

## **Edge Comfort Debate – 28<sup>th</sup> October 2008**

**Stuart Wheeler** (Head of Public Diplomacy at Canada House)

Thanks to Yasmin Shareef (of Dennis Sharp) for connecting Canada House to the Edge for this event and beyond, to our series of climate change talks.

Thanks to Richard Lorch and Robin Nicholson for organising the event.

It was great to have the Vancouverism event at Canada House – challenges of how we live together, how our lives connect with the cities we live in. Canada believes strongly in placing sustainable development at the centre of our debates.

5 member countries of Royal Geographic Society have an exhibition here at Canada House

**Simon Foxell (the Edge)**

Thank you Canada House for hosting this event and the next one, on 12<sup>th</sup> November, called the “80:20 Debate”.

Tonight I’m very pleased to introduce David Strong.

- 98-2007 – Chief Executive, BRE
- 2007-present – Chief Executive, Inbuilt
- Visiting Professor from the School of Built Environment at Nottingham

**David Strong (Inbuilt)**

Welcome everyone to our debate, *Are you dwelling comfortably? The need to redefine comfort in buildings.*

Not just talking about dwellings, despite the title. When we talk about comfort we should also be talking about health and well-being as well.

Comfort is a very important part of the sustainability debate although it is in danger of being forgotten in the midst of agendas that are being pushed more vociferously.

There are 4 speakers this evening who have 10 minutes each. The purpose this evening is not only to hear from the speakers but also from you, the floor.

Chatham House rules prevail here and I hope that the journalists in the audience will respect that.

Richard...

**Richard Lorch (RBRI)**

What started the idea of this evening off was a special issue of BRI that came out earlier this year, *Comfort in a low carbon society*. What I'd like to do tonight is raise some of the important issues that came out of this special issue.

The 'carbon challenge' in the UK: all new homes to be zero carbon by 2016.

Climate change to date: the indoor environment has seen the biggest range of temperatures. Most people tolerate a narrower range of temperatures and reject traditional ways of feeling more comfortable in the warmer temperatures, e.g.

How do we alter the inhabitants' expectations of comfort and what we do about that? A less consumerist view of comfort.

Multiplier effect: halve the demand, double the efficiency and

So the challenge for the building stock is how do you expand the range of indoor temperatures that are acceptable?

Technological efficiencies are not the panacea that people think. There is a so-called 'revenge effect' where increased efficiencies inadvertently justify and legitimise continued / increased use of heating and cooling devices, albeit more efficient ones.

There has been a long debate about comfort. According to some researchers (e.g. Fanger) comfort is physiological. Others claim it is a socially negotiable concept. In 1973, Humphreys and Nichol wrote about 'free running' buildings and comfort as 'part of a self-regulating control system'.

Comfort is a combination of physiological and psychological influences.

Myths about comfort: is productivity maximised in a 'perfect environment'? What do organisations and people want? Is everyone comfortable within the same range of temperatures? Is homogenous comfort necessary?

For the construction and property sectors, we need to provide a positive message about comfort. We need to give people the opportunity to be active in their environments. We need to educate people about what are acceptable and unacceptable behaviours. We need to examine again value and influence markets.

For policy makers, we need to initiate the debate & admit the scale of the challenge. We need to examine the potential for creating / enlarging the non-standard indoor conditions: seasonal variations. We need to adapt codes, standards & voluntary assessments to account for energy consumption AND comfort range. We need alternatives for reducing vulnerability.

### **Michael Kelly (CLG)**

We are net importer of energy. The climate change data is in. We live in a 3planet society in the UK. Even if you're a sceptic of one, the other 2 will drive you.

Most of our housing stock is old. 62% of homes were built before 1956 and 35% before 1939. We have a very large proportion of private ownership.

In 1990, there was 154MTCO<sub>2</sub> (35% of energy saving interventions were already installed) In 2005 it went down 4% to 147MTCO<sub>2</sub> (65% of energy saving interventions were already installed).

We must achieve savings at six times the rate of recent history.

Whatever is done to the fabric it's only part of the story. Energy consumption is dependent on lifestyle too. Only half the problem is the engineering, the other half is the way we live.

Beijing study: By using AC when temperatures reached 29°C and then turning it off when they got down to 26°C they managed to halve energy consumption. By doing additional things such as opening windows and using the space only part of the time, they were able to bring down the cooling energy by a further 75%.

Scale is the essential ingredient. Get the HE/FE sector to show us the way. Produce a concrete trajectory from 2010 to 2050 for an urban local authority (Most of the people in local government are firing at everything on the horizon that is linked to sustainable development.) Start up a retrofit consortium.

Should we be concentrating on the high street?

Announcement from CLG last week, we're changing the internal accepted temperature range. Moving from 22°C ±1°C all year to 23°C ±2°C in summer and 21°C ±2°C in winter.

### **Philip Parnell (Drivers & Jonas)**

Comfort is a core strand of sustainability. The government's . To mind that equals comfort. Making that value connection is about knowing your market. Knowing that the investor, owner-occupiers.

Tishman & Speyer – a major investor in commercial property – equate comfort with sustainability: “Every day, in 30 cities, in 11 countries, on 5 continents, we are making it possible for more than one million human beings to live, work, and breathe in our buildings. This is why we care so deeply about sustainable development.”

Valuer's role is wider than scorekeeping. We provide commentary on risks to value. We are a 'sounding-board' for clients. We look at worth appraisals and carry out due diligence.

Sustainability is all about reducing risk, which makes it all the pertinent now in the current market conditions. Non-sustainable stock will depreciate at a faster rate than sustainable stock.

Drivers Jonas produce a report for RICS on productivity, which is a

Thoughts on implications for valuers of Gordon's growth model. The value is rent divided by yield. And yield = risk free rate + risk premium (subject to adjustment due to building adaptability, etc.) – growth (subject to adjustment due to energy efficiency, waste and water consumption, etc.)+ depreciation (subject to adjustment due to build quality, accessibility, etc.).

These are changing times in the real estate market. I hope my valuers learn from the sustainable development debate as much as I am. Don't just point the finger at valuers. They are duty-bound to reflect the market conditions, not lead it. Valuation methodology is evolving all the time.

## **Bill Bordass (Usable Buildings Trust, Bill Bordass Associates)**

Can we make good enough better than just right?

“What we’ve got used to, we’re not entitled to.” Rodd Bunn

“Evening out fluctuations has become an egalitarian enterprise which it is heresy to question.”, Michael Young, The Metronomic Society (1988).

Comfort in context on a simplified scale:

1. - Medical problems (e.g. heat stress, frostbite)
2. - Discomfort and stress (too much of a good thing)
3. + Delight (exhilarating differences: theatre, holiday)
4. + Comfortably unbalanced (e.g. comfortably warm or cool)
5. +- Neutral (comfortable) - sensory deprivation?
6. +- Slightly uncomfortable (boiled frog)
7. - CRISIS OF DISCOMFORT (comes sooner with no control)
8. - Irritably uncomfortable
9. - Increasing discomfort, until ...
10. - Medical problems (e.g. heat stroke, hypothermia)

Going away from neutral can be better if you don’t push it too hard.

You need to be able to provide opportunities for occupants to avoid crises of discomfort:

- Adjust a passive system (windows, blinds etc).
- Adjust M&E services (central, local or task).
- Contact the facilities manager (rapid response needed).
- Adjust posture, clothing, activity etc.
- Move about, or go somewhere else
- Eat or drink (hot or cold), take a shower

The conditions of the building are less important if you can control them and adapt. People are much more tolerant of places where you can open the windows even in situations that are measurably worse. More tolerant in fact than you’d predict from a laboratory-controlled experiment.

US studies have found that mixed-mode buildings were rated favourably by users. What seems to be happening is that US occupants have low expectations of their buildings so if you do a little for them e.g. offering them a mixed-mode building, they are more positive about the change than expected.

And in Australia too mixed mode services on-demand have proven very economic.

Looser control works and occupants report better conditions where:

- Design intent has been made clear to occupants, and where possible is intuitively obvious.

- Controls are clear to the user and manager, and give good feedback on what to do and what is happening.
- Facilities management is adequately resourced, respects users and responds rapidly and effectively to their needs.
- Default states are restored manually or automatically, to avoid unnecessary stress and/or energy waste.
- Organisations monitor performance in use, and make an effort to ensure that things are working and occupants are informed.

We need to encourage people to adapt. At a new Feilden Clegg Bradley designed building (Heelis), the building facilities manager says that they've told occupants not expect stable conditions.

### Questions

Michelle Shipman – I feel that with policy makers and building modellers, the focus has been on the building envelope. What we need is how do we create an environment where people comfortable? There's a phenomenon of 'disappearing doors' where homes' doors are being designed out and limiting users to keep heat in rooms.

Response from BB – modellers are getting better at modelling low energy than builders and designers are able to build and design a building.

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Mystery contribution: Clothing is negotiable. Done POEs in winter when a woman was wearing a dress. There is a lot that can be done on the clothing front, e.g. that wearing a coat indoors looks unprofessional.

In all of the efficiency measures that have been talked about the measure is usually in terms of 'per building' rather than 'per occupant'.

Response from DS – are we setting standards that are unhelpful and are valuers to blame?

Response from PP – choosing to fit AC or not comes down to a perception issue: the developer tends to take a view as to whether their occupants will value AC.

Response from BB – we don't have good metrics for the occupancy levels of buildings. The industry needs to come up with robust data for occupancy levels to be used in the benchmarking. Hopefully EPCs will bring in more data. The metrics are just too crude at the moment.

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Mystery contribution: What is the importance of the influence of others on our perception of comfort? AC can be taken a proxy for quality

Response from RL – Literature on how AC was sold to the US public as an indicator of quality. It's also changed in the States from having it one room, to the whole house, to the car, to the workplace. The marketing strategy was very effective in getting massive uptake and expectation for AC. See *Air-conditioning America* by Gail Cooper.

Response from MK – In Japan white goods manufacturers are making significant improvements in efficiencies.

There are some irreducible fundamentals of physics (e.g. 2<sup>nd</sup> law of thermodynamics) that can't be circumvented. Heating water is a factor of volume, change in temperature, etc. You can't escape the energy requirements.

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Chris Beaman – We are living in a world of much higher energy prices. What can we do to persuade landlords to make fabric improvements and take energy efficiency measures?

Response from MK – smart metering that taps into pricing structure, e.g. a meter that tells me how much I'll be charged if I used electricity in the next 5 minutes. i.e. how much is going to cost me to use a kettle at football half-time.

Response from PP – energy has a low cost compared to people costs so there is less incentive. There is a brand effect of being a low or high energy user. BBC is working to lower its energy consumption, for example, which is perceived more positively.

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Yasmin Shareef (Dennis Sharp Architects) –

Response from MK – building designs are Hanham Hall and other Carbon Challenge sites aren't that different from designs of any other building.

There is a shift in Whitehall in reaching the realisation that the existing stock needs to be tackled.

Heritage protection is given more importance than energy efficiency.

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Robyn Pender – We need to remember how to build well again, because I don't think we do.

Jeff West – Cotswold traditional homes were built for a low-carbon economy.

How do we persuade people to change their comfort tolerances? What other levers, other than price of energy, do we have available to us?

Response from Richard Saxon – a book called *Nudge* has some useful pointers. Get the building to look after itself more. People's decision-making is very easily led (we're so busy that we take mental shortcuts to make decisions).

Response from BB – we should get people closer to buildings and technologies. How can we persuade people? Make performance visible. Money won't do it – it's uneuitable and money will make them hurt in different ways. It needs to be a 'keeping up with the Jones' type approach. A lot of what we take to be human rights are actually very discretionary.

Response from MK – it's not beyond us to create a sea-change in perception of comfort (see changing attitudes to smoking, drink driving, driving without a seatbelt, etc). I think it's possible to get society to make a change.

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Response from DS – attitudes to seatbelts was probably brought about by legislation. Legislation on the existing stock is not forthcoming. At the moment politicians are spending a huge amount of time on consultations and select committees.

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Fergus Nichol – standards pervade everything we do in the built environment. A grade A building has to be designed to only have a 1°C fluctuation in internal temperatures. What about if the standard

changed so that a grade A building was one that required no energy to keep its occupants comfortable.

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David Shipworth – off record conversation with colleague from the States: much to his surprise those with BMS used more energy. He couldn't get it published because his funders weren't happy with his findings. Maybe we should look at resilience in buildings, where a building would be able to be run in arrange of different ways. It would mean that resilient homes would reduce the effects of fuel poverty. A resilient building would be able to handle more of the shocks of climate change. A resilient building will need less of back-up system. If we build our stock to be more resilient then we empower the user to drive the building in the way they want. There's a challenge to the architecture and design communities to get resilience back in buildings.

Response from BB – the prime examples of resilient buildings are old buildings. It's all about how they are being used. There is not the articulated demand (yet) for super low-energy equipment.

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Steve Wood – Is the issue of central power generation more important than the building use?

Response from MK – we still need to look at the way energy is being used in buildings.