

Buildings Economics and Society: why we need a new agenda for sustainability

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What's wrong with the sustainable buildings agenda?

“ Buildings are responsible for 50% of UK CO2 emissions and energy use”

Misleading

- 50% of UK emissions
- With external emissions - 40%
- Green house gases – 30%
- Total environmental impact – 15%??

Misleading

- What happens in buildings?
- Washing, cooking, work, leisure activities not necessarily anything to do with buildings
- Food – are buildings responsible for 95% of our food impact?

Wrong

- Buildings not responsible for anything. People are.

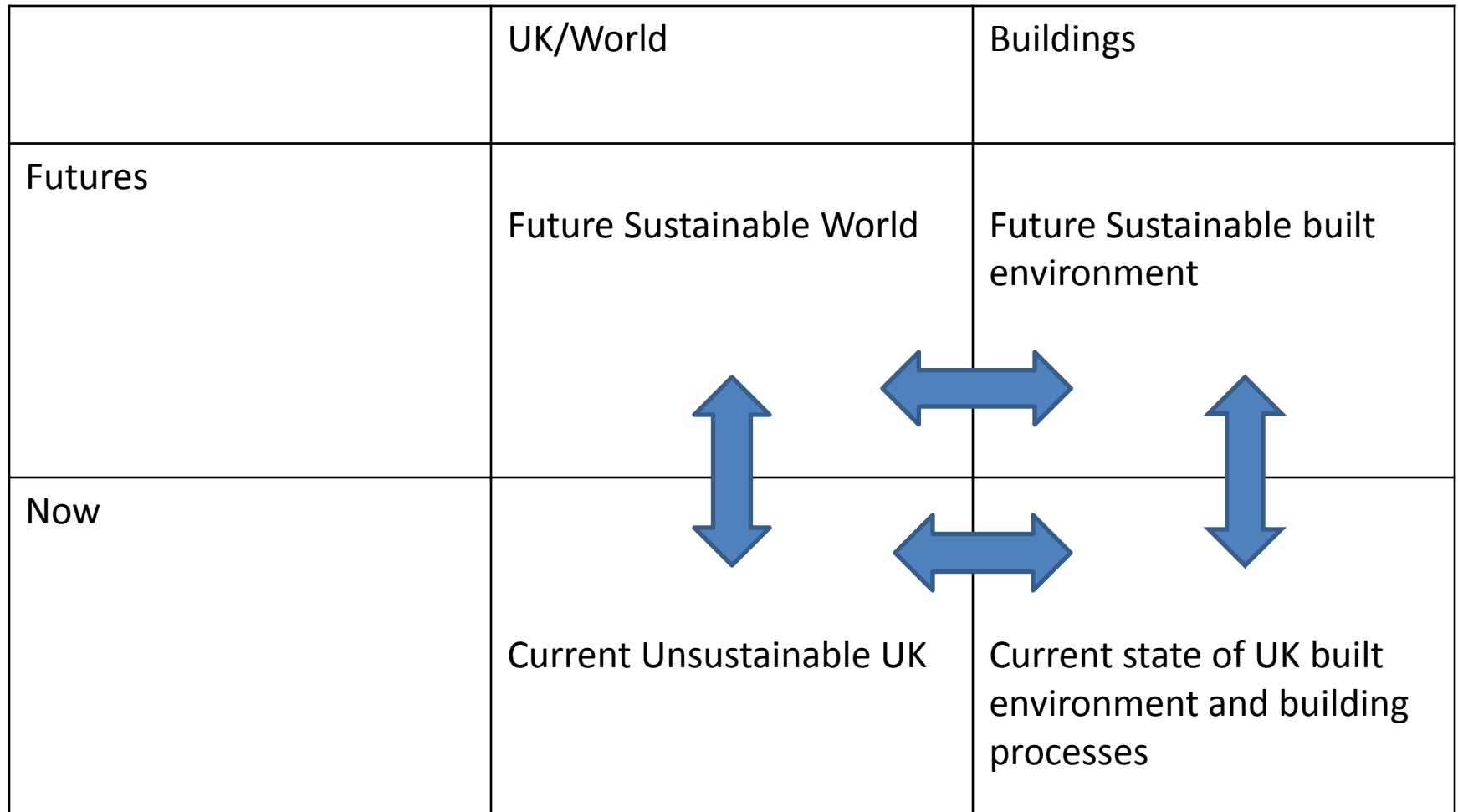
What does this show?

- Category errors
- Displacement from people to buildings - technical fixation
- Atomisation of understanding - lack of holistic approach

Consequences of wrong thinking

- Zero Carbon Homes policy
- Passivhaus fanatics
- Call for a “Manhattan Project” for buildings
- Technical fix addiction
- Headless chickens

We need to get out more



Prosperity without Growth by Tim Jackson

- Economic (GDP) growth and environmental sustainability are incompatible
- Growth supposedly required for social stability, prosperity and to bring poorer nations out of poverty
- However growth is destroying the environment which is also necessary for the same things

Ehrlich Equation

- $I = P \times A \times T$

Impact = Population x Affluence (ie income) x
Technological intensity (of economic output)

Carbon Dioxide calculations

- $I = P \times A \times T$
- Carbon impact =
Population \times \$/person \times gCO₂/\$

1990:

$$5.3b \times 4700 \times 860 = 21.7b \text{ tonnes CO}_2$$

2007

$$6.6b \times 5900 \times 770 = 30b \text{ tonnes CO}_2$$

Carbon Dioxide Calculations

- Population forecast to grow at 0.7% pa
- Income (in real terms) growing 1.4% pa
- Carbon intensity reducing by 0.7% pa
- at this rate, by 2050 - 80% ***increase*** in CO₂

Carbon Dioxide Calculations

- To achieve 450ppm CO₂ stabilisation by 2050 we need to get emissions down to 4bn by 2050. This means annual av reduction of 4.9%
- For this to be achieved with same population and income growth we need to improve carbon intensity (T) by 7% pa - ie 10 times the current rate, so that in 2050 $T = 40\text{gCO}_2/\$$ compared 770g now ie 21 times less

Carbon Dioxide Calculations

- This is still a deeply unequal world.
- To raise everyone to western standards (which also keeps expanding at forecast rates) world economy would need to grow 15 times between now and 2050 and carbon intensity would have to fall by 11% pa to 6gCO₂/kg by 2050 – ie 130 times less than now, from this year.

The end of the Stern illusion

- Stern calculates costs of stabilising at 550ppm at “around 1% of global GDP”
- Revised to 500ppm at a cost of 2% GDP. PWC calculate 3% - ie wipe out growth!
- Dieter Helm - shows that achieving this requires massive transfer of funds now to China and India by West. Furthermore no costs in Stern for mitigation and adaptation – “the easy compatibility between economic growth and climate change, which lies at the heart of the Stern Report, is an illusion”

The requirements of GDP growth

- A requirement to continually reduce costs and increase output
- The need for “Creative Destruction”
- Increasing rate of change of technologies
- Increased “labour productivity”
- Culture of consumerism to ensure demand remains high

The myth of de-coupling

- Relative and absolute de-coupling
- Efficiency – “efficiency quite literally drives growth forward” – saved money spent on other stuff – rebound effect or even backfire
- Non material economy (“angelised”) – not possible for more than a small part of economy. Also has its own material costs – possibly as much as material economy

Absolute failure

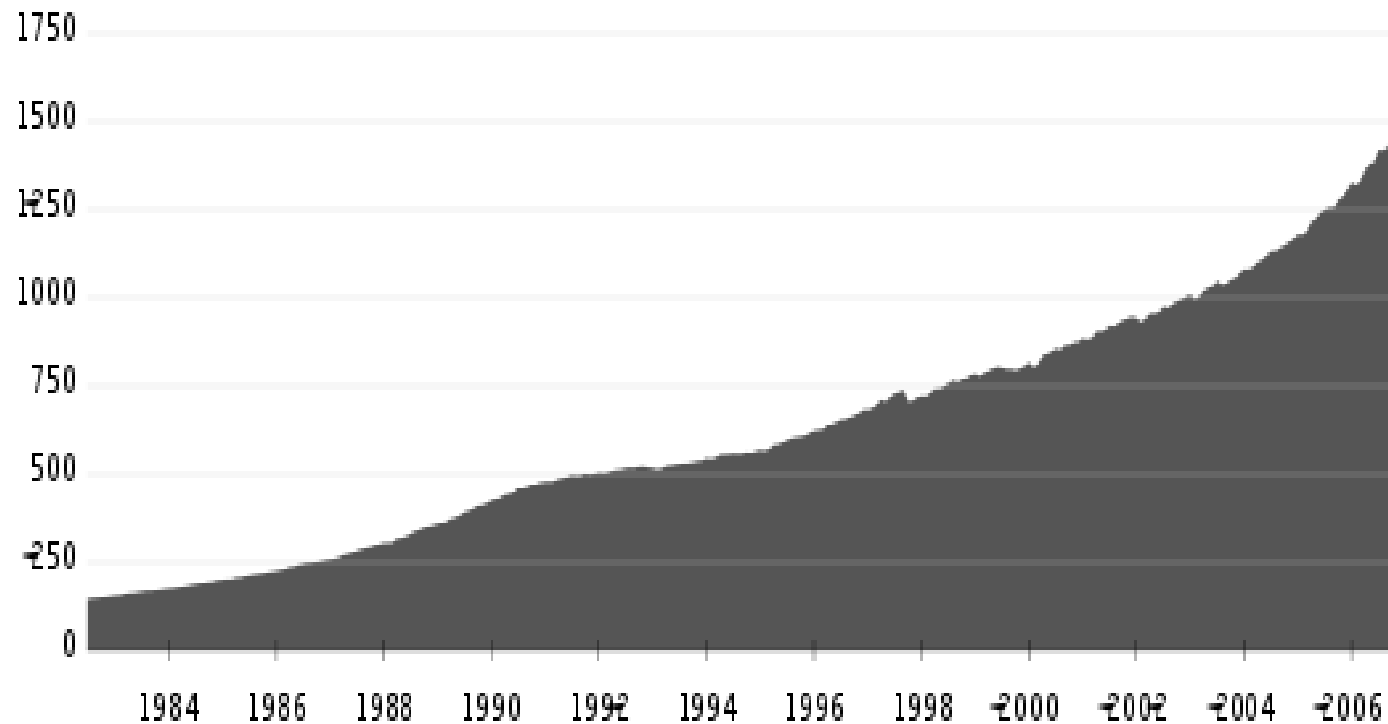
- While globally, “energy intensity” has decreased by 33% since 1970, and carbon intensity by more than this, CO2 emissions are 80% higher. Since 2000 growing by 3% per year.
- In resources of metals since 1990, there is not even any relative decoupling compared to GDP. Primary metal extraction is growing faster than global GDP

Economics -Jackson

- Develop ecological macro-economics, which take account of social and natural capital and which is not based on financial growth.
- Green new deal investment
- Transition to more service based activities (de-coupled!)
- Working time policy as stabilising mechanism

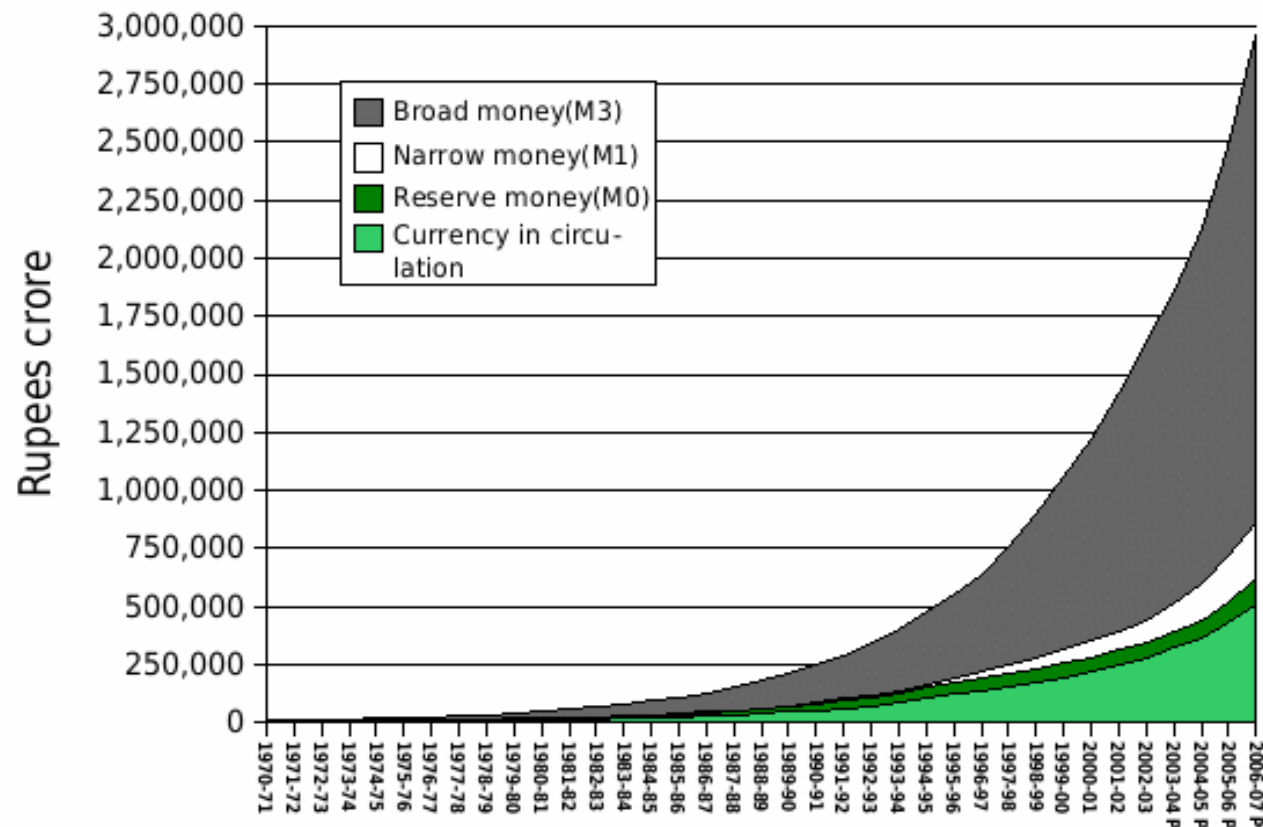
Economics - Douthwaite

- Problem is more basic – its money, stupid



India

Components of the money supply of India 1970-2007



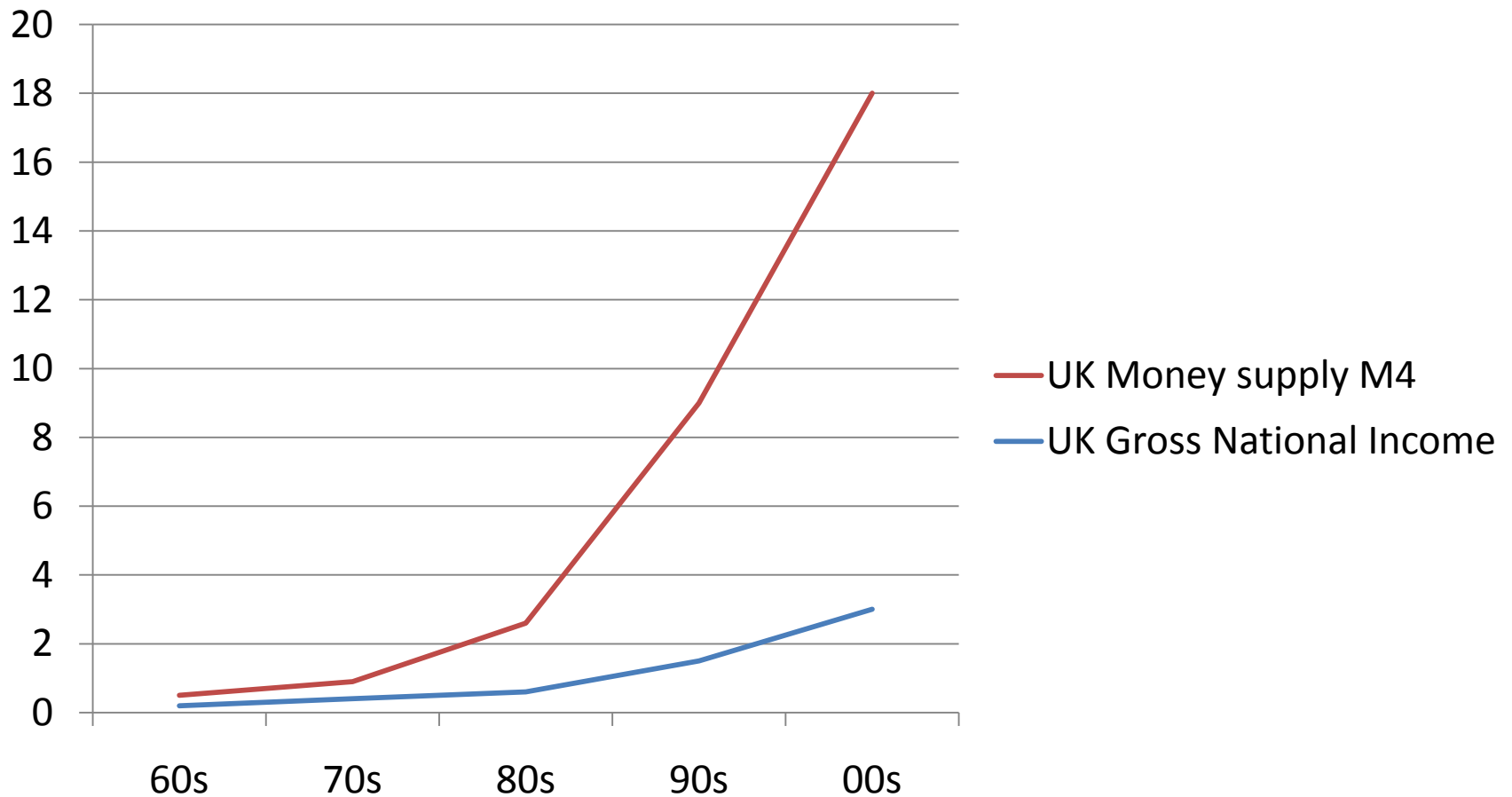
Where did the money come from?

- 3% from Government; 97% from Banks (compared with 16% and 84% in 1971)
- Mainly based on house mortgages

	1963	1980	1996
Personal (mortgages)	£4.4	£46.6	£483
Commercial	£3.4	£26.5	£160
Financial	£0.4	£7.3	£145
Total	£8.2	£80.4	£788

- Now total debt is £1500 bn = total money

Bank created money



The Grip of Death (Mortgage)

- Debt based money/ economy
- Requires continual growth
- Drives efficiencies : “labour productivity” ie exploitation
- Drives inequality
- Drives environmental impact
- At same time less outright ownership of houses than in 1960 and more owed to banks

Douthwaite's solution

- Need different kinds of money
 - Commercial
 - People (WIR, LETS)
 - Government (National and Regional)
- Need international currency based on environmental impact – new gold standard but using carbon – using money as a constraint (part of C & C process).

Is it all about money?

- Money is about (dis)connection and trust
- Pluralistic solution reflects plural relationships
- Is economics a driver or a reflection/ outcome of social forces? – what drives growth?

Sustainable Building

- Is it addressing these issues?
- Is it part of a solution or part of the problem?
 - Prince's Foundation work
 - (Eco) building work generally – current German housing boom

Vales assessment of UK Housing Impact

	1971	2007	% change
Population	55million	61million	+9%
Dwellings	19.25 million	26.65 million	+38%
Overall domestic energy consumption	1490.5 PJ	1854.7PJ	+24.4%
Av consumption per dwelling	77.4GJ	69.6GJ	-10.1%
Av size of dwelling	85m2	76m2	-10.6%

Vales assessment

	1971	2007	% change
Space heating	870.9 PJ	1042 PJ	+19.8
Hot water	410.3 PJ	473.1 PJ	+15.3
Lights and appliances	117.2 PJ	284.7 PJ	+142.9
Cooking	92.1 PJ	54.4 PJ	-40.9
Total	1490.5 PJ	1854.7PJ	+24.4

Vales assessment

- Situation has got worse in past 20 years – 19% rise in energy use for 4% rise in population
- Single households increased by 10% in same period.
- Impact is due to social structural change (more smaller households) and human behavioural change (more appliances, less time to cook)

What about a radical approach to energy in homes?

- If all new homes autonomous since 1971 (5.4GJ per house)
- If all existing stock retrofitted to same as a 2007 house (69.59) a reduction of 10% on 1971
- Total energy reduction would be only 7% compared with 1971 on whole stock
- Vales – “the intractability of the problem”

Vales' Critique

- Efficiency approach versus systems approach – Autonomous house is not efficient house!
- Efficiency leads to take back (even back fire!) – examples such as conservatories, Warm Front programme etc.
- Systems is about constraints and learning. It is about holism. Efficiency can increase alienation.
- “What is essential now is to concentrate on household behaviour, not just the building”

Jackson on social logic of consumerism

- What are things for?
 - Need
 - Gift
 - Identity
 - Pleasure
- Things and the self – the problem when things start replacing relationships or non-material meaning – “the empty self”

Too much stuff

- No increase in happiness in richer countries
- Loss of community
- Loss of time/ space
- Reduction of value and relationships to money
- Alienation of people from others, from work, from natural environment.
- Addiction
- Part of what has happened in the past 50 years

Deep Ecology viewpoint

- It's a cultural problem
- Problem of atomisation
- Problem of technocracies – “spaceship earth”
Brave New World
- Need for wilderness for our relationship with nature – reciprocal not controlling.
- Relationship to nature, language, self

Arno Naess

- The problem of the wood
- Vedanta Mining
- The re-establishment of the Sacred
- Gestalt ontology
- The need for pluralism of self

Faustus

- Lack of constraints
- Loss of relationships of reciprocity
- Loss of our souls
- Loss of our lives

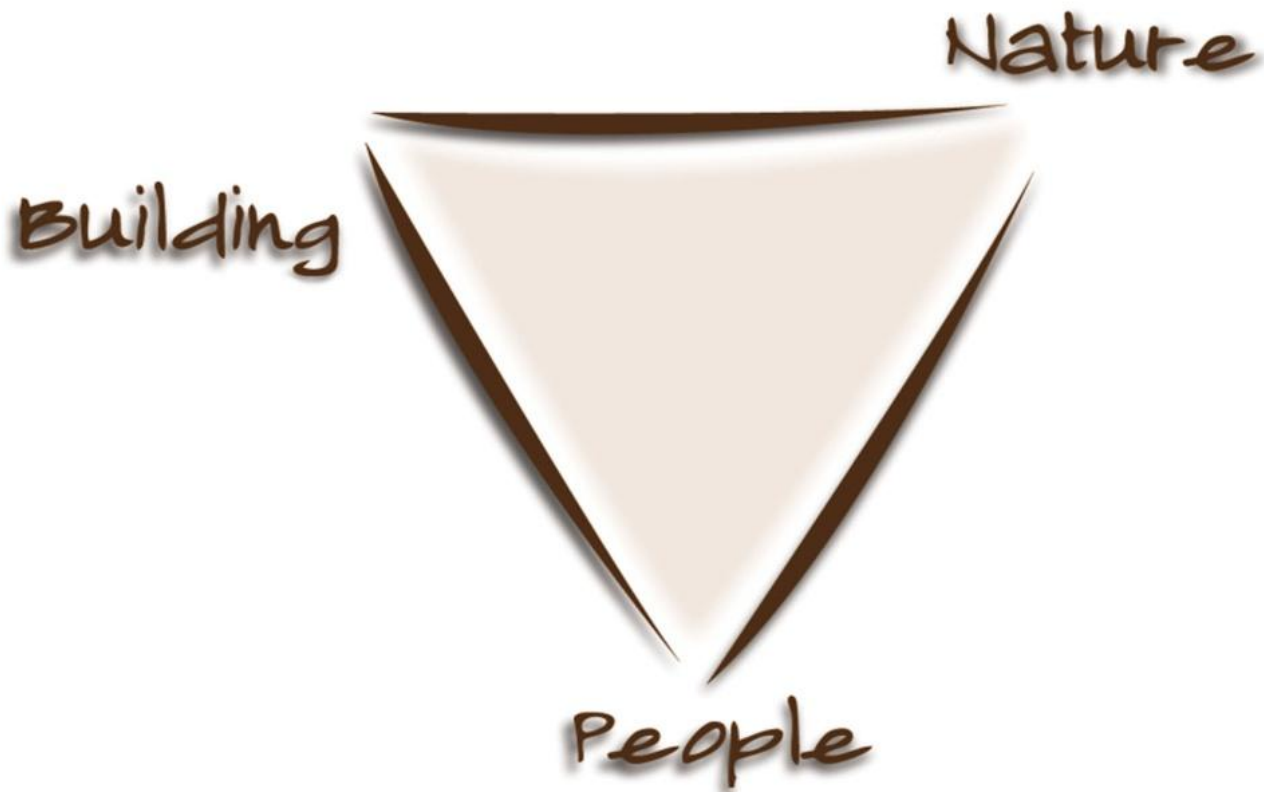
Loss of constraints in history

- State/ rich (social)
- Energy (environmental)
- Money (economic)

Natural constraints

- Illness
- Death
- Ecological limits
- A last chance for Faustus

How does what we do relate?



Vales on Systems approach

“From the evidence presented above, the path of systems thinking could have produced a significant reduction in energy demand. This is because it would have led to the promotion not just of alternative buildings, but of alternative values within society.”

The great opportunity

- Building (and assessing building) as a raw interface with material culture
- 10% of workforce involved
- Still UK based and controlled (mainly)
- One Brighton
- Coed Darcy

Where to now?

- Re-assessment of direction. Need to understand context. Need a different language.
- Re-establish constraints. Away from technical fixes to human engagement and re-establishment of relationship with nature through building design, materials and relationship to natural environment. Micro anyone?
- Exploration of new economic models
- Creation of space for self: Working time practice, design, finance, friendship.

Happy 21st Anniversary, AECB!

References

- Tim Jackson – Prosperity without Growth – free download
http://www.sd-commission.org.uk/file_download.php?target=/publications/downloads/prosperity_without_growth_report.pdf
- Richard Douthwaite - The Ecology of Money (also see <http://www.feasta.org/money.htm>)
- The Grip of Death by Michael Rowbotham
- Brenda and Robert Vale: Domestic energy use, lifestyles and POE: past lessons for current problems – free download
<http://www.informaworld.com/smpp/section?content=a926278617&fulltext=713240928>