

Design Engineering Society Event
Peter Cheung's Philosophical Powwow

#1 Thinking About Thinking

Peter Y K Cheung

Professor of Digital Systems
Dyson School of Design Engineering &
Department of Electrical & Electronic Engineering

What on earth is this?

- ◆ Conversation over a bottle of Beer – last day of term
- ◆ University education is often too narrow – lots of facts, formulae, methods and skills
- ◆ Many topics left for students to figure out by themselves without much guidance
- ◆ Too much focus on learning outcomes – not enough effort on personal development
- ◆ Teaching about life is difficult; too close to religion; danger of “preaching”
- ◆ May not be that scientific - becoming “opinion” rather than facts

A Disclaimer

- ◆ I am not a philosopher, nor a psychologist – not even an amateur!!
- ◆ This talk and other subsequent talks will not really cover philosophy – no Socrates, Buddha, Confucius
- ◆ No consideration of meaning of life, or why are we here, or how to attain “goodness” or “happiness”
- ◆ Not here to instruct you, but to stimulate you

Thinking vs Feeling

- ◆ “We are not thinking machine that feel; we are feeling machines that think.”

Thinking (T)

- Objective
- Critique
- Want to be right
- Feel good when a job is done well
- Present goals and objectives first
- Brief and concise

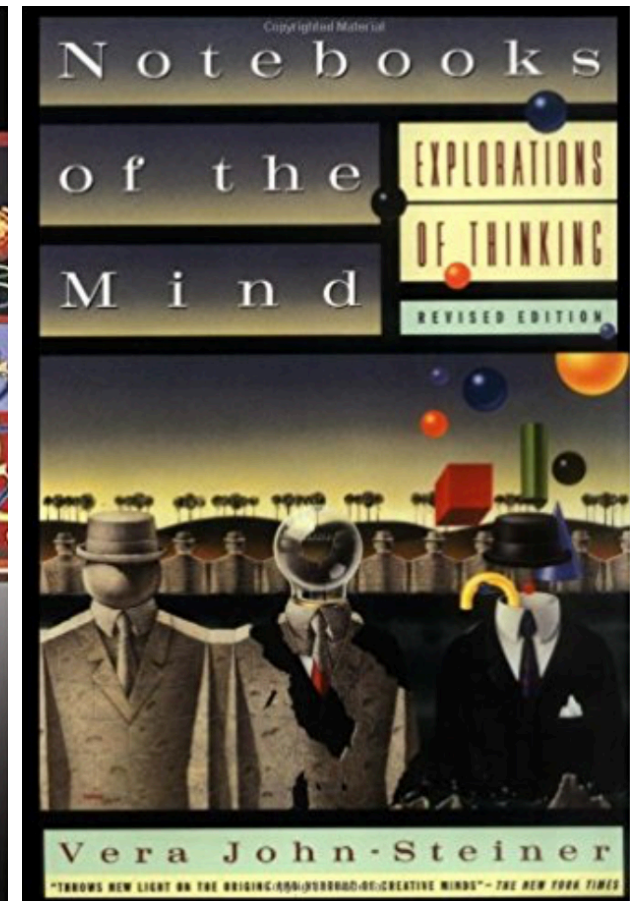
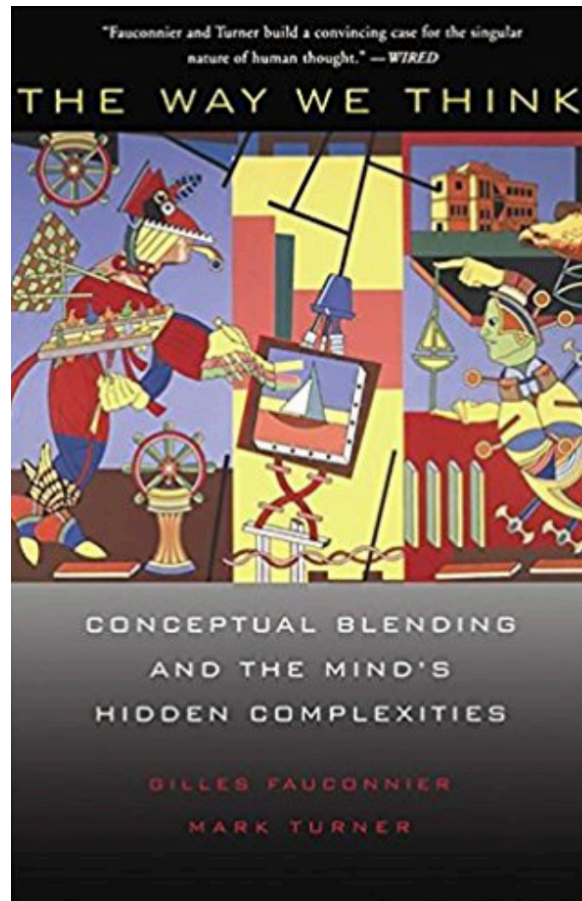
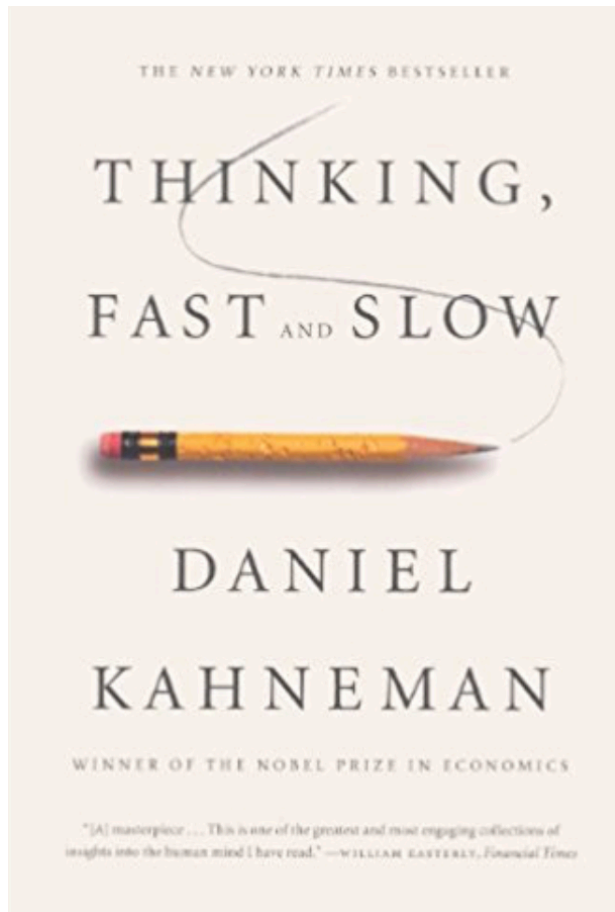
Feeling (F)

- Subjective
- Compliment
- Compassionate
- Feel good when other people's needs are met
- Present points of agreement first
- Sociable and friendly

6 topics on thinking

1. Thinking about **THINKING**
2. Thinking about **EDUCATION & LEARNING**
3. Thinking about **SELF**
4. Thinking about **TIME**
5. Thinking about **RELATIONSHIP**
6. Thinking about **PURPOSE**

Thinking about THINKING



Message 1: Thinking is hard work (1)

- ◆ Two systems:
 - System 1 – automatic, intuitive, effortless
 - System 2 – deliberate, reasoning, focussed, logical, solve problems
- ◆ System 1 – heuristics and prone to errors
- ◆ System 2 – require effort and work

- ◆ **Good thinking** – recognise situations where system 1 is not sufficient, and need to pass to system 2 in order to avoid mistakes when stakes are high!

- ◆ **“Thinking Fast and Slow”** by *Daniel Kahneman*

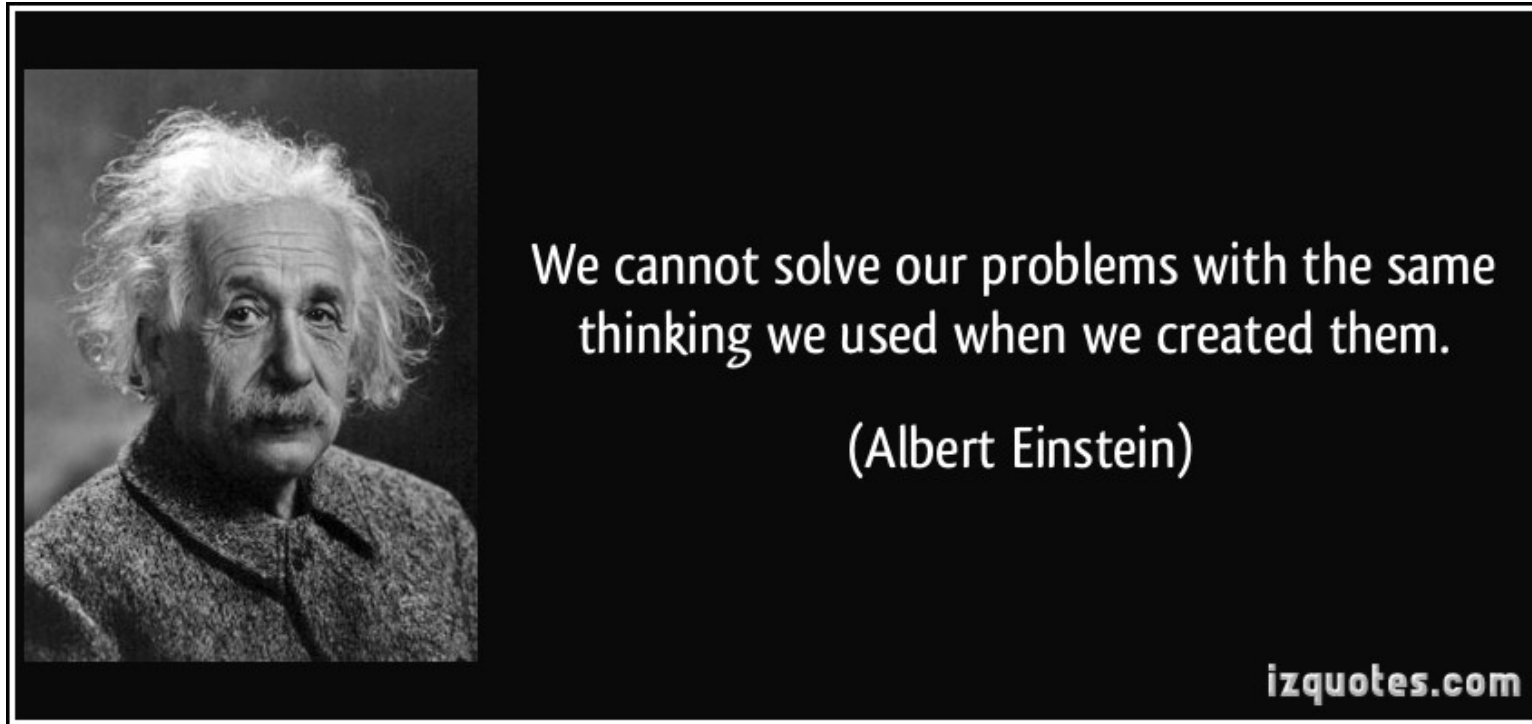
Message 1: Thinking is hard work (2)



◆ <https://www.youtube.com/watch?v=UBVV8pch1dM>



Message 2: Conceptual Blending – for creative thinking (1)



- Blending of multiple conceptual spaces
- Why interdisciplinary work often leads to new ideas
- Example from IDE course by Dyson School
- **“The Way We Think”** by *Gilles Fauconnier & Mark Turner*

Message 2: Conceptual Blending – for creative thinking (2)

- ◆ Design something that combines:
 1. Innocent Orange Juice
 2. Shoehorn



Message 3: Thinking at higher level of abstraction is useful

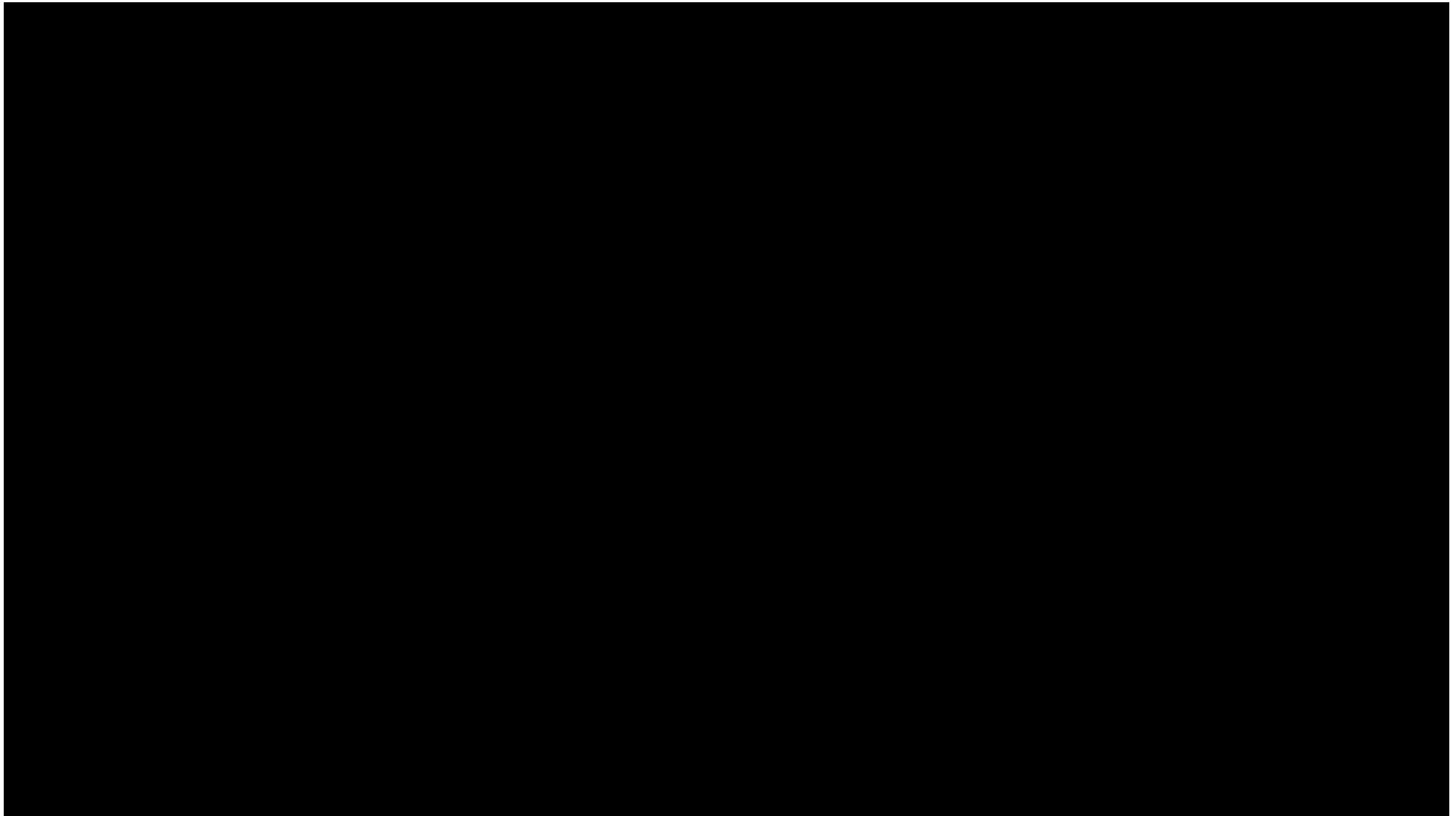
INDUCTIVE REASONING

Uses the **highest** level
of **ABSTRACT** thinking

Message 4: Anyone can learn to think better (1)

- ◆ Tools and methods available for thinking (e.g. critical thinking skills)
- ◆ Big decisions vs everyday decisions
- ◆ Big decisions – affect where you end up
- ◆ Everyday decisions – affect your person (therefore more important)

Message 4: 5 tips to improve your critical thinking



◆ <https://www.youtube.com/watch?v=dItUGF8GdTw>



Practice Thinking

- ◆ Write down ONE question in Post-It note, and put it on the board