

SMU Classification: Restricted

Cultivating Innovation: Specifying The Eureka Moment



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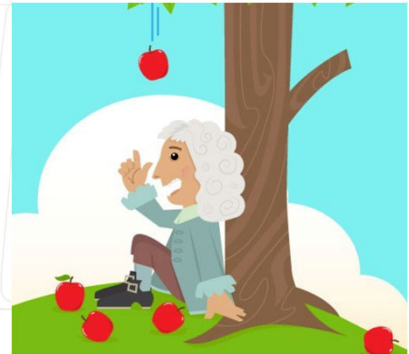
Archimedes, Galileo, Newton



Archimedes taking a bath



Galileo staring at the church ceiling



Newton relaxing under a tree



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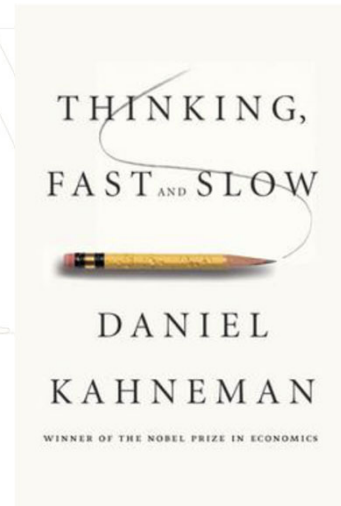
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Systems 1 & 2 Thinking, and 3?

System 1: fast, automatic, frequent, emotional, stereotypic---unconscious
Examples include fight or flight response, gag reflex when smelling foul smell, moral condemnation at the sight of a swastika, scrolling through facebook?

System 2: Slow, effortful, logical, calculating---regular computational power
Examples include bracing yourself ahead of a sprint, give someone your phone number, playing chess, parallel parking.

SYSTEM 3: Relaxed (neither fast nor slow), effortless, all-compassing (more than logical)---pure consciousness
Examples include: Feeling the warm water around you in a bathtub, staring at the ceiling in church, sitting under a tree watching a sunset.



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Systematic Errors and the Limits of Logic (System 2)

One of the following assertions is true about a hand of cards, and one of them is false about the same hand of cards:

1. If there is a king in the hand, then there is an ace in the hand.
2. If there isn't a king in the hand, then there is an ace in the hand.

What follows?



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Survival Logic Privileges Truth over Falsity

One of the following assertions is true about a hand of cards, and one of them is false about the same hand of cards:

1. If there is a king in the hand, then there is an ace in the hand.
2. If there isn't a king in the hand, then there is an ace in the hand.

What follows?

EITHER

T1: if $K \rightarrow A$ (Still a conditional statement.)

F2: $\neg K \rightarrow \neg A$ (There isn't an ace in hand.)

OR

F1: $K \rightarrow \neg A$ (There is king but no ace in hand)

T2: if $\neg K \rightarrow A$ (Still a conditional statement.)

Subjects overwhelmingly infer that there is an ace in the hand. This phenomenon is predicted by the model theory, which postulates that reasoners normally represent only what is true, and not what is false. In this case, reasoners tend to assume an exclusive disjunction (T1 or T2) rather than a conjunction (F1 and F2), namely, there is **no ace in the hand**.



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System 2 is still Survival Logic, close to System 1



To survive in the jungle, we have been trained to focus on what is true (crumbs on the road for Hansel and Gretel), and to ignore what is irrelevant/untrue (where there are no crumbs). This *selective reasoning* can be a helpful survival instinct in the jungle, but it is also a source of habituated systematic error outside the jungle.




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Evolving Beyond Darwin (Systems 1 & 2)

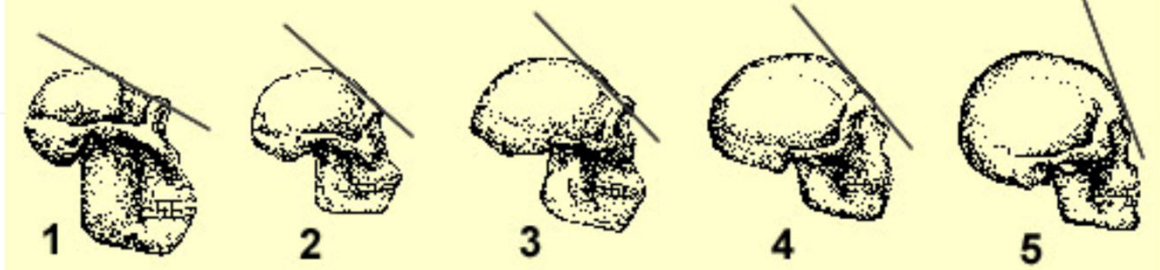
Cerebellum or “Reptilian” brain

- Regulating motor movements
- posture, balance
- Reflexes, reaction
- System 1: *survival*



Prefrontal Cortex

- impulse control, regulating attention and distraction
- moderating social behavior, personality
- “mental sketch pad” (Goldman-Rakic, 1996)
- System 2 & 3: *consciousness*




1. Australopithecus robustus 2. Homo habilis 3. Homo erectus 4. Homo neaderthalensis 5. Homo sapiens

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What Do You See?

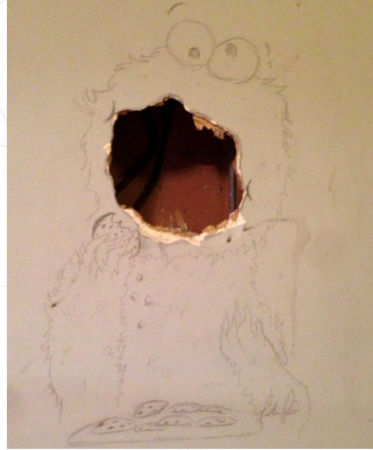


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A Hole in the Wall, or a Wall?



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Matchstick Math



By moving (not removing) three matchsticks, make the following equation correct:

$$8 + 9 = 4$$



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Anagrams

Form a word adding a new letter to VAN or TAG until all letters of the anagram are used up.

VANEITG

VAN

+ E

+ I

+ T

+ G



TAGERNI

TAG

+ E

+ R

+ N

+ I

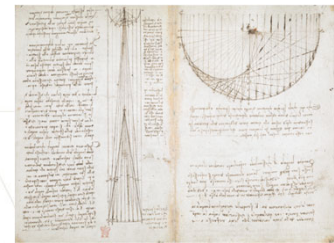
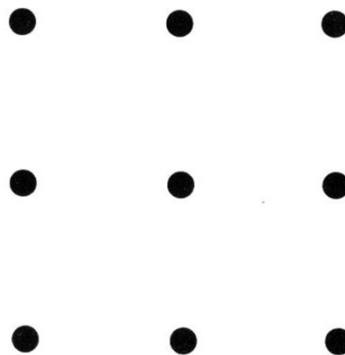


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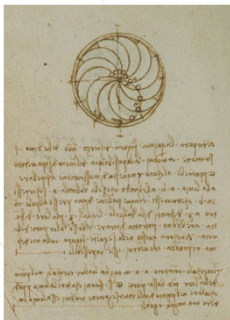
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Nine Dots

Connect the following nine dots in four consecutive lines (without lifting your pen from the paper):



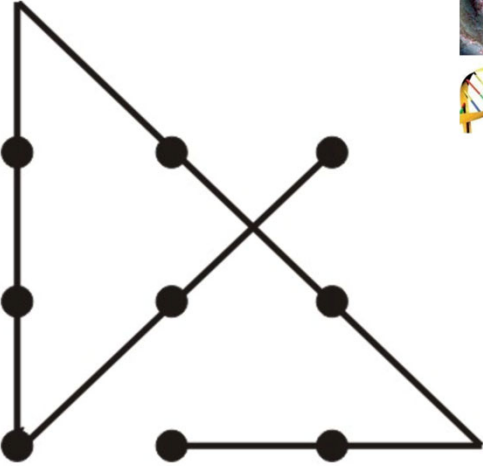
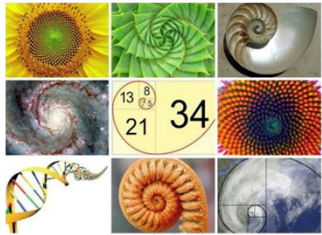
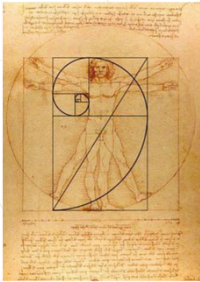

Source: Leonardo Da Vinci, *Codex Arundel*.



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Thinking Outside the Box

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From Making a Living (Surviving) to Living: Policy Implications for Educators for System 3

As educators, we have grafted many lessons unto Systems 1; even religion (Pascal's wager) and morality (Thou shalt ... or else)!

To move into System 3 we we must set conditions:



- Fewer in-class exams, less timed constraints
- Less competition, more encouragement (less sticks, more carrots)
- Less goal orientation, more process orientation

Embracing uncertainty and ignorance, surrendering.

And practice:

Foregoing reflexes and learned formulae, heuristics; engendering **effortless awareness**.

Equanimity and ease is the necessary precursor for the flourishing of consciousness. The "little me" (the reactive ego) must die before innovation arises.

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Of Careers and Economic Development ...

There are, of course, **trade-offs**. To promote system 1 and 2 is, often, to detract from System 3, and vice versa. This is something we may all have collectively missed in our fast-paced modernity.

Careers (micro) and economic development (macro) matters, but to focus on them solely will keep us in survival mode.

In survival mode, innovation cannot happen.



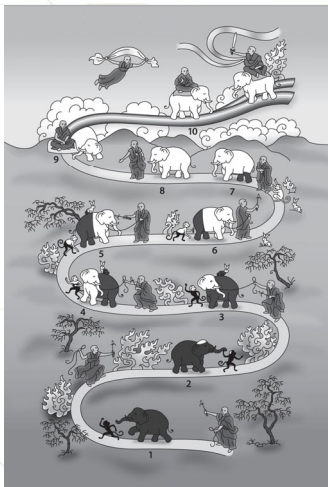
"Behold the birds of the heaven, that they sow not, neither do they reap, nor gather into barns; and your heavenly Father feedeth them. Are not ye of much more value than they? And which of you by being anxious can add one cubit unto the measure of his life? And why are ye anxious concerning raiment? Consider the lilies of the field, how they grow; they toil not, neither do they spin: yet I say unto you, that even Solomon in all his glory was not arrayed like one of these."
(Matthew 6: 26-29)



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From Survival (Reaction) to Being (Flourishing)



System 1 & System 2 (Daniel Kaheman) v. **SYSTEM 3**

Focused v. **Diffused Attention**

Routinized v. **Unconditioned**

Effortful v. **Restful**



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“Genius is Patience” – Isaac Newton

Patience is not calculated perseverance, as is the everyday understanding of “patience.” Our transactional, outcome-oriented approach to the word has obscured Newton’s meaning. True patience requires surrender.



God or the cosmos can speak to and through you only if you are patiently abiding. No agenda, just being still; then and only Eureka comes, exactly when one has stopped looking. From the greek, heurēka, find; paradoxically, one can find only if one is not intently looking. (Or, we cannot actually find, the solution finds us; we are found.)



Singapore has moved out of the third world into the first, it is time to stop stressing about survival and to dedicate ourselves more fully to enabling human consciousness. It is time to get out of the jungle.



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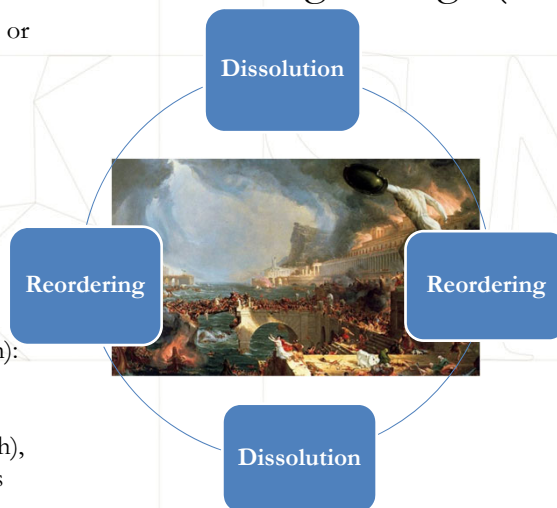
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Innovation and Embracing Change (Dissolution)

15th-16th Century (Dissolution or creating change): Renaissance, **Reformation**

17th Century (Reordering or preventing/resisting change): Birth of Westphalian Nation State, **Empire**, Age of Royal Absolutism

Late 18th Century (Dissolution): American and French Revolutions, **Enlightenment**, “Invisible Hand” (Adam Smith), “Checks and Balances” (James Madison),



19th Century (Dissolution): Nietzsche and the Death of Absolutes—God, King, Empire, **Industrialisation**, Darwin

20th Century (Reordering): The Resurrection of **Absolutisms** (Fascism, Leninism), Bretton Woods consensus, Keynes

21st Century (Dissolution): Sep 11, Trump, Brexit, One Belt One Road, **Multipolarity**

The Cycles of Institutional Creative Destruction



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THANK YOU!



Questions?
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