

IoTMatrix: Enchanted Reality

IoTNext 2019

Arvind Tiwary
Co Chair IoTNext

Phase Change: Civilizational Disruption

Solid Liquid Gas and others

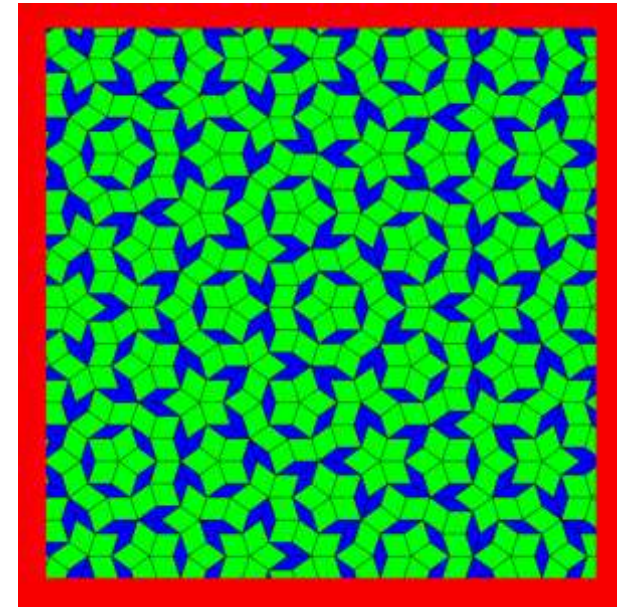


istockphoto.com - 1008120759



Boson Fermions Superconductivity

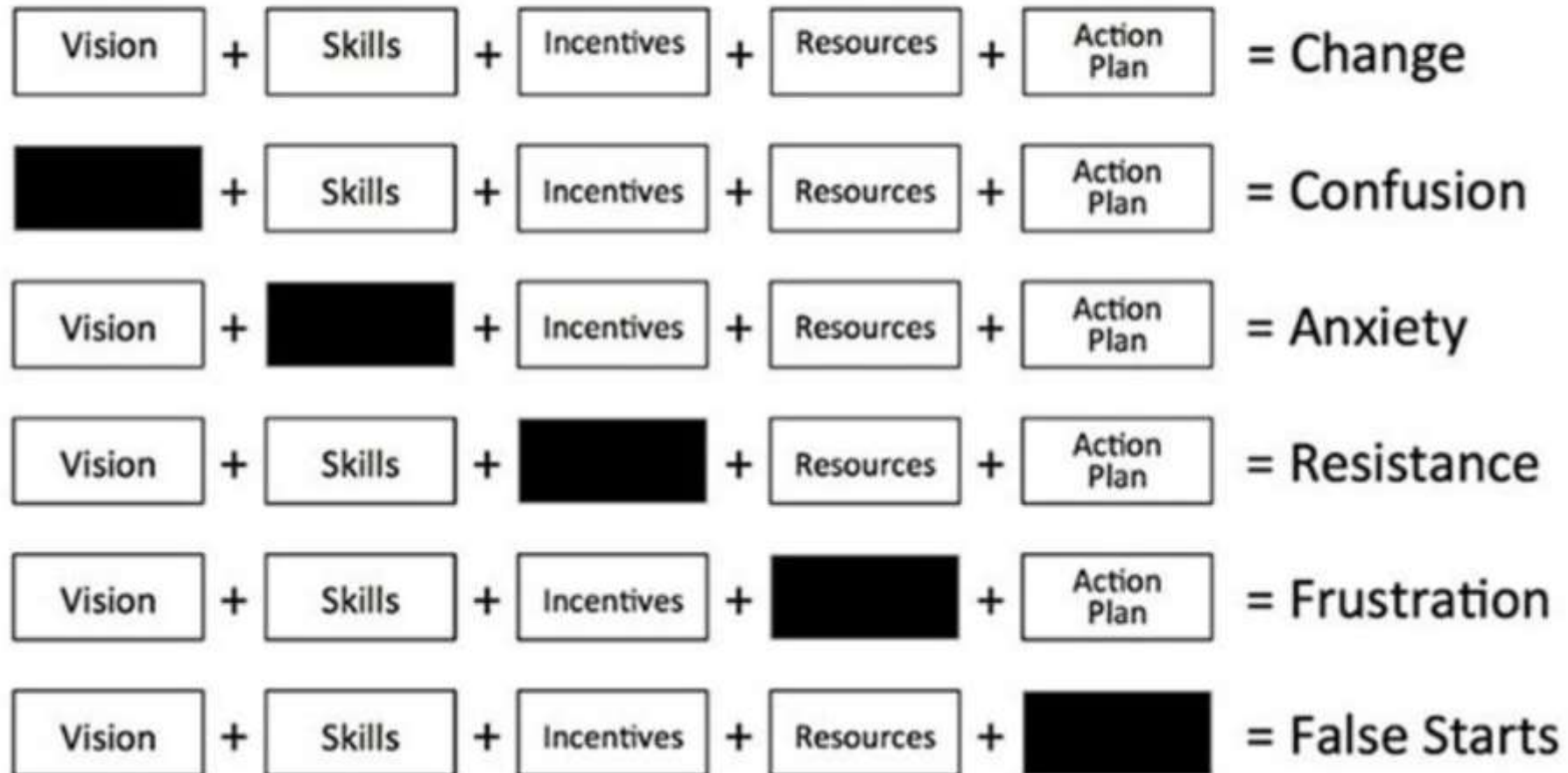
Aperiodic Crystal The DNA



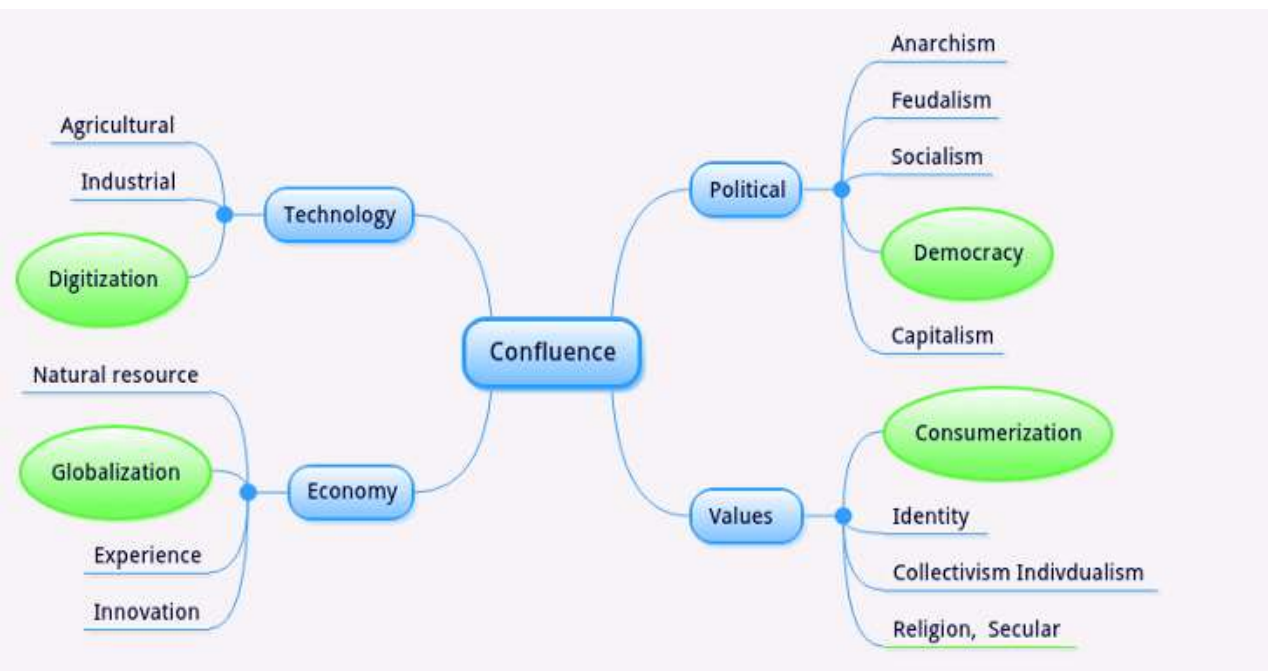
Change of Mental Model
Change **Glasses** to perceive a **New** World

IoTMatrix @ IoTNext

Managing Complex Change



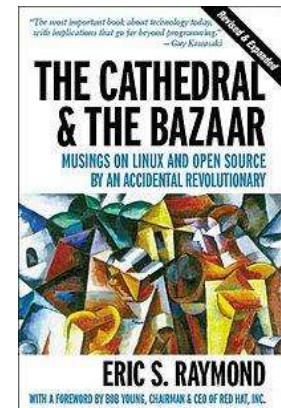
Helicopter View of Themes Trends



World Not running 2 Specifications

■ The Ajanta Moment

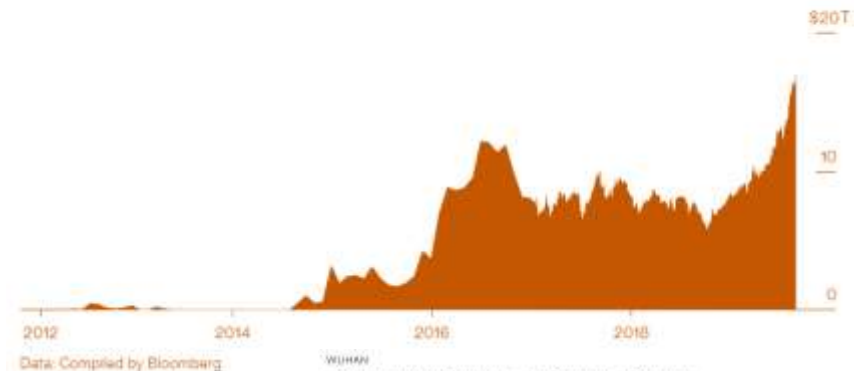
- Open Source wins
- Big Data +AI/ML
- Alibaba, Amazon, Tencent, Facebook, Google, Baidu



■ The Great Credit Crisis

- 2008 and continuing China, EU, Japan, Fed QE??
- 17 Trillion dollars of negative debt
- 1 Trillion negative **Corporate Debt**
- **Deflation worldwide**

Market Value of Negative-Yielding Bonds in the Bloomberg Barclays Global Aggregate Index



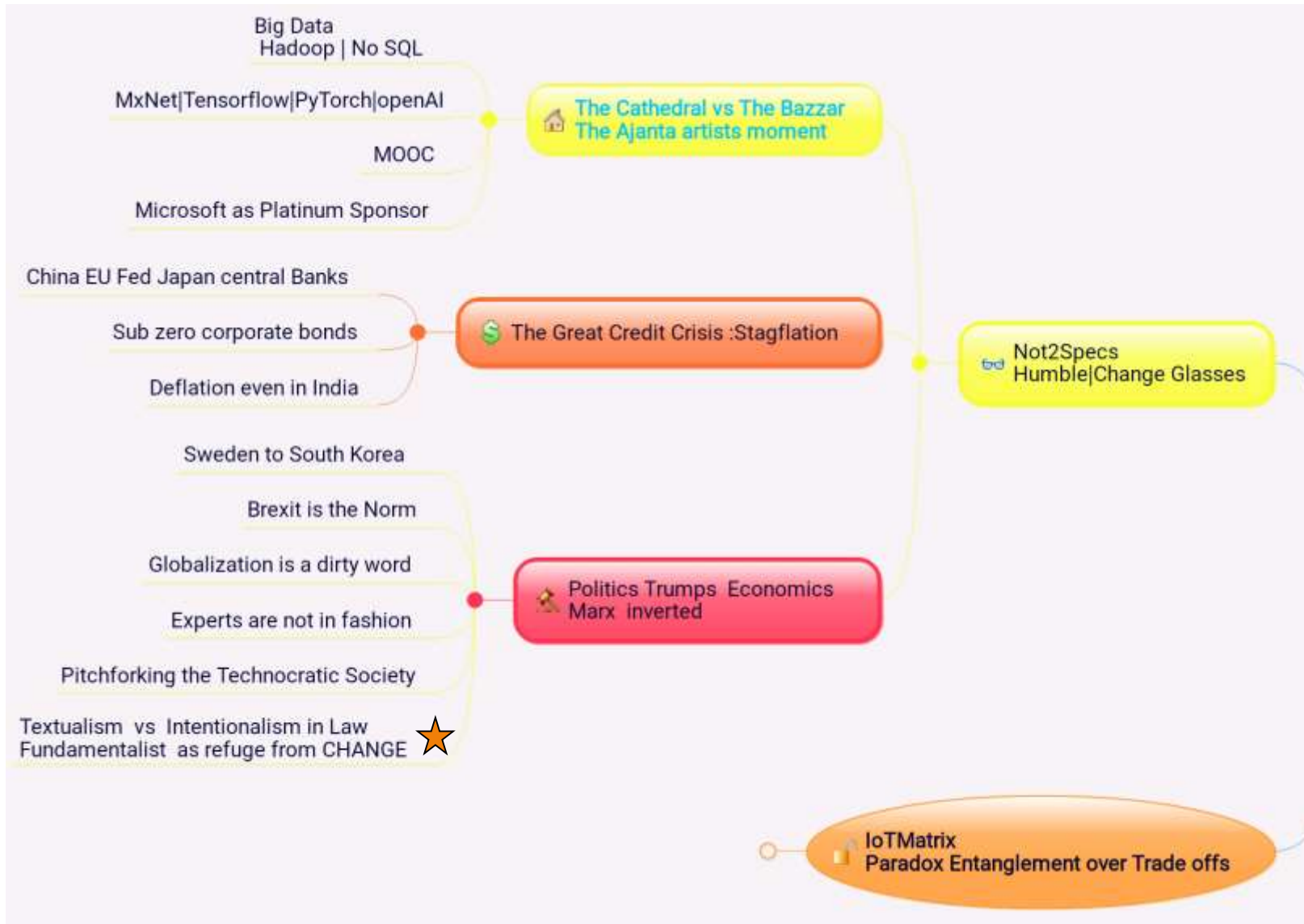
WUHAN
After a good run of growth, China braces for bumps

■ Marx Trounced Inverted

- Politics trumps Economics
- Experts and Technocrats are being pitchforked
- Textualism vs Intentionalism even in US Judiciary:
- The Fundamentalist movements

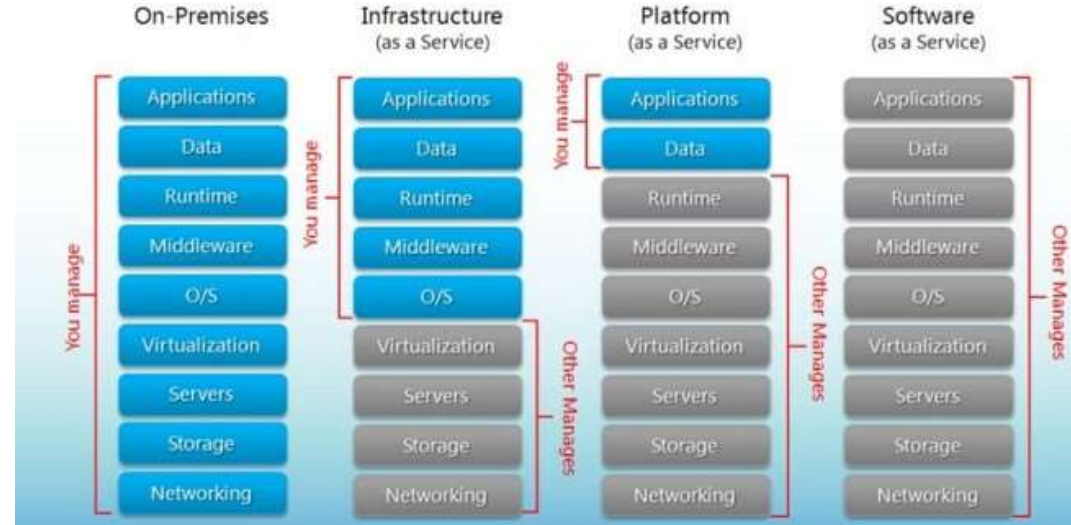


The World is not running to Specs: Humble Nobel Prize!!!

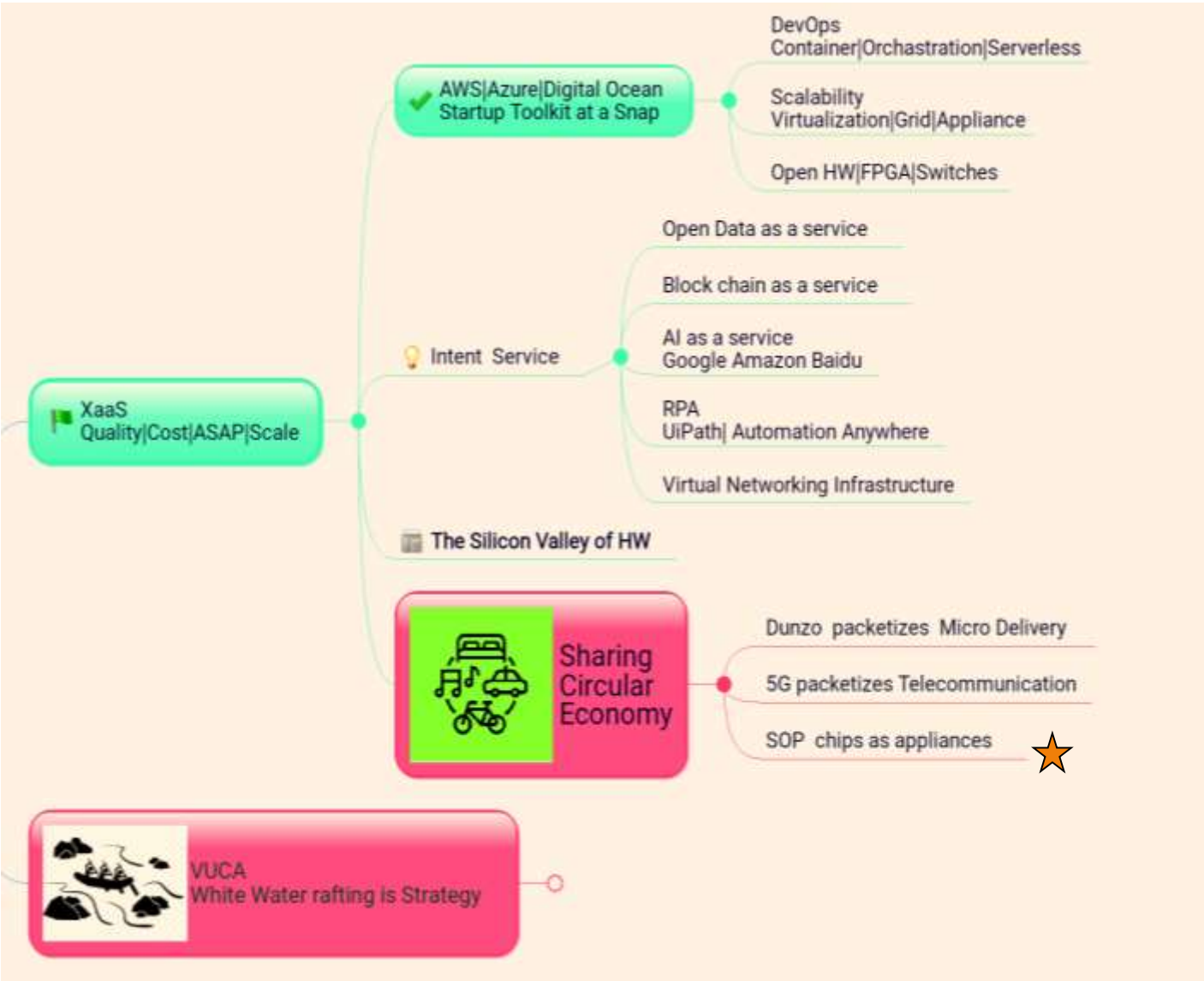


XaaS : Everything as a Service

- AWS, Azure, Aliyun, GCE...
- IaaS,PaaS,SaaS
- XaaS
 - Image recognition
 - Text NLP
 - BlockChain
- RPA
- Shenzhen : The Silicon valley of HW
- 5G Packetization of Circuit Cellular
- Packetization of Physical Services
 - Dunzo???

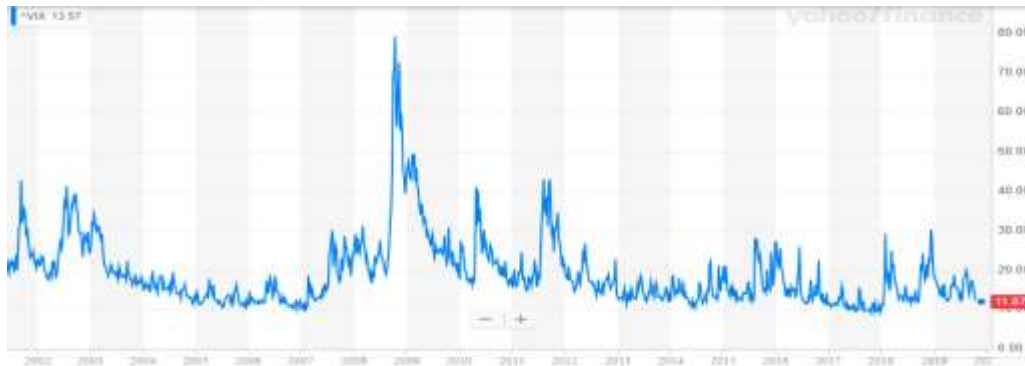


Everything as a Service: Coming to Physical Goods too



VUCA : Volatile Uncertain Complex Ambiguous

- **VIX is Dead . Long live the VIX**
 - 70+ peak. Avg 20-25 . Now <13
 - Boson Condensate: Risk off coo-related move
 - Aggregate Stability: Social Physics.



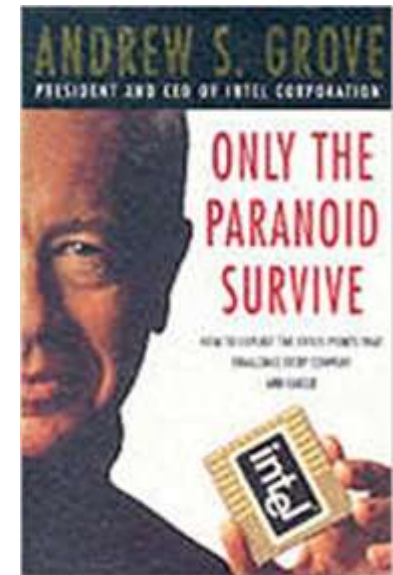
Even Large-Caps Get Mispriced

Top 10 Largest Companies in S&P 500 (as of 6/24/2016)

Company	Ticker	Current Market Cap (\$ billions)	52 Week Low	52 Week High	% Change (High/Low)	\$ Change in Market Value (\$ billions)
Apple	AAPL	\$511	89	133	49.4%	\$239
Google	GOOG	\$459	515	790	53.4%	\$187
Microsoft	MSFT	\$391	40	57	42.5%	\$134
Exxon Mobil	XOM	\$370	67	92	37.3%	\$106
Amazon	AMZN	\$330	426	731	71.6%	\$145
Berkshire Hathaway	BRK-B	\$326	124	148	19.4%	\$60
Facebook	FB	\$320	72	121	68.1%	\$141
Johnson & Johnson	JNJ	\$318	82	118	43.9%	\$100
General Electric	GE	\$274	19	32	68.4%	\$117
AT&T	T	\$255	31	42	35.5%	\$69
Average % Change High/Low					48.9%	
Average \$ Change in Market Value						\$130 billion

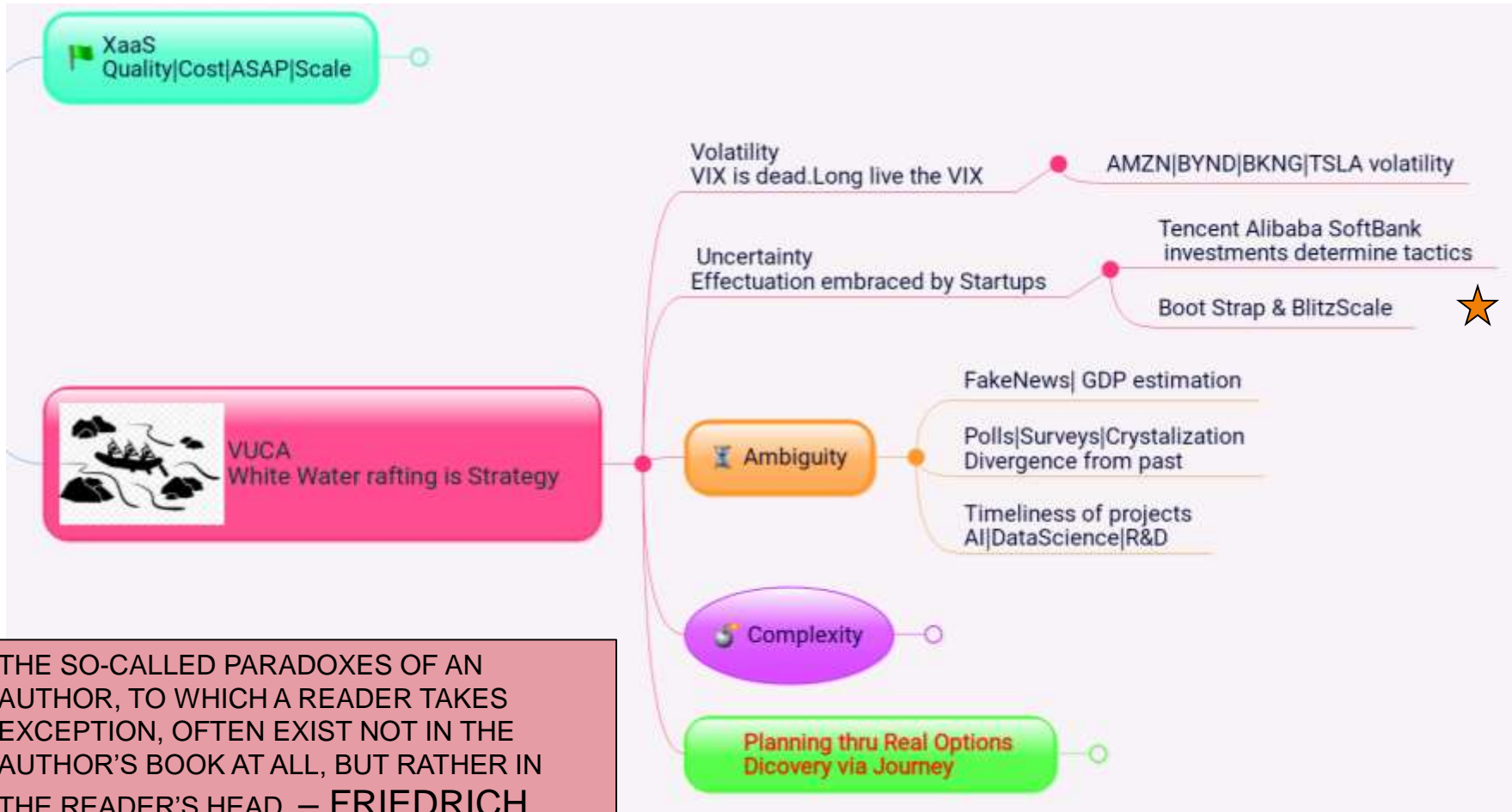
Options Approach to Volatile World

- DCF biases on Loss Prevention
- Nokia, BlackBerry never got a re match
- **Discovery based Planning**
- Real Options. **Geopolitics matters..**



VUCA: Embrace Volatility and Uncertainty

A shape shifting response: Peter Thiel may disagree



THE SO-CALLED PARADOXES OF AN AUTHOR, TO WHICH A READER TAKES EXCEPTION, OFTEN EXIST NOT IN THE AUTHOR'S BOOK AT ALL, BUT RATHER IN THE READER'S HEAD. — FRIEDRICH NIETZSCHE

Risk and Uncertainty: Levels of Uncertainty



There is a continuum of risk and uncertainty. As discussed by Frank Knight (Knight FH 1921, 'Risk, Uncertainty and Profit'; Boston, Houghton Mifflin), one side is amenable to (formal) quantitative analysis, especially using statistical methods (game of chance like Poker), while the other side is not amenable to such approaches (meteor crashing into Manhattan). Much of SII assumes that uncertainty can be modeled with statistical approaches. However, there is a continuum as seen in physical systems to social systems and economic systems. Lo and Mueller describe partially or fully reducible uncertainty that is the mainstay in SII modeling.

Level 1 Complete Certainty: Simple physical phenomena. For example, time to travel a fixed distance by light rays.

Level 2 Risk Without Uncertainty: Known and static probability distribution. For example, card games. Risk can be fully valued and the expected value can be used for decision making.

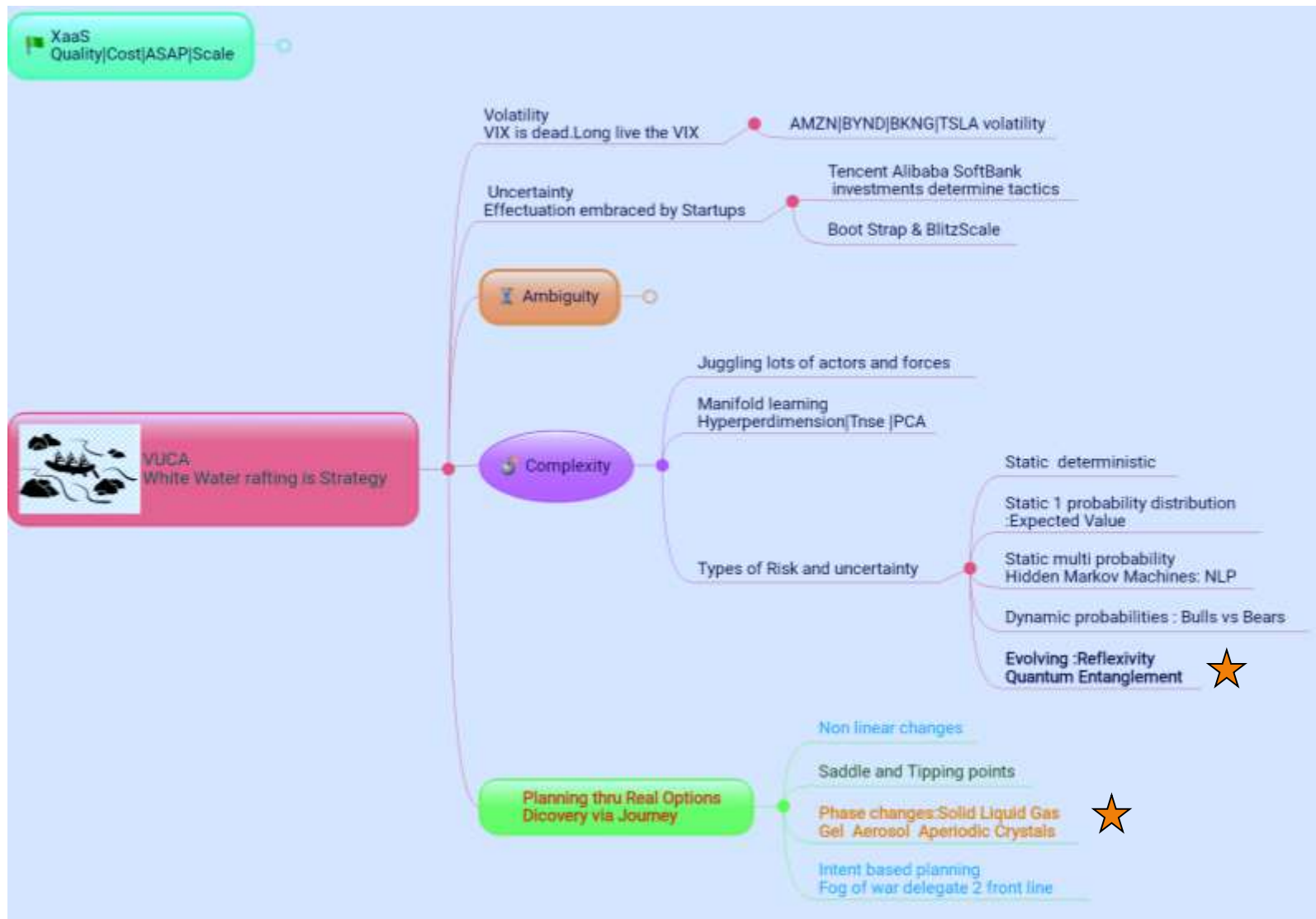
Level 3 Fully Reducible Uncertainty: Unknown but static probability distribution. A large data sample is used to estimate the distribution. Actuaries have developed a prior expectation on the type of distribution for different events. For example it is popular to use Poisson or Inverse Binomial distributions for modeling P&C claims.

Level 4 Partially reducible uncertainty: Unknown dynamic probability distributions are fairly common in social and economic systems such as RSLN2 for equity price in global markets, regime switches in operational risk assessment. Concepts like these break the central dogma of statistics. The 'law of large numbers' and the 'central limit theorem' which posit a Gaussian or bell-shaped distributions is the approximate form. Experts and informed participants have been able to provide good 'best estimates' to such complex concepts in the past. Hence, it is vital to research and develop some cause effect models of these concepts, with an inherent ability to nullify the bias of the human brains. The current evolution of topics such as crowd sourcing are indicators that there is some kernel of truth in this.

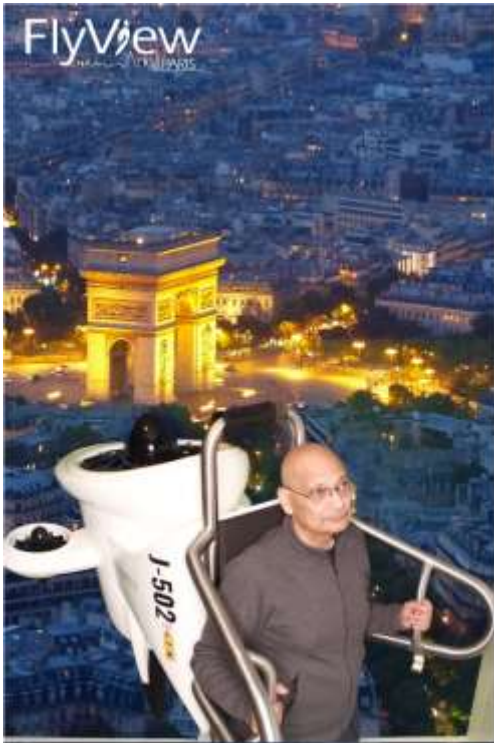
Level 5 Irreducible Uncertainty: This touches upon topics like philosophical enquiries, mystical truths, and existence of God. These need a major improvement in science before one can make a judgment on them. Till that time they remain in an irreducible uncertainty zone. Global warming is a topic transitioning from Level 5 to Level 4 as more research progresses.



VUCA: Reflexivity | Discovery planning thru Real Options



IoTMatrix : The Physical and Digital to Phygital



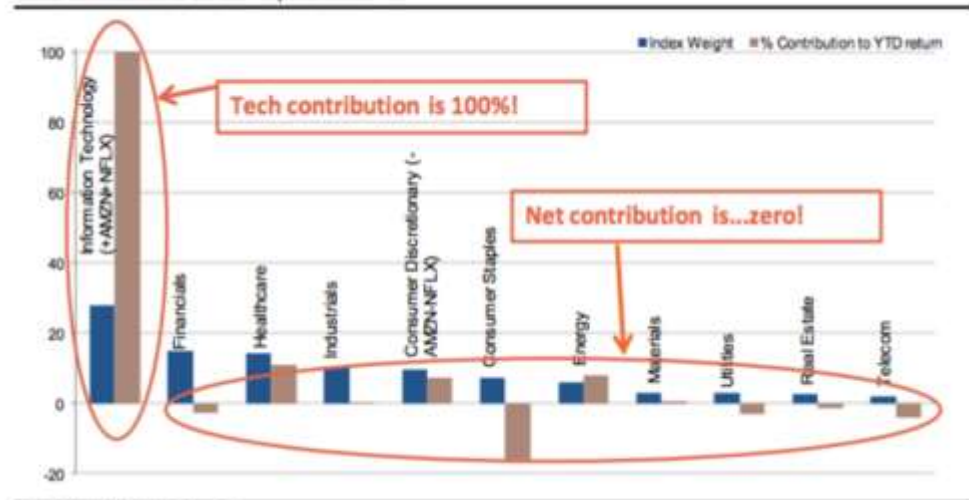
The Economy of Overabundance

- **Surplus Options :Economic Utility less relevant**
 - 100 TV Channels
 - Branded Rice, Water. The Harrods Store
 - **Emotion, Identity, Aspirational drivers**
- **The Great Flip: Friction less Information drives Value in reverse**
 - **Connected sensor world with ambient Intelligence**
 - **Detection of externalities , outliers, anomalies is mechanized. Privacy is notional**
 - **Old business moats are losing out**
 - **Fermium , Getting paid for users**
 - **Amazon Alibaba Tencent/WeChat FB**

**Your Industry is Innovation
thru SW and AI/ML**

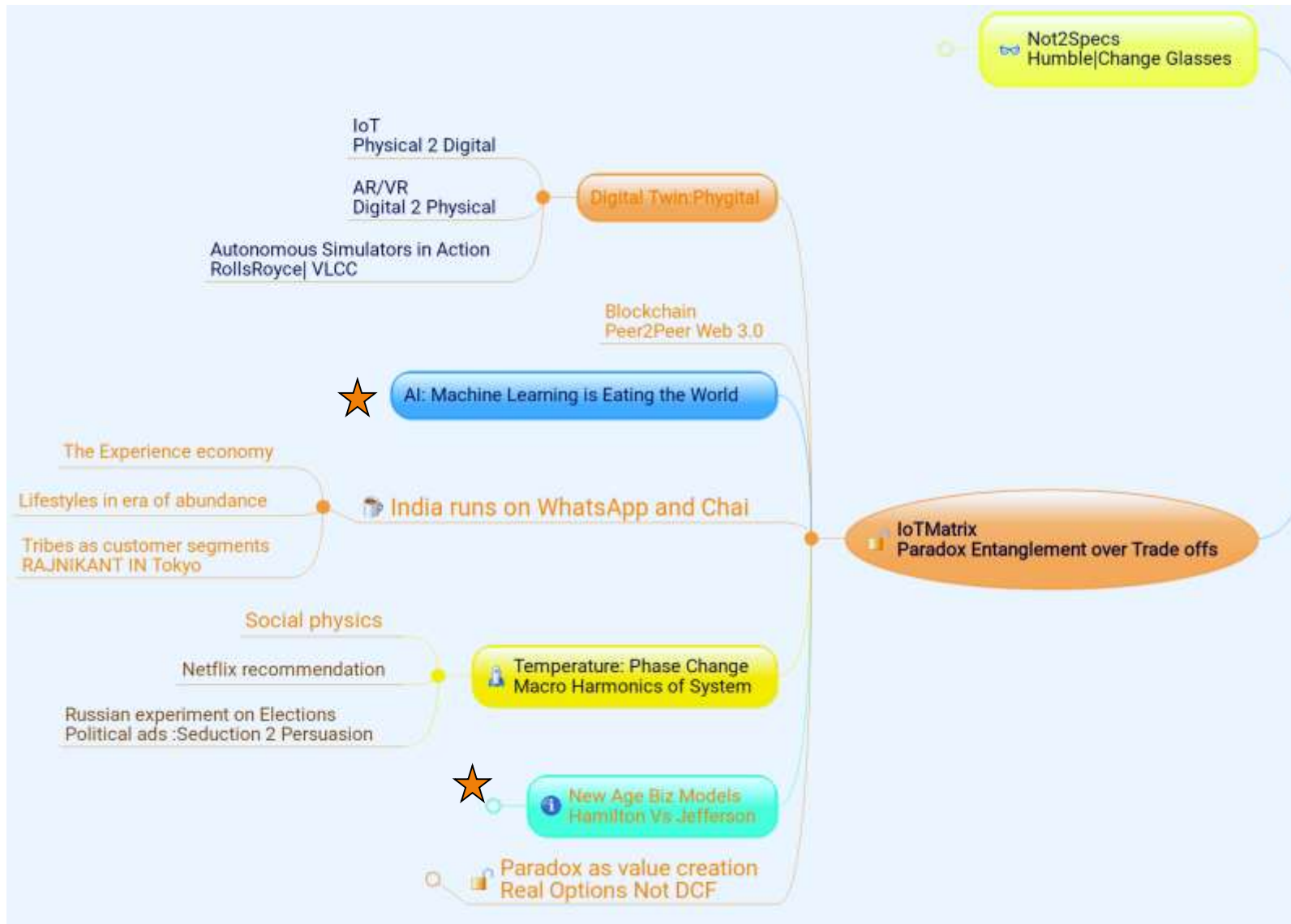
**Customer Intimacy with market
leading value and differentiation**

Sector contributions to S&P500 TR performance YTD



Source: IBC Cross Asset Research/DeVries

IoTMatrix: The Maya World arrives NOW



Machine Learning: Instances versus masses



To see a World in a Grain
of Sand

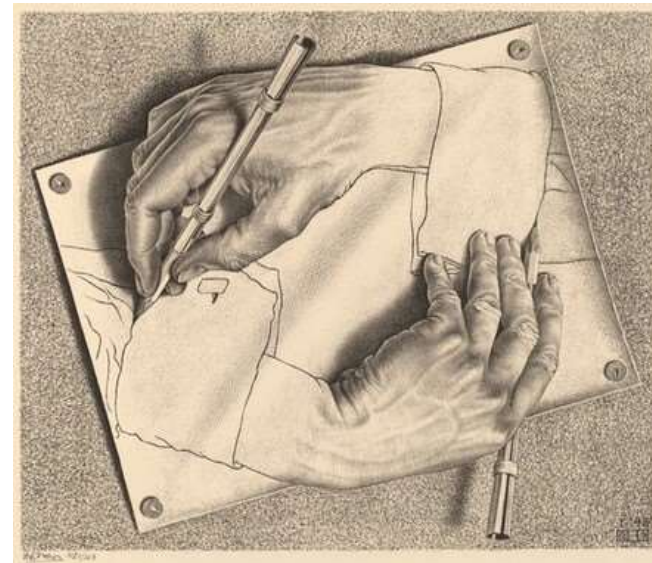
And a Heaven in a Wild
Flower

Hold Infinity in the palm
of your hand

And Eternity in an hour

Auguries of Innocence
William Blake

Fractal Physics



M C Escher

Perpetual Deficit Financed For Profit Company

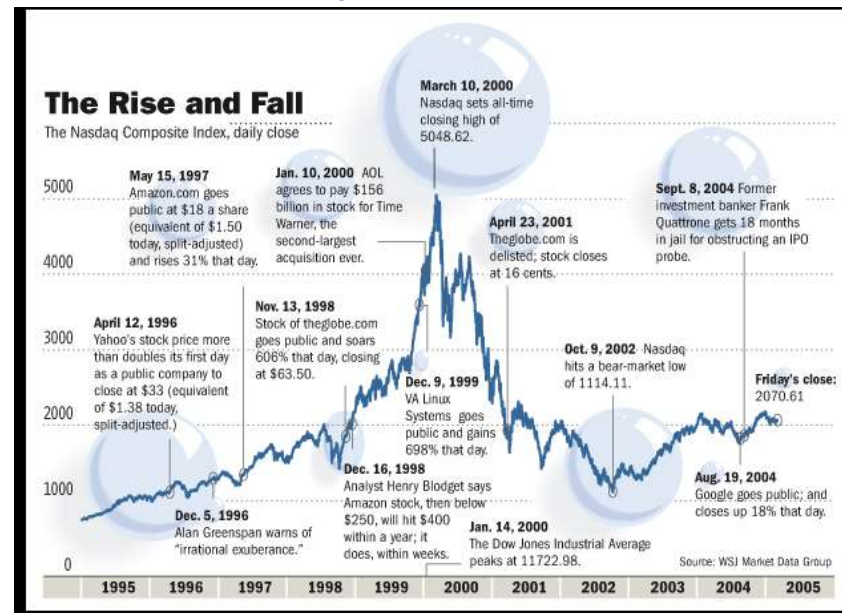
■ New Biz Model:

- DotCom bust did not kill eBIZ: Priceline, eBAY,AMZN
- WeWork implosion not goanna kill
- Indian government is deficit financed for 70 years..

■ Didi Chuxing, Google,

■ Social Physics

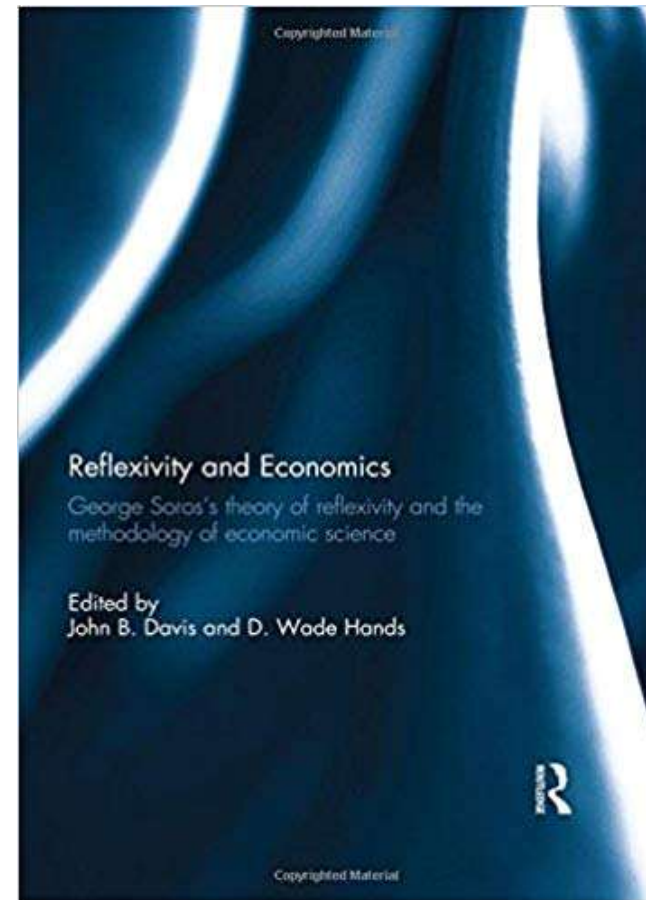
- Individual is random and may be unpredictable
- Trillions of a digital trace lead to predictable clusters
 - resistance of copper or boiling point of water
- YouTube is a bigger source of News then we assume
- The like currency is replacing Fiat currency
- TiKToK is a new addictive



The Future Leaders will be from TiKToK celebrities

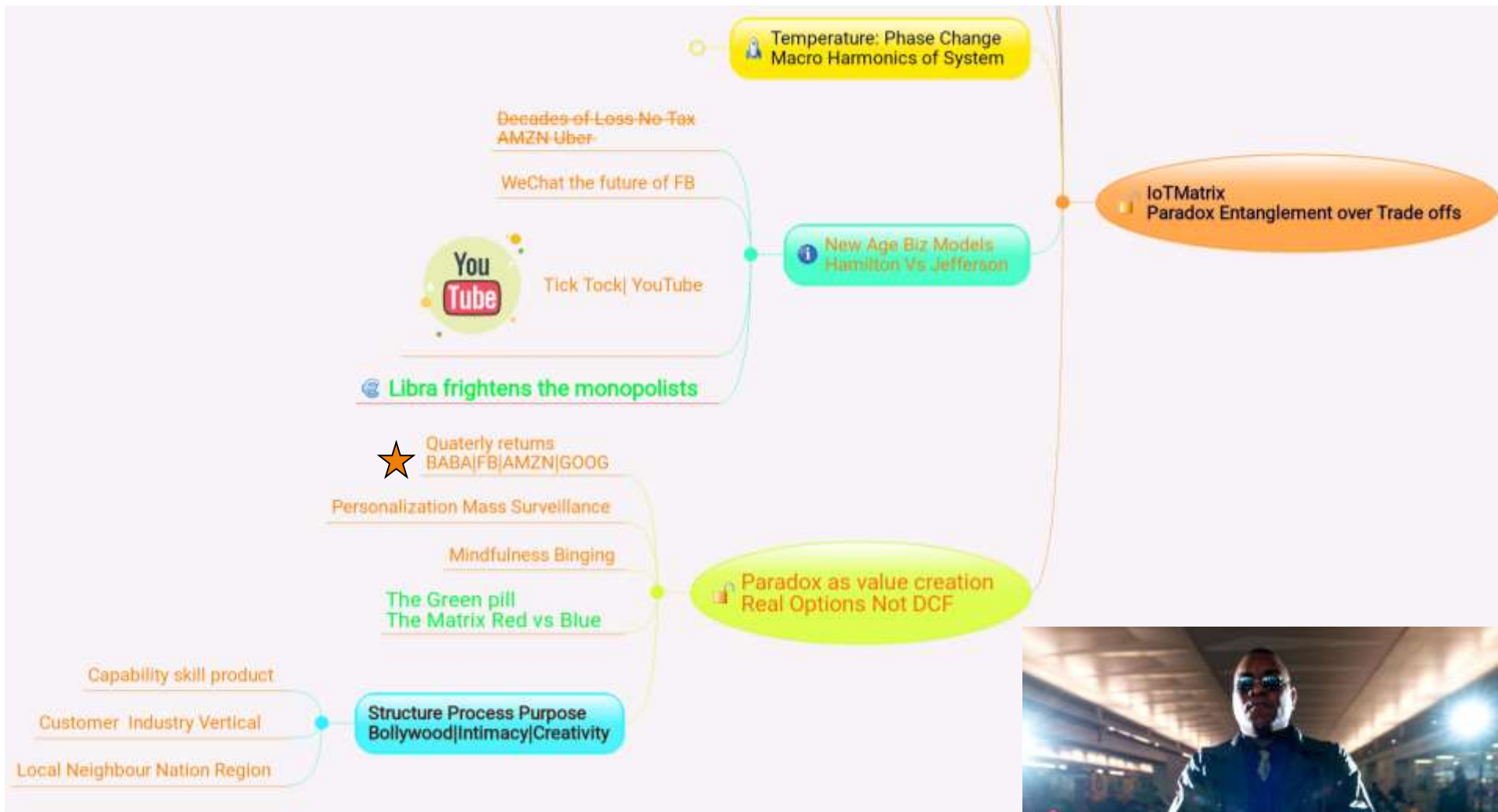
Quantum Entanglement in Social Physics: Reflexivity

JUST A NORMAL DAY AT THE NATION'S MOST IMPORTANT FINANCIAL INSTITUTION...



Opinions Select Facts:
Fake News, GDP statistics etc

IoTMatrix: The Green Pill not the Red or Blue one



Helicopter View of Themes Trends: A Retro look



Technology has been strongest force of change
Fragmentation of Consumers. Global Tribes
Polarization
 Employees want a say on Google and Amazon business values
Anger and Hate
 How to respond? Structure?
 Need a new Yug? **The Green Pill**

EMOTIONS MATTER MUCH MORE THEN UTILITY



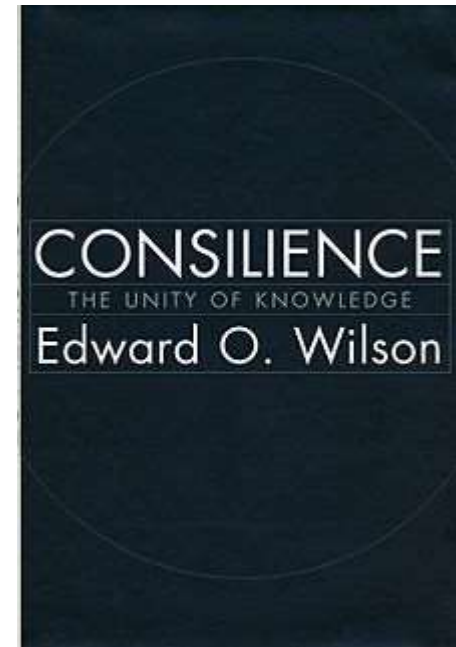
Consilience: The Unity of Knowledge

- agreement between the approaches to a topic of different academic subjects, especially science and the humanities.

One of our greatest living scientists--and the winner of two Pulitzer Prizes for **On Human Nature** and **The Ants**--gives us a work of visionary importance that may be the crowning achievement of his career. In **Consilience** (a word that originally meant "jumping together"), Edward O. Wilson renews the Enlightenment's search for a unified theory of knowledge in disciplines that range from physics to biology, the social sciences and the humanities.....

Consilience is science in the path-clearing traditions of Newton, Einstein, and Richard Feynman.

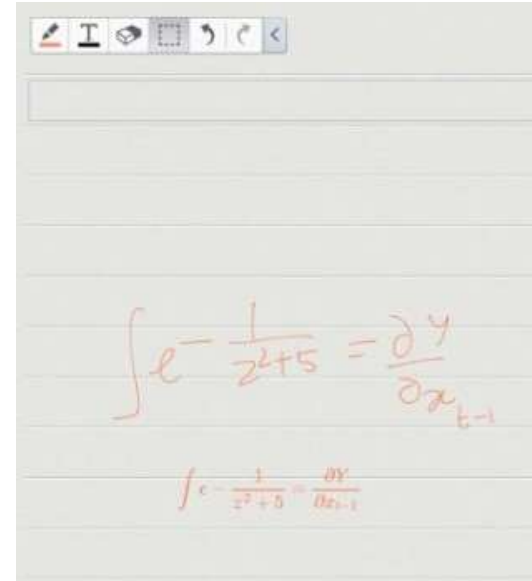
goodreads



“The love of complexity without reductionism makes art; the love of complexity with reductionism makes science.”

— **Edward O. Wilson**,
Consilience: The Unity of Knowledge

Enchanted Objects: Smart Appliances



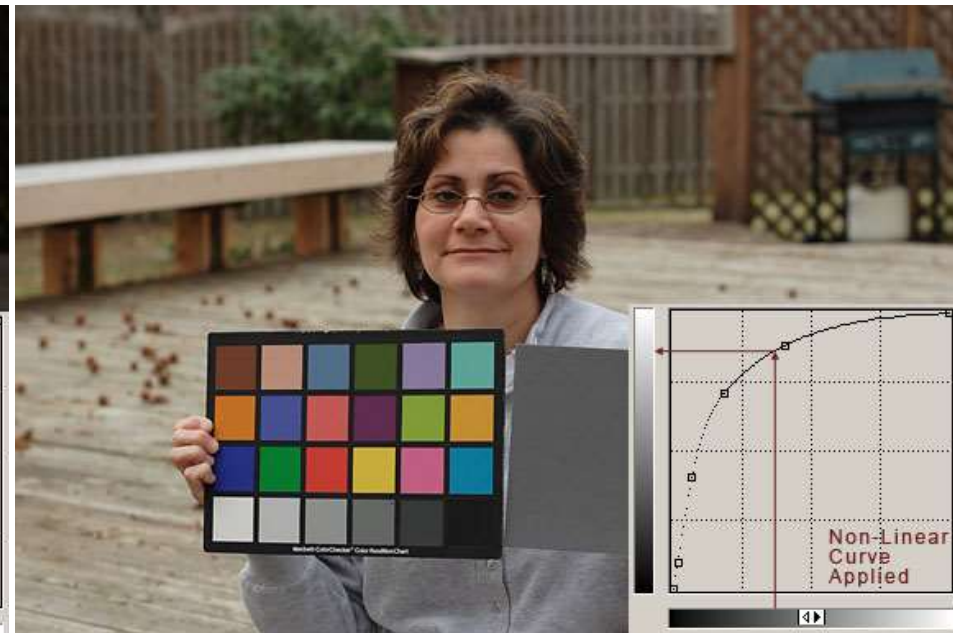
- Inventing enchanted objects | David Rose | WOBI

**From General Purpose Computer
to Smart Appliances**
John Young , President HP 1991



Enchantment: Lost Mission

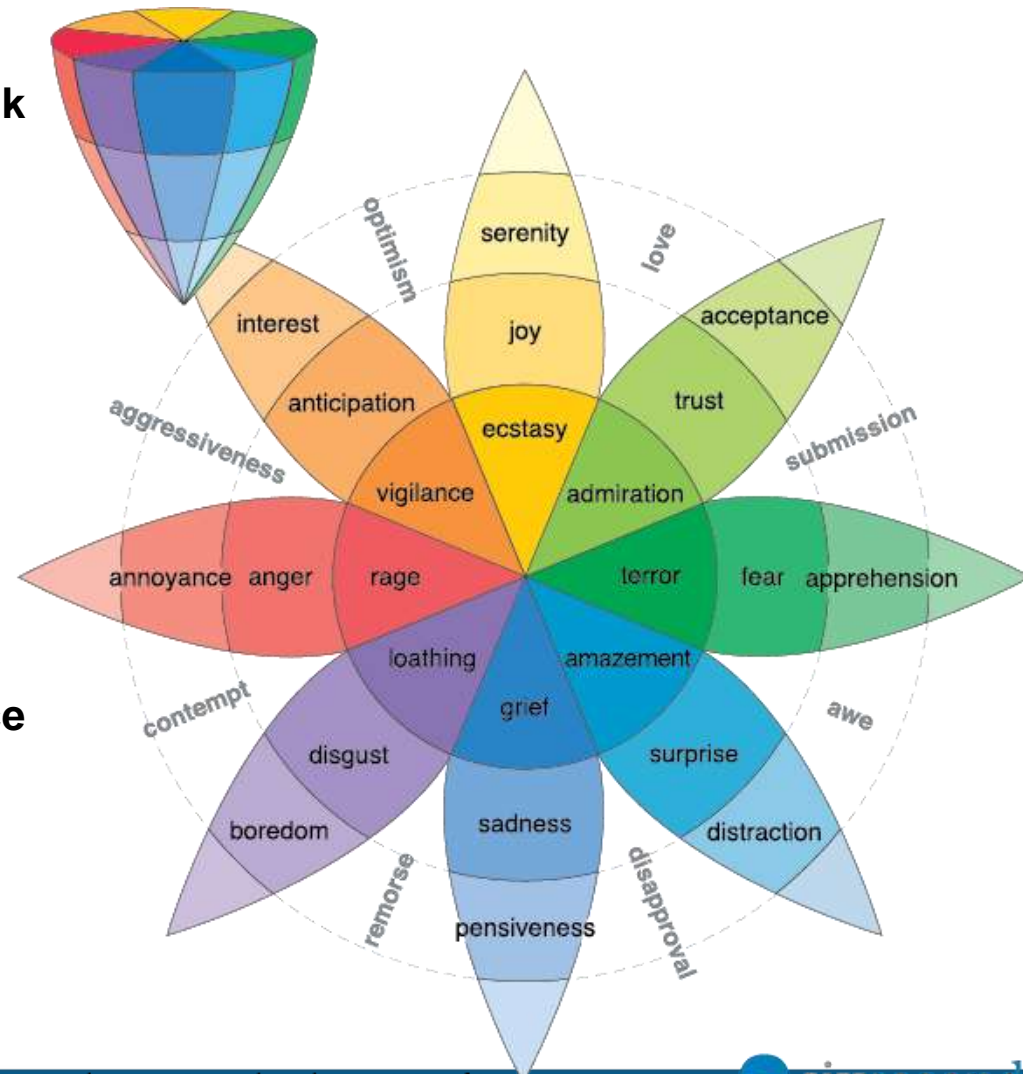
- **Photography: A joyful Art at our service**
 - ISO, Aperture, Speed, Focus and many more techniques
 - High Dynamic Range (HDR), Auto choose from 8-32 shots
 - Smiling faces auto detect



Joy : the Real North Star for Technologist projects

The Purpose trounces Rol

- Politics trumps Economics
- Sharing Circular Economy emerges back
- Planning as Discovery
- White water Rafting : Real Options
- Temperature Phase Changes
 - Amorphous to crystals
- Customer and Employees voices
 - Amazon/ Google Workers on Values
 - Nike
- Identity Emotional Aspiration Experience world



Arvind Tiwary



Introduction:

Arvind Tiwary runs SangEnnovate based in Bangalore, India.

SangEnnovate is about leading change and innovation in a VUCA world and *Whitewater rafting as Strategy*.

Arvind is also Chair TiE IoTForum. IoT is a new paradigm with significant disruptive potential. Arvind has provided leadership in developing a **#IoTForIndia** vision. Over 800+ startups are engaged with the IoT Forum. . Arvind is also active as Lead for WG3 in IoT4 Smart City Task Force(IOT4SCTF) and is IET India IoT panel lead for IoT Security WG and is co Chair for the premier **#IoTNext** event



Experience and Competencies:

Arvind brings 33+ years of Industry experience . Arvind has a multi disciplinary experience in helping financial institution, exploit Information Technology. He has worked in Sales and Marketing, managed software projects and acted as Product Manager and Chief Architect to large enterprise scale applications over three generations. He has also run operations with Board level responsibility in Hong Kong, Singapore and India. Arvind is a popular speaker and has been adjudged the best speaker in many conferences and has participated in strategic planning (Business and IT) at the board level for many insurers.

Arvind is an alumnus of the Wharton Business School, Indian Institute of Technology, Kanpur and Indian Institute of Management, Ahmedabad. Arvind has taught IT to insurers and Insurance to IT professionals.

Arvind is 60 years old, married with 2 children, is keen on golf and an avid reader of books on all topics, and loves long drives on the road less travelled



[Tiwary_ar](#)



[/in/tiwar yarvind](#)



[/people/Arvind-Sang/100005573178335](#)

Contrarian Reflection: Is our age really so different?

It was the best of times, it was the worst of times, it was the age of wisdom, it was the age of foolishness . . . it was the spring of hope, it was the winter of despair . . . in short, the period was so far like the present period



Charles Dickens
English writer
1812 - 1870

QuoteHD.com

Thesis, Antithesis, Synthesis

KARL MARX FOR DUMMIES

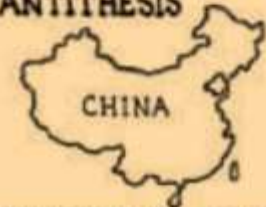
A NEW MANIFESTO FOR A 21ST CENTURY GLOBAL ECONOMY

1. THESIS



CAPITALISTS CONTROL THE MEANS OF PRODUCTION

2. ANTITHESIS



COMMUNISTS CONTROL THE MEANS OF PRODUCTION

3. SYNTHESIS



COMMUNISTS BUY THE ASSETS OF CAPITALISTS WHO SPEND BEYOND THEIR MEANS AS CONSUMERS OF PRODUCTION

© MACKENZIE

Q&A

Backup Extras