User behaviour in buildings...a story

1. Normative behaviour....I’ll do it if they do it

2. Nudging?......I should do this, as I am being told it is right

3. Action Gap theory..... but I am not doing it because I don’t want to

4. Competition.......I’ll be darned if they are seen to be better than me!
Human needs.....Maslow’s hierarchy

- Physiological Needs
- Safety Needs
- Social Needs
- Esteem Needs
- Self-Actualization
How do humans work?

we are a product of millions of years of evolution...fine-tuned monitoring

we have primitive instincts and habits......hunter, gatherer, farmer

we operate through our senses and conceptual models

we are always meaning-making with whatever we have to hand

we are programmed for change, not continuity
Affordance - design interfaces

Gibson’s ‘affordances’ = perceived and actual properties of things, which determine how they can be used. The user knows what to do by sensing.

a chair ‘affords’ sitting

a window ‘affords’ opening

a fire ‘affords’ warming

a thermostat ‘affords’ warming?

an MVHR ‘affords’ ventilation?
Key control touchpoints in the home

**Heating**  programmer, VDU, switches, dials

**Ventilation**  windows, doors, handles, hinges, trickle vents, ventilation units, switches, dials, VDU, filters, ducts

**Lighting**  switches, VDU, light bulbs, shading, control panels,

**Water**  taps, plugs, showers, baths, dials, switches

A jungle or field with a view?
Conceptual model of how things work

Our concept of how things work and their meaning is based on:

- past experience
- habit
- instinct
- sense
- memory
- logic
- culture
- physical context
- feedback

We try to ‘make sense ‘ of controls with whatever faulty information we have..... not always logical!
Conceptual congruency in design

- Design model
- Designer
- System
- System image
- User model
- User

Norman, 86
Usability in design – the Cinderella factor?

testing for usability only occurs in a minority of key touch point products

lab tests are not user tests

architectural education does not teach usability

**ergonomics and psychology are still off the agenda** thanks to debunking of determinism in 1970’s
Current thinking in BPE

Increasing emphasis on user **behaviour** to explain the gap between Intention and reality

Danger of ‘blaming the user’

More work needed on evaluating the underlying **usability** of the design and how **needs** are defined
Usable design – mapping

**Mapping** = relationship between two things e.g. controls and results in world

**Natural mapping** = immediate understanding from culture, biology, perception

**Mapping problems** = cognitive dissonance (‘does not compute, not logical counteintuitive.’) – no direct spatial relationship
Usable design – feedback

make feedback visible to tell user what is going on

provide accurate, embodied, feedback

provide more feedback, less features
Things that go wrong with usability

too many features – too much information

smaller and faster is not always better

over automation

humans are irrational - users blame themselves or wrong cause
Evaluating usability – the six criteria

Clarity of purpose

Intuitive design

Labelling

Ease of use

Feedback

Degree of fine control

‘Controls for end users’
Bordass, Leaman and Bunn
sink taps

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<tr>
<th>Usability criteria</th>
<th>Poor</th>
<th>Excellent</th>
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<tr>
<td>Clarity of purpose</td>
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<td>Intuitive switching</td>
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<td>Labelling and annotation</td>
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<td>Ease of use</td>
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<td>Indication of system response</td>
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**Comments**
There are no indications of movement for hot or cold water or labelling. This is a highly non-intuitive piece of equipment, although the movement is good.
Translating usability evaluation into process enhancement

Good solutions to design problems are not always product-based – they can be process-based:

dirty MVHR filters? – change indicator or SEND REMINDERS/FILTERS

poor co-ordination of services/structure? – ORGANISE CO-ORDINATION MEETINGS

short-life product? – ENHANCE AFTER SALES CARE, MAINTENANCE, UPGRADING
Moving on from affordance to learning

affordance is ‘What you see is what you get’ (WYSIWYG) – physical

humans work conceptually also, and through time – we learn how to use things

products and buildings have emergent properties which create a relationship with the user

maximum usability is when emergent properties reveal themselves easily e.g. one thing leads to another – exploring a door handle....
Better guidance and procedures

The bigger the manual, the dumber the building?

Interactive web-based/smart phone guidance needed

Think of the ‘leaking roof in a storm at 4 in the morning’ situation...guidance needs to be easy to access!
Co-evolutionary buildings

positive emergence can be enhanced through adaptive opportunities with accurate evidence-based feedback

design for users to interact with building and learn from it

user learning fed into next project via ‘Soft Landings’
an antidote....

‘One must still have chaos in oneself to be able to give birth to a dancing star.’
Nietzsche

Watch out for the ‘rear view mirror’ effect in evidence-based design.

We need to keep on imagining....and emerging
thank you....