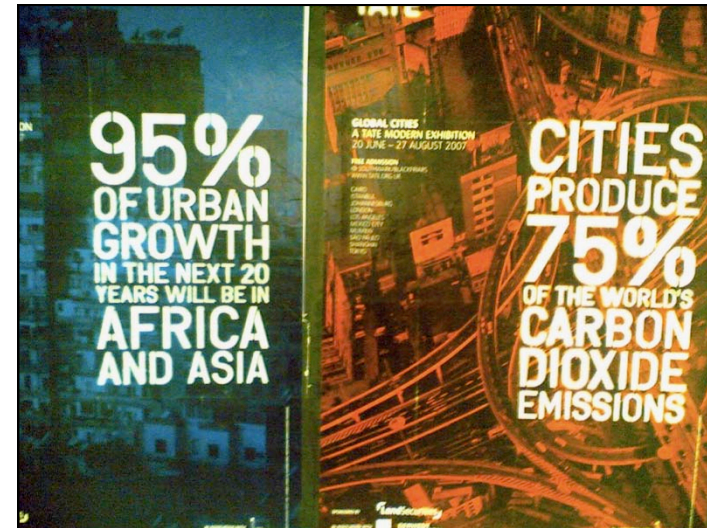
- Imitating nature
- ...the technology discipline pioneered by Janine Benyus
 - www.biomimicry.net
- Fans, propellers like nautilus shells
- Wire ropes as strong as spider webs...
- ...made in cold biochemical processes



Poverty

4. Complexity

Simplicity

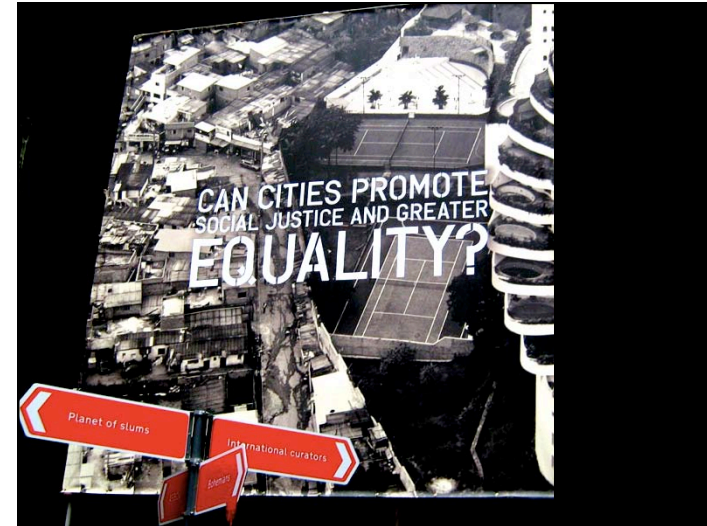
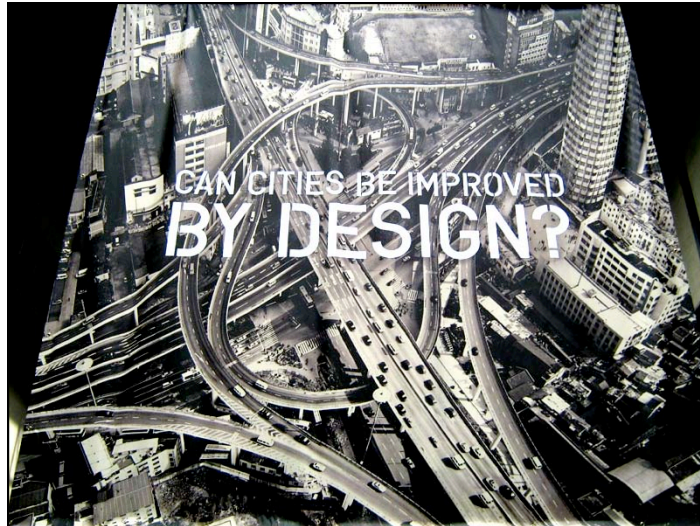


Paraisópolis Favela, Sao Paulo *Photo: Tuca Vieira*



Copan complex, Sao Paulo *Photo: Andreas Gursky*





Wealth

4. Simplicity

Complexity

Urban New Zealand

- As a nation, we largely define ourselves by our rural and wild parts
 - ...and we believe rural business underpins the national economy
- Yet, we're one of the most urbanised populations in the world
 - ...87% of us live in towns and cities
 - ...most people earn livings far removed from the rural economy
- Our urban places are in trouble....
 - ...their built environments are increasingly unsustainable
 - ...their economies anemic, inward looking
 - Christchurch pre-earthquake had a lot of marginal businesses, buildings
 - Auckland mainly serves only its own population
 - Wellington's tourism & events strategy earns little; public sector shrinking
 - Dunedin is slipping away
 - ...and every smaller town has its own story to tell, positives & negatives
- Challenge:
- Reinvent, reinvigorate our urban communities and economies

Poverty

5. Exploitation

Sustainability

Wealth

5. Sustainability

Exploitation

Our future

- NZ Land: 270,000 sq km
 - *Australia's 28x NZ*
- NZ Oceans: 5.8m sq km
 - *5th largest in the world*
 - *Australia's 1.4x NZ's*
- Huge responsibility:
 - ...to nurture
 - ...to use responsibly
 - ...to sustain us
 - ...we get \$184bn of ecosystem services for free
- We need new values, systems, learning, collaboration:
 - ...to be sustainable
 - ...to offer hope to the world



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Farmhand, by JK Baxter

You will see him light a cigarette
At the hall door careless, leaning back
Against the wall, or telling some old joke
To a friend, or looking out into the secret night.

But always his eyes turn
To the dance floor and the girls drifting like flowers
Before the music that tears
Slowly in his mind an old wound open.

His red sunburnt face and hairy hands
Were not made for dancing or love-making
But rather the earth wave breaking
To the plough, and crops slow-growing as his mind.

He has no girl to run her fingers through
His sandy hair, and giggle at his side
When Sunday couples walk. Instead
He has his awkward hopes, his envious dreams to yarn to.

But ah in harvest watch him
Forking stooks, effortless and strong -
Or listening like a lover to the song
Clear, without fault, of a new tractor engine



...drawing on the best of the past...

...a new expression of ourselves

- In a world where one product, one country looks ever-more like others...
- ...we stand out for our innovative, practical, leading approaches to issues
- An example:
 - Our pavilion at the Shanghai World Expo last year was very distinctive
 - ...and in many lists of Top 10 "must see" pavilions
- Expo's theme: "Better City, Better Life"
 - China investing in new technology, materials, energy sources so many more people can enjoy higher living standards
 - Our pavilion featured NZ's very distinctive urban lifestyle
- In these sorts of ways, we're starting to reap the same rewards from responding constructively to climate change



