CIBSE: Back to the Future Seminar

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Introduction

• Observations on Design (We have forgotten more than we know)
• The Importance of Integration
• The Importance of Crossing Over
• Possible ways forward
We have forgotten more than we know
Marina Bay Sky Park Dynamics
Singapore
Dynamics

Wind
Seismic
Human
Broad Eaves
Surrounding Greenery

Ventilated cavity space above acting to mediate solar gains

High Ceilings
Allowing stratification

Promotion of air movement:
- Screened shutters (no glass)
- High level vents b/w rooms
- Ceiling Fans

Good Exposed mass (RC).

Minimise Heat island effect

‘Like Minded Community’

TRADITIONAL ‘BLACK + WHITE’ RESIDENTIAL ARCHITECTURE SINGAPORE
We have forgotten more than we know
Full East West Shading
Small Horz. shades to North
No shading to South
Side Cores
Inter-storey connecting central stairs
<10m from solar access
Panoramic views without floor-ceiling glass
Steel frame / Precast floors
Enduring (& good) design works on many levels
Integration is key

• Problems don’t come in disciplines
• The whole becomes greater than the sum of the component parts
• Appreciate systems & complexity - avoiding over rationalisation and unintended consequences.
• Achieve understanding & ‘buy in’
Good technical design is not enough
Crossing Over to the Other Side

(Big Business is very wise)
### Habits of Mind

1. **Persisting**
   - Stick to it!
   - Persisting in task through to completion; remaining focused. Looking for ways to reach your goal when stuck. Not giving up.

2. **Managing Impulsivity**
   - Thinking before acting; remaining calm, thoughtful and deliberative.

3. **Listening with understanding and empathy**
   - Devoting mental energy to another person’s thoughts and ideas. Make an effort to perceive another’s point of view and emotions.

4. **Thinking flexibly**
   - Look at it another way!
   - Being able to change perspectives, generate alternatives, consider options.

5. **Thinking about your thinking**
   - Metacognition
   - Know your knowing!
   - Being aware of your own thoughts, strategies, feelings and actions and their effects on others.

6. **Striving for accuracy**
   - Check it again!
   - Always doing your best. Setting high standards. Checking and finding ways to improve constantly.

7. **Questioning and problem posing**
   - How do you know?
   - Having a questioning attitude; knowing what data are needed & developing questioning strategies to produce those data. Finding problems to solve.

8. **Applying past knowledge to new situations**
   - Use what you learn!
   - Accessing prior knowledge; transferring knowledge beyond the situation in which it was learned.

9. **Thinking & communicating with clarity and precision**
   - Be clear!
   - Strive for accurate communication in both written and oral form; avoiding over-generalizations, distortions, detours and exaggerations.

10. **Gather data through all senses**
    - Use your natural pathways!
    - Pay attention to the world around you
    - Gather data through all the senses; taste, touch, smell, hearing and sight.

11. **Creating, imagining, and innovating**
    - Try a different way!
    - Generating new and novel ideas, fluency, originality.

12. **Responding with wonderment and awe**
    - Have fun figuring it out!
    - Finding the world awesome, mysterious and being intrigued with phenomena and beauty.

13. **Taking responsible risks**
    - Venture out!
    - Being adventurous; living on the edge of one’s competence.
    - Try new things constantly.

14. **Finding humor**
    - Laugh a little!
    - Finding the ridiculous, incongruous and unexpected. Being able to laugh at one’s self.

15. **Thinking interdependently**
    - Work together!
    - Being able to work in and learn from others in reciprocal situations. Team work.

16. **Remaining open to continuous learning**
    - Learn from experiences!
    - Having humility and pride when admitting we don’t know; resisting complacency.
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How to integrate as a designer...
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UNDERSTAND WHAT THE OTHER DOES, AND VALUE IT

TALK TO EACH OTHER

Architect and Engineer (Yutaka Saito and Peter Rice, Tokyo, 1990)
Photo: Koji Kobayashi, courtesy Arup
How to integrate as a designer...

DO IT WELL

UNDERSTAND WHAT THE OTHER DOES, AND VALUE IT

TALK TO EACH OTHER
HOW TO IMPLEMENT INTEGRATED DESIGN ON A PROJECT

- Client / Project team
- Project Planning & Procurement
- Project Culture Setting
- Design Process Specifics
**Integrated design literature review...**

- Figure 1. Whole systems design framework (Blizzard and Klotz, 2012)
- Lovins et al. 2010
- Cunha III, 2018

**Integrated design process (Source: Roadmap for the Integrated Design Process)**

**Project Planning & Procurement**

- **Procure right behaviours**  
  (performance based fees/alliancing/IPD/multi-disc...)
- **Brief integrated design**
- **Establish common design environment**
- **Instil third party integrated design facilitator**
The key to enduring design is integration

Technical merit is not enough on its own

We need to expand integration to cross over to other stakeholders

Procurement is a potential enabler