ASCHB CONFERENCE

St Peter's, Vauxhall 1 April 2022

Lessons from built heritage in the climate emergency

Retrofit our buildings, or our brains?

CHANGING MINDSETS FOR THE CLIMATE EMERGENCY

Bill Bordass

www.usablebuildings.co.uk

Should we be resolving our problems,
or re-examining our premises?

"We can't solve problems
by using the same kind of thinking
we used when we created them"

Attributed to A EINSTEIN

"We are suffering from an attempt
to know our way into the future
instead of live our way"

W SHARPE

SOURCE: Bill Sharpe, *Three Horizons: the patterning of hope,* Triarchy Press (2020).

Places to intervene in a system
after Donella Meadows

Parameters, standards, targets etc.

HANG ON A MOMENT … WE NEED TO CHANGE THE GAME !

SOURCE: Adapted from Donella Meadows, *Places to intervene in a system,* Whole Earth (Winter 1997), *with help from Neil May.*

Places to intervene in a system
after Donella Meadows

CULTURE

1. The underlying **mindset or paradigm**. *But is it appropriate?*
2. What are the **goals**? *Who sets them? Are they realistic? Are there contradictions?*

POLICY/POLITICS

3. What **skills and resources** are likely to be needed? *Is the ambition realistic?* ***Is there scope for self-organisation?***
4. What **rules and constraints** emerge in the particular context? ***Who will set them?***

INFORMATION FLOWS

5. What are the required **information flows**? *How can they get **leverage** in the population?*
6. What are the **positive / 'virtuous' feedback processes**? *Promoting things that make significant improvements to the system.*
7. What are the **negative / 'vicious' feedback processes**? *Avoiding things that lead to chronic - and more seriously acute - failures.*
8. What are the **stocks** (people, energy, goods) **and flows** in the system? *Where are the **buffers, constraints and bottlenecks**?*

NUMBERS

9. Parameters, standards, targets etc.

So why does so much activity occur at Level 9, and not question the strategic context?

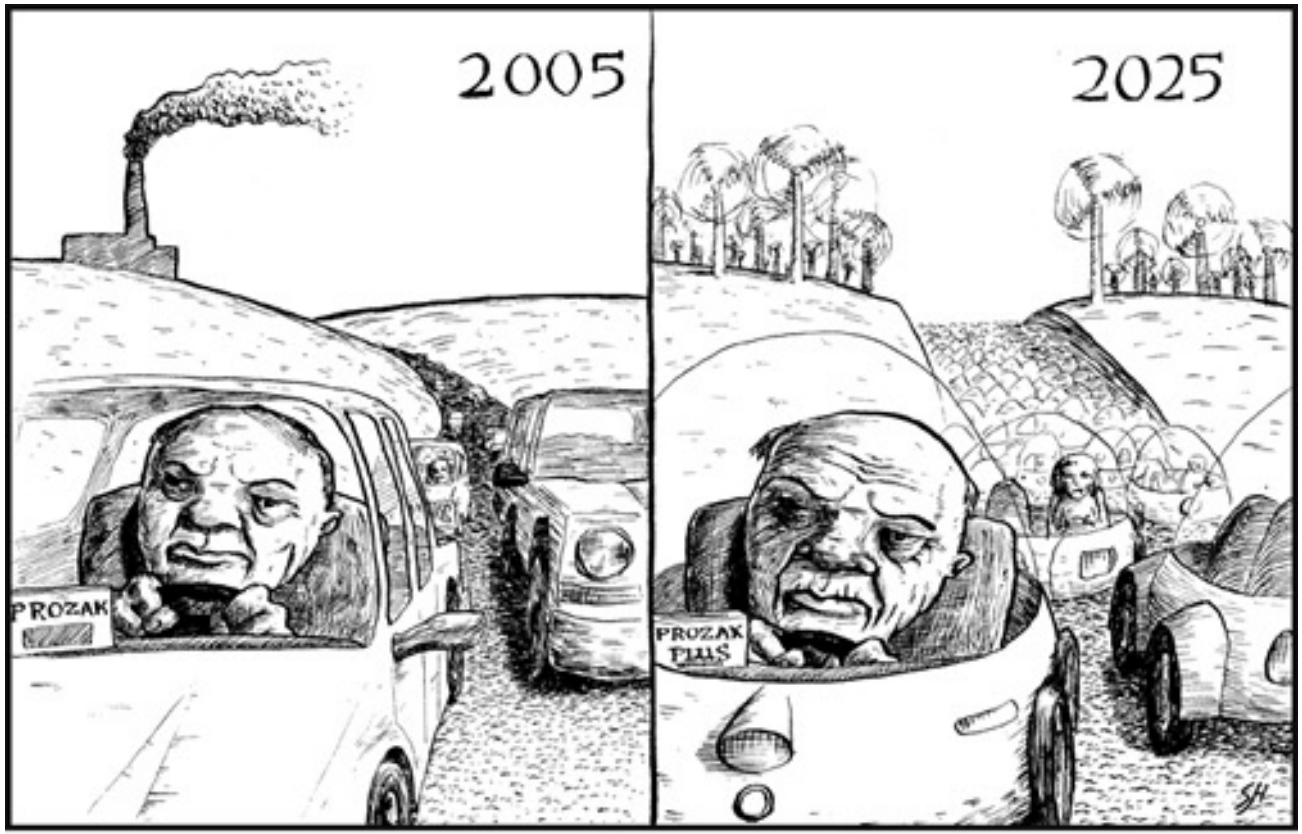
SOURCE: Adapted from Donella Meadows, *Places to intervene in a system,* Whole Earth (Winter 1997), *with help from Neil May.*

… not only easy, it's lucrative and it is right to be green
BORIS JOHNSON

CULTURE

1. The underlying **mindset or paradigm**. *But is it appropriate?*

"We have the ideas, we have the technology, we have the bankers, we have the corporations and the NGOs"



The technofixers' best-case scenario

From Johnson's speeches to the UN (22 Sep 2021) and opening CoP 26, Glasgow (1 Nov 2021)

FRAMING: People respond to Stories

Stories can alter radically … and then become taken for granted

OLDER STORIES *can persist, or revert*	**CURRENT STORIES** *C20-21*	**EMERGING STORIES ?** *Later C21*

Subject-Consumer-Citizen classification from: J Alexander & A Conrad, *Citizens,* Canbury Press, Kingston (2022).

FRAMING: People respond to Stories

Stories can alter radically … and then become taken for granted

OLDER STORIES *can persist, or revert*	**CURRENT STORIES** *C20-21*	**EMERGING STORIES ?** *Later C21*
SUBJECT *of a* *Chief, King, Pope, Dictator*	**CONSUMER** *I spend, therefore I am*	**CITIZEN** + COMMUNITY *both local and wider scales*
PRIESTHOODS *+ Guilds Professions Unions*	MARKETS: *Invisible Hand, or Corporate Takeover?*	COLLABORATIVES *with diverse skills*

Subject-Consumer-Citizen classification from: J Alexander & A Conrad, *Citizens,* Canbury Press, Kingston (2022).

FRAMING: People respond to Stories

Stories can alter radically … and then become taken for granted

OLDER STORIES *can persist, or revert*	**CURRENT STORIES** *C20-21*	**EMERGING STORIES ?** *Later C21*
SUBJECT *of a* *Chief, King, Pope, Dictator*	**CONSUMER** *I spend, therefore I am*	**CITIZEN** + COMMUNITY *both local and wider scales*
PRIESTHOODS *+ Guilds Professions Unions*	MARKETS: *Invisible Hand, or Corporate Takeover?*	COLLABORATIVES *with diverse skills*
KNOWLEDGE EDUCATION + TRAINING *Diverse routes*	ACCREDITATION*, but not necessarily education*	CONTINUOUS LEARNING *by working together*
BASIC RESEARCH *And on-the-job learning*	ACADEMIC RESEARCH *Distanced from practice*	REAL-WORLD RESEARCH *Connected with practice*

Subject-Consumer-Citizen classification from: J Alexander & A Conrad, *Citizens,* Canbury Press, Kingston (2022).

FRAMING: People respond to Stories

Stories can alter radically … and then become taken for granted

OLDER STORIES *can persist, or revert*	**CURRENT STORIES** *C20-21*	**EMERGING STORIES ?** *Later C21*
SUBJECT *of a* *Chief, King, Pope, Dictator*	**CONSUMER** *I spend, therefore I am*	**CITIZEN** + COMMUNITY *both local and wider scales*
PRIESTHOODS *+ Guilds Professions Unions*	MARKETS: *Invisible Hand, or Corporate Takeover?*	COLLABORATIVES *with diverse skills*
KNOWLEDGE		
EDUCATION + TRAINING *Diverse routes*	ACCREDITATION, *but not necessarily education*	CONTINUOUS LEARNING *by working together*
BASIC RESEARCH *And on-the-job learning*	ACADEMIC RESEARCH *Distanced from practice*	REAL-WORLD RESEARCH *Connected with practice*
BUILDINGS AND ENERGY		
BUILT TO LAST, Robust *With routine maintenance*	BUILT TO CONSUME *Demolish or retrofit old ones*	IMAGINATIVE RE-USE *Improving what we've got*
LOCAL WARMTH *& Thermoregulatory Fitness*	SPACE CONDITIONING *Commoditised comfort*	AVOIDING DISCOMFORT *by Thermal Adaptation*
ENERGY CONSERVATION *Husbanding resources*	ENERGY EFFICIENCY *But not necessarily saving*	ENERGY SUFFICIENCY *Living within our means*

Subject-Consumer-Citizen classification from: J Alexander & A Conrad, *Citizens,* Canbury Press, Kingston (2022).

Three examples of framing follow

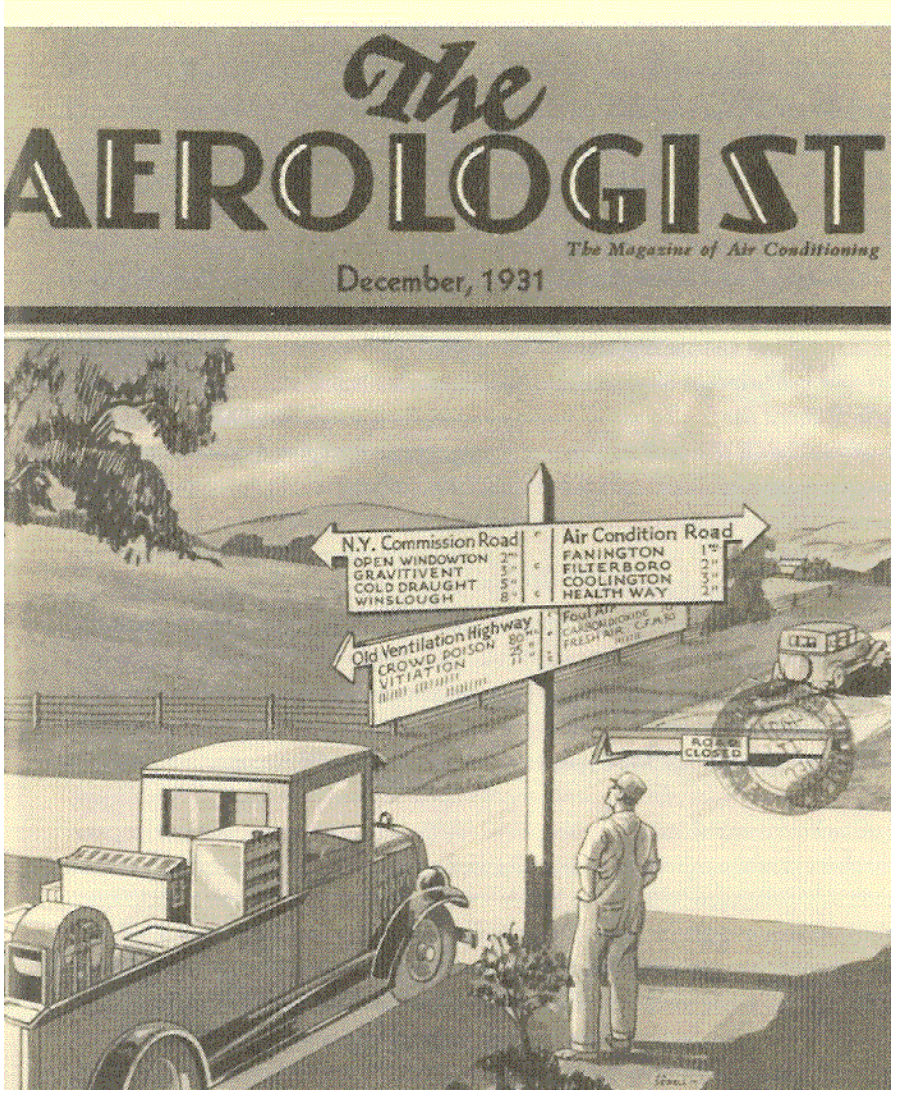
COMFORT

BUILDING AND ENERGY PERFORMANCE IN USE

RESEARCH

FRAMING comfort as controlled environment:

Making space conditioning into a marketable commodity



"In 1922, the New York State Commission … advocated natural ventilation … The engineering community seriously opposed …

"The Aerologist journal … argued physicians were stepping outside their [professional] boundaries.

"When natural climate was the ideal, mechanical systems were found wanting, but when quantitative standards … became the measure, natural climate was found wanting. When no town could deliver an ideal climate, all towns became potential markets."

SOURCE: G Cooper, *Air-conditioning America,* Johns Hopkins University Press (1998), pages 69-79 and cover illustration.

People first: Comfort standards are also *socially and culturally determined*

"If current understandings of comfort underpin escalating levels of energy demand, why persist with them?"

People's needs… have social histories of their own … The [mistaken] distinction between technology … and behaviour.

"Sociology … repeatedly demonstrates the extent to which things … 'script' what people do …

"[while] dominant paradigms remain … there are fewer references to non-technical barriers and more to sociotechnical change, and … practices not behaviours."

Late medieval Burgundian coats – finally warm enough!

Clothes like these would more than halve space heat demand:
Now to make them fashionable …

SOURCE: E Shove, *Why social theory is important for energy research and the built environment,* Buildings & Cities (14 Sep 2020).

They don't necessarily need to stay that way:
Ways to avoid discomfort without doing deep retrofits

Sarah Khan has already covered much of this ground, and shown some traditional fabric-related measures.

1. Review appropriate standards *and promote adaptive comfort*
2. Control draughts and radiant heat gains and losses
3. Wear suitable clothing
4. Consider local and personal heating and cooling devices
5. Have responsive user-friendly controls
6. Improve thermoregulatory fitness where practicable
7. Consider thermal refuges as a last resort – *both local and communal*

"He gets so dramatic when I lower the thermostat."

And they all save energy and carbon much faster than heavy capital investment

P C Vey cartoon from the New Yorker (1 April 2019).

So which frame might this have come from?

Current Story or Emerging Story?

"The opportunity for widespread behaviour change has been considered, with a cautious approach to expectations that occupants will be able to reduce thermostats without improvements to building fabric –

one of the supporting arguments for the fabric first* retrofit programme."

Net Zero Whole Life Carbon Roadmap

A Pathway to Net Zero for the UK Built Environment

* NOTE: this UK Green Building Council report (2021, page 24) also regards Fabric First as a "no regrets" strategy.

If you wanted to improve building performance in use, *what would you do …*

A. Focus on building performance in use?

OR

B. Do lots of other things and hope that performance will improve …?

Why have we been barking up the wrong tree?

Why has actual performance not been the target?

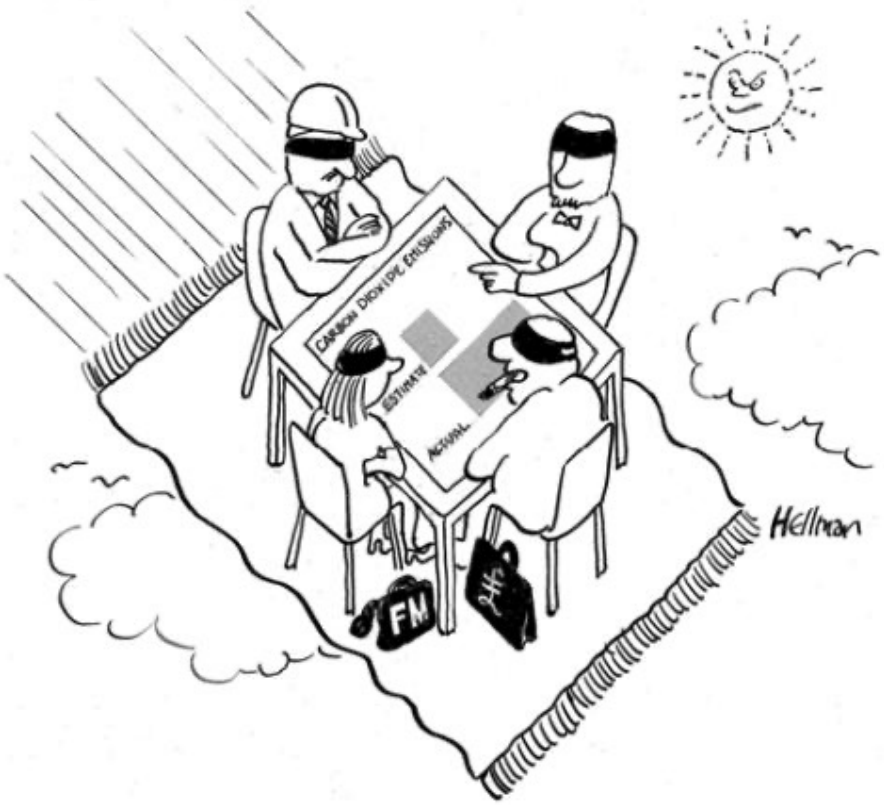
For most of the construction and property industry, *performance in use has been another country …*

"in theory, theory and practice are the same, in practice they aren't."
SANTA FE INSTITUTE

"Missing feedback is a common cause of system malfunction"
DONELLA MEADOWS

"designers seldom get feedback, and only notice problems when asked to investigate a failure."
ALASTAIR BLYTH
CRISP Commission 00/02

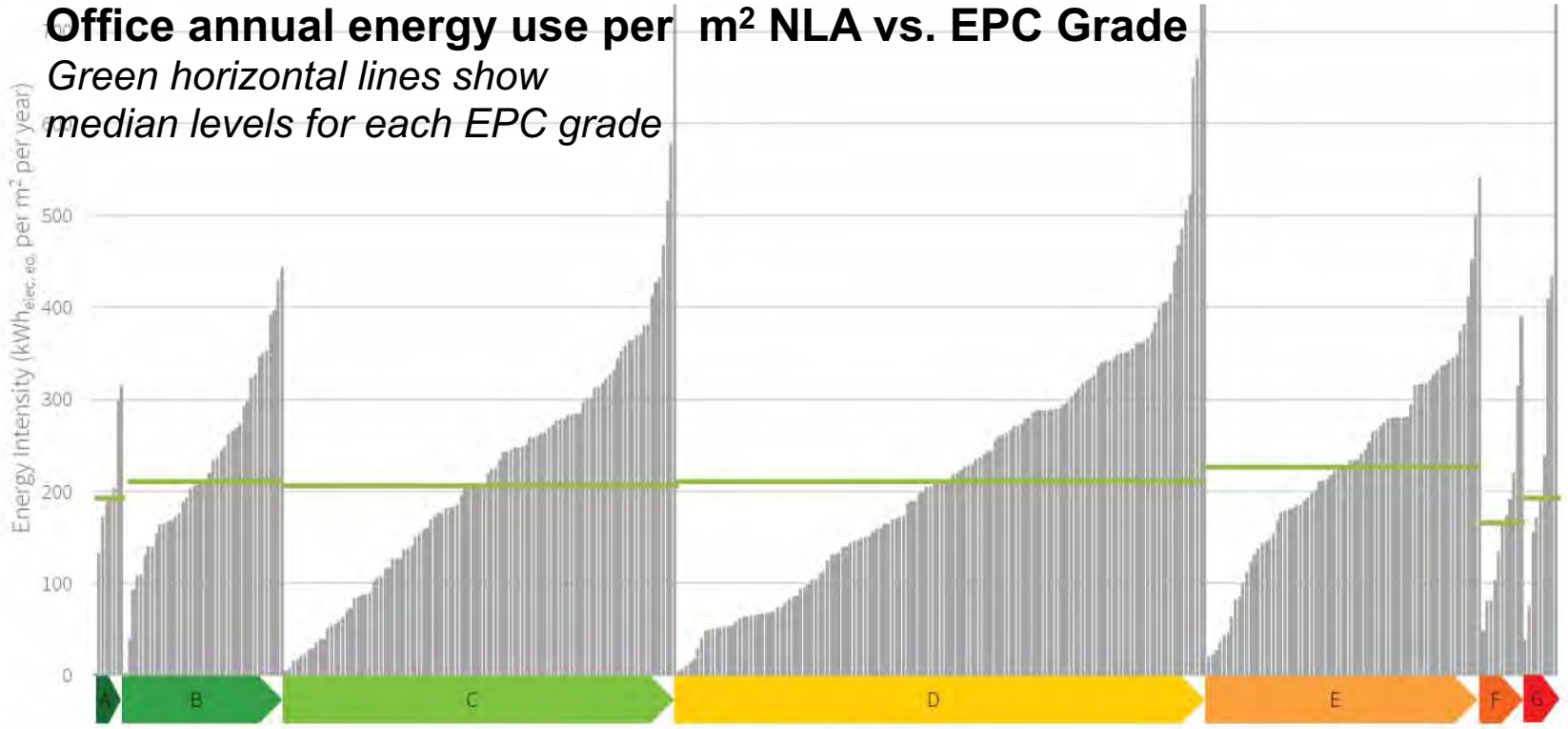
"I've seen many low-carbon designs, but hardly any low-carbon buildings"
ANDY SHEPPARD, Arup, 2009



SOURCE: Hellman cartoon for W Bordass, *Flying Blind,* Association for the Conservation of Energy & OXEAS (2001)

So how might EPCs have been framed?

More from the virtual world than the real one



SAP and domestic EPCs are only a little better … SO

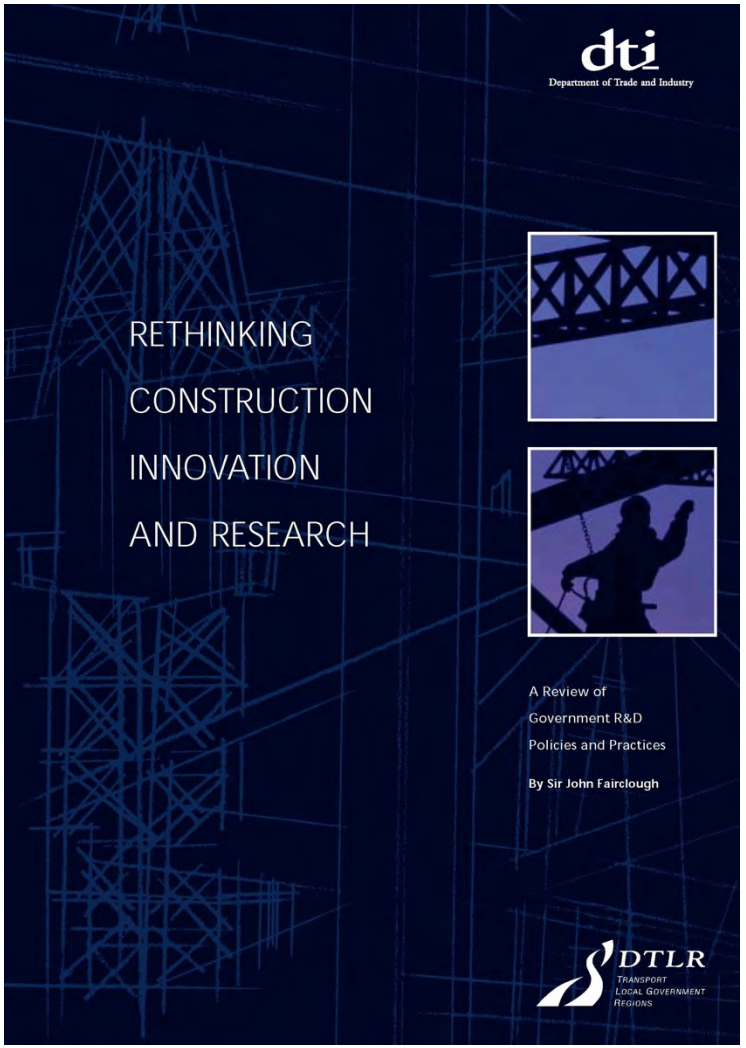
The MEES requirement for max C standard is wrongheaded

FOR MORE SEE: www.betterbuildingspartnership.co.uk/our-priorities/measuring-reporting/design-performance

UK buildings policy has always tended to focus on construction, *not performance in use*

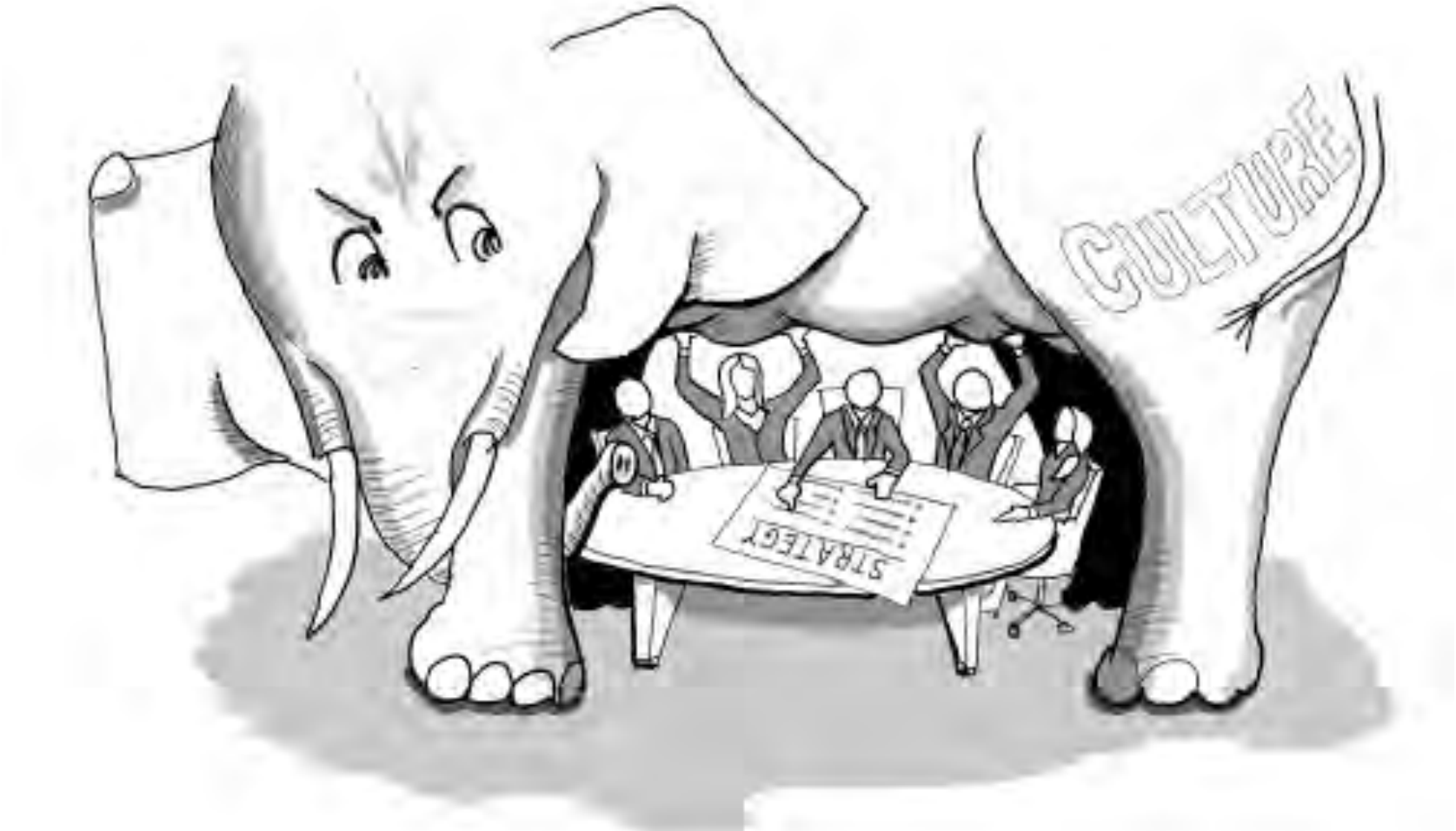
RETHINKING CONSTRUCTION

THE REPORT OF THE CONSTRUCTION TASK FORCE



REFERENCES: The Egan Report (DTI, 1998), the Fairclough Report (DTI and DTLR, 2002)

So the elephant isn't in the room,
IT IS THE ROOM!



WE HAVE A SYSTEMIC PROBLEM: Blindness to performance in use

It's not just construction, it's the way society has gone about things

SOURCE: Bruce Flye, 2012, www.bruceflye.com/concept-graphics/illustrations/4092610

Energy Performance of Buildings Directive (2002):

"The worst thing that ever happened" [A Moncaster]

BUT IT SAID *"The actual energy-performance situation should be taken into account to the extent possible"*

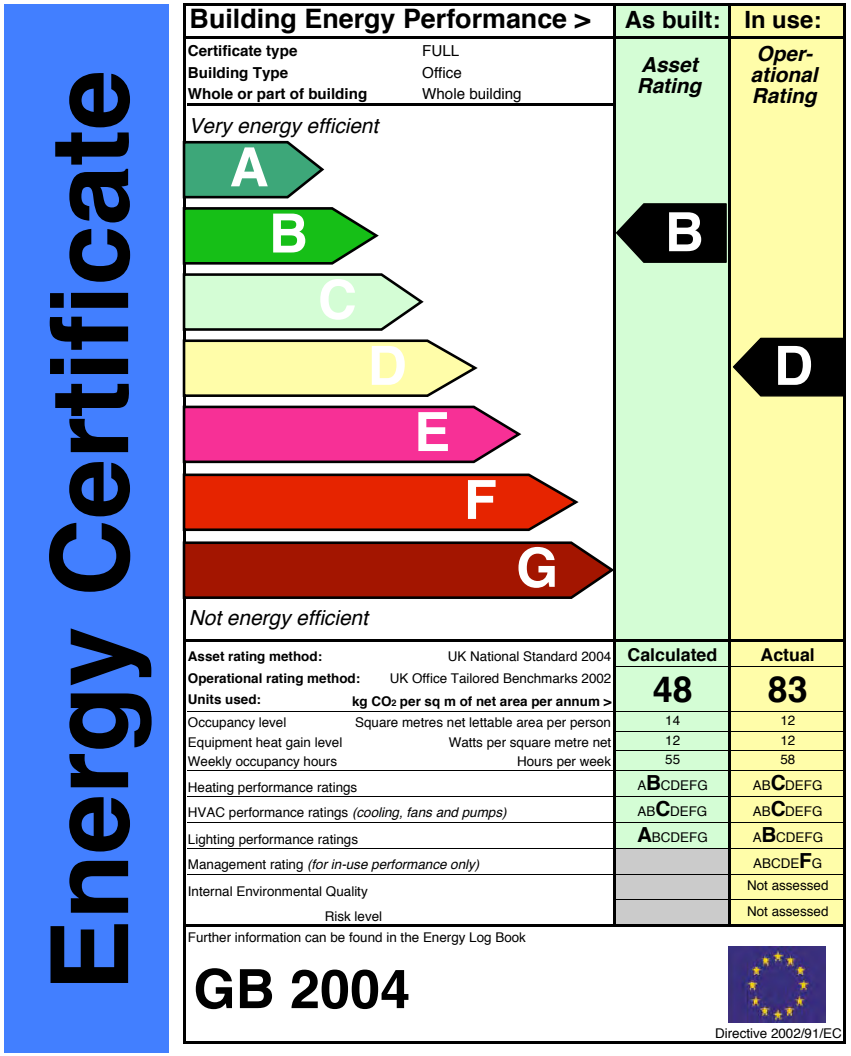
SO WE DID THIS >>>

BUT DCLG's consultant (a modeller) said:

Modelled and actual are like apples and oranges:

SO *we got EPCs + DECs,*

And DECs were neglected



W Bordass et al, *Energy efficiency in non-domestic buildings closing the credibility gap,* IEECB, Frankfurt (20-22 April 2004).

So how might one change the situation?

A paradigm shift with no paradigm to shift to

" The Old Story … is not functioning properly, and we have not yet learnt the New Story"

THOMAS BERRY

"… you keep pointing at the anomalies and failures of the old paradigm, you keep coming yourself, loudly and with assurance, from the new one, and you insert people with the new paradigm in places of visibility and power.

"You don't waste time with reactionaries; rather you work with active change agents and with the vast middle-ground of people who are open minded"

DONELLA MEADOWS

D Meadows, *Thinking in Systems: A Primer,* Chelsea Green Publishing, VT (2008), T Berry, *The New Story,* Teilhard Studies (1978).

Re-framing research to benefit practice:
Getting out of the virtual world and into the real one

Solving problems **NOT** Just gaining knowledge

Predicting effects **NOT** Just finding causes

Robust results, actionable factors **NOT** Just statistical relationships

Developing and testing services **NOT** Developing and testing theories

Field **NOT** Laboratory

Outside organisation **NOT** Research institution

Strict time and cost constraints **NOT** R&D environment

Researchers with wide-ranging skills **NOT** Highly specific skills

Multiple methods **NOT** Single method

Oriented to client **NOT** Oriented to academic peers

Viewed as dubious by some academics **NOT** High academic prestige

Large samples are not necessary, if you understand the context.

Case studies of individual buildings tell stories

and can establish hypotheses that can be tested elsewhere.

SOURCE: After H Robson, *Real-World Research.* Butterworth-Heinemann (1993 et seq). 5th Edition upcoming, Wiley (2022).

Back to today's subject …

Lessons from built heritage in the climate emergency

- Old buildings are sustainable – they've lasted
- They embody lots of things,
  including carbon and cultural significance
- They will always need to adapt to stay useful.
- There are ways of avoiding discomfort that limit space conditioning.
  Deep retrofits may be unnecessary; they can even be dangerous
- Policy and construction are poorly informed by outcomes.
- Building research often shuns the real, messy world: *it needs to get much closer to projects on the ground, and quicker to share insights.*

BUT:

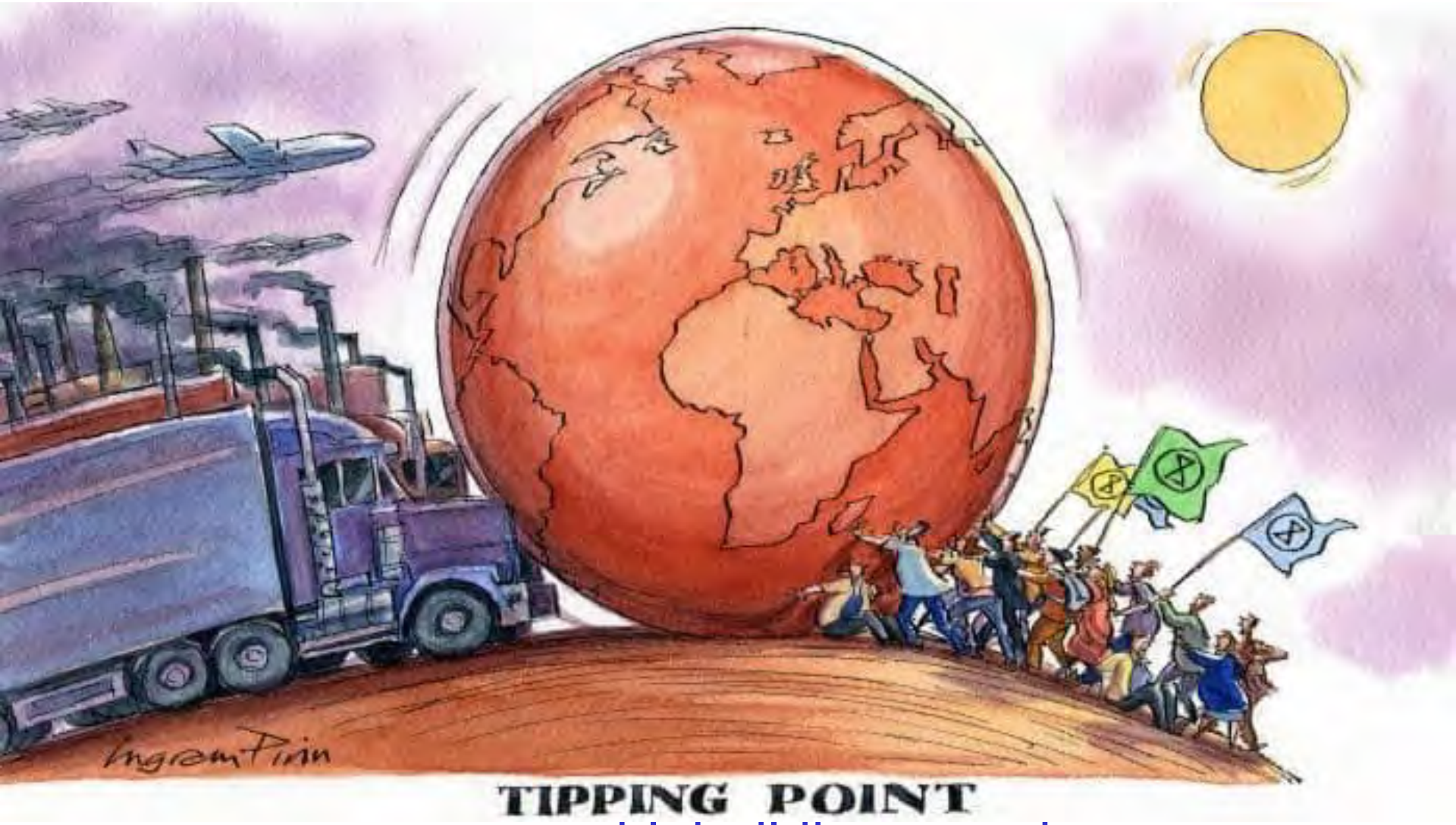
- **The heritage sector already knows and does many things that mainstream designers and the building industry don't touch:**
  Much scope for sharing knowledge and methods of working.

Some practical steps?
Starters for ten …

- Listen, share knowledge and experiences
- Work together, *collaborate across silos and populations.*
- Challenge the obsolescent Stories, and propose alternatives, *for example to the Consumer Story.*
- Demonstrate what can be done. *Involve academics in research and learning, and reflect on what is happening.*
- Collect review, and share the feedback, *warts and all.*
- Don't wait for top-down directives: *work from bottom-up and middle-out to help challenge mindsets at every level.*
- This is ultimately about learning by doing, *while helping to make the most of the buildings and places we've already got.*
- And it is more sustainable:
  More thought, more care, more skill, more satisfaction, less stuff …

See also: J Alexander & A Conrad, *Citizens,* Canbury Press, Kingston (2022).

Thank you **DISCUSSION**



www.usablebuildings.co.uk