Universal Design – or Design a Universe?

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Access to London Underground

• Testing ramps for London Underground stations
• What gradient?
• How do people with different capabilities respond to them?

Experiment about platform gradients for people with vision challenges and their assistance dogs
Footway surfaces

- Damage to ankles, knees, hips, pelvis from a lifetime of walking on inappropriate surfaces
- Can we reduce this damage and make falls in older age less likely?
- How about wheelchair users?

Experiment with different kinds of footway surfaces
Hearing

- Hearing aids are tuned to the human voice
- What happens when there are a lot of human voices?
- What happens when you visit a restaurant?

Experiment about how people can hear in restaurants
Where am I?

• Spatial memory
• How do we remember where things are?
• What about losing that capability?
• How can the environment help?

Experiment about how people remember space
Dementia is all about people

People with dementia making their lunch in a Group Home in Fujinomiya, Japan
Movement

• Movement with crutches
• Hand grips
• Enjoying life

Use of crutches in sports helps to guide design for other users
Movement – pushing a wheelchair

- How about the person who pushes someone in a wheelchair?
- Massive forces needed all the time because of the way we design footways

Measuring the forces applied to push a wheelchair under different environmental conditions
Navigation with and without dementia

• How does a person with dementia navigate?
• Very different from someone without dementia
• Can we understand what they use as cues?
• How does their head move?
• How do they see?
How does a person with dementia see?

Control

How the eye works – this shows fixations on a scene
How does a person with dementia see?

A) Control

B) Person with PCA

This shows how someone with PCA fixates on the same scene.
How does a person with dementia see?

... and this means that this is the only information they actually receive.
Falling over in buses

Experiment about people moving about inside a moving vehicle to alter the way buses accelerate
Multisensorial environments – PEARL

• Physical environment
• Lighting
• Sound/Acoustics
• Movement
• Smell
• Feel
• Scale
• Ventilation

Examples of physical and lighting environments in PEARL
Multisensorial environments

• Physical environment
• Lighting
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The sound and acoustic systems in PEARL allow us to simulate many different dynamic environments
Design a Universe

Create the worlds that people imagine – with the capabilities they have
There is a choice of entry footway to PEARL – a softer or a harder surface: which do people prefer?