Building performance in use: The great unknown?

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Structure of the talk

1. The great unknown?

1. Building in ignorance?

2. Doing better building-related projects.
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THE GREAT UNKNOWN?
Government has seen the Construction Industry as responsible for building performance
But most designers and builders know little about performance in use - they’re not paid to!

“in theory, theory and practice are the same, in practice they aren’t.”
A EINSTEIN

“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

Gaps in understanding are not solely for new buildings, e.g. Knowledge base for retrofit

SOME CONCLUSIONS

Industry and policy lack understanding of traditional building performance.

Poor connection between research intelligence and guidance procedures.

Significant uncertainty in application of models and software.

Some methods used are inappropriate.

A systemic approach is necessary to avoid unintended consequences.

There are good opportunities, but some need approaching in rather different ways from those currently advocated.

Feedback on building performance is in the public interest …

*but government has outsourced its feedback loops*

Some examples:
- Property Services Agency
- Central Electricity Research Laboratories
- British Gas Research Laboratories
- Research and technical units in Ministries
- Local government design and works departments
- Building Research Establishment
- Energy Efficiency Best Practice programme
- Partners in Innovation research programme - *but from 2010 we have had work by the Technology Strategy Board (renamed Innovate UK)*

*People and firms who specialise on work to traditional buildings tend to know rather more about building performance in use. But many that used to work almost exclusively on new buildings have also been entering the traditional buildings area.*
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 the construction industry, it’s the way we all go about things*

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BUILDING IN IGNORANCE?
Why haven’t we taken more account of the evidence under our noses?

“… unlike medicine, the professions in construction have not developed a tradition of practice-based user research …

Plentiful data about design performance are out there, in the field …

Our shame is that we don’t make anything like enough use of it”

FRANK DUFFY, past President RIBA

- Designers and builders cut the tape and run away.
- Government and institutions haven’t closed the feedback loop.
- To many people wants to bury bad news … or point the finger.
- Evidence from case studies has been dismissed as anecdotal.

Where is the institutional memory?
What happened to Rothschild’s intelligent government customer?

Case studies of new non-domestic buildings: 
What have we tended to find, for many years now?

They often perform less well than predicted, especially for energy and occupant satisfaction.

Design intent is seldom communicated clearly to users and operators.

Buildings are seldom tuned-up properly. Controls are often difficult to understand.

Unmanageable complication is the enemy of good performance.

Modern procurement systems make it difficult to pay attention to critical detail.

“The English spare no expense to get something on the cheap” … NIKOLAUS PEVSNER

SOURCE: For more information, go the Probe section of www.usablebuildings.co.uk
In spite of the warnings in the 1990s, complication has burgeoned in recent years

- Technical complication
- Legislative complication
- Contractual complication
- Bureaucratic complication
- Tick-box procedures: feature creep
- Complication for building users and managers

So less money to spend on basics

The complication disease has now spread to housing too!

AND NOTHING JOINS UP PROPERLY!

“Complexity is profitable, [it] makes people believe you understand it.”
JON DANIELSSON

So what can we trust?

BUILDING PHYSICS:  *Heat, air, moisture, energy*
- Do we understand it? Are we applying it correctly?
- Do we appreciate the risks?

ENVIRONMENTAL CONTROL SYSTEMS:
- Are they appropriate? Are they necessary? Will they be put in right?
- Were they considered as whole systems?
- Will they work? Will anyone understand them?
- What will they really cost to run? (*not just energy, but support*).

PEOPLE:  *Individuals, organisations*
- Are their needs accommodated (*e.g. in controls design*)?
- Do we understand what they are likely to do?

PROCUREMENT OF BUILDING WORK:
- Do we have the right skills and processes?
Existing buildings - our laboratories

• We can learn a lot quickly by finding out what is already happening, e.g. energy use, system reliability, ergonomics, the fabric, people, and how things are changed by interventions.

• Monitoring need not be complicated if you plan for it. You can learn a lot from a little, and go into more detail only where necessary. Much of the evidence is right under our noses.

• Performance is full of unexpected and unintended consequences, particularly when there is insufficient understanding of systemic performance, including socio-technical issues.

• The theories or assumptions we have been using can often be found wanting, sometimes by large margins.

• Case study research is often under-rated, while people ask for big statistics or theories of everything. These are delaying tactics.

SEE: B Flyvbjerg, Five misunderstandings about case study research, Qualitative Enquiry 12, 219-245 (2006),
3

DOING BETTER BUILDING-RELATED PROJECTS
Proposed strategic interventions: *with potential to snowball over time*

We need not just technical “solutions”, but cultural adaptations that can help to promote virtuous circles of continuous improvement.

1. **MAKE IN-USE PERFORMANCE CLEARLY VISIBLE**
   In ways that will motivate people to strive to improve it.

2. **BRING TOGETHER KNOWLEDGE AND UNDERSTANDING**
   Develop building performance as an independent knowledge domain, with the authority to inform clients, practice and policymaking: *AN INSTITUTE OF BUILDING PERFORMANCE?*

3. **REVIEW PROFESSIONAL ETHICS AND PRACTICES**
   Appeal to individual building-related professionals to work in the public interest and engage properly with outcomes: *NEW PROFESSIONALISM.*
Building projects: from inputs to outcomes

Getting started: the Five Ps

PEOPLE – Who you use
Leadership is key

PROCESS – What they do
Soft Landings can help teams to focus on outcomes

PRODUCT – What you get
Keep it as simple as possible (*but not more so*) and do it well

PERFORMANCE – How it really works
Need for understanding, fine tuning, reflection and feedback

PROFESSIONALISM – The broader view
Reaching the parts that rules and markets can’t.
The role of the building professional needs re-defining

• There’s a big job to do, *in making new and existing buildings more sustainable.*

• We’re short of money: *we can’t afford to spend it on the wrong things; needs better evidence.*

• Institutions require members to practise sustainable development: *surely this must mean evaluating outcomes?*

• We can’t change everything tomorrow … *but we can change our attitudes to what we do.*

• It’s not a question of whether we can afford to change *We can’t afford not to!*

• Current procurement systems are not fit for purpose: *we must do things very differently.*
Soft Landings can help to maintain the “golden thread” from client and design intent to reality

It augments the duties of the project team and client representatives), especially:

1. During the critical **briefing** stage.
2. Closer forecasting & **reality-checking** of predicted performance during design and construction.
3. Greater involvement of **users and operators, or their proxies**, with special attention to pre-handover.
4. **Aftercare**, with an on-site presence during settling-in.
5. **Monitoring** and review for the first three years in use.

**EACH STAGE HAS A CUSTOMISABLE WORKPLAN**

**It can run alongside ANY procurement process;** and

- Create a fast track to improving performance in use.
- Provide more customer focus.
- Improve client relationships and user satisfaction.
- Build recognition that some debugging is necessary.

**SOURCE:** downloadable from www.usablebuildings.co.uk and www.softlandings.org.uk
Soft Landings: 
*Findings from trials over recent years.*

**STAGE 1 – INCEPTION AND BREIFING**
Client leadership is key.
Champions need to be designated.

**STAGE 2 – DESIGN AND CONSTRUCTION**
Clients must not drift off.
Regular reality-checking is essential.
A question of attitude – no additional costs.

**STAGE 3 – PREPARATION FOR HANDOVER**
Dialogue with occupiers needs more care.

**STAGE 4 – INITIAL AFTERCARE**
Difficult to get the right kind of support.
Easy for contractors to revert to type.

**STAGE 5 – MONITORING AND REVIEW**
Requires some independent input.
Needs funding outside the building contract.

SOURCE: downloadable from www.usablebuildings.co.uk and www.softlandings.org.uk
Improving client capabilities

• Better briefing, *with more focus on outcomes*.

• Manage the brief, *as understanding develops during the process*.

• Seek to ensure that proposals will be usable, manageable and affordable in operation.

• Beware the false promises of technology: *watch out for unmanageable complication and hidden costs*.

• Never be afraid to ask stupid questions. *Many things cannot be taken for granted*.

• Don’t break the golden thread from intent to reality or outsource your feedback loops.
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