

# Deciding, measuring,& planning...



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# This is the most dangerous time in history of humanity: Stephen Hawking

*The 74-year-old Cambridge professor said the world is facing huge environmental and technological challenges and needs to unite and work together to protect the humanity.*

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## THE ECONOMIC TIMES

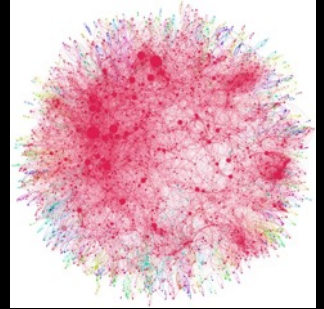


LONDON: In a grim prognosis, renowned British theoretical physicist [Stephen Hawking](#) has warned that the human race today is facing the "most dangerous" time in its history.

Noting that the planet is in crises, the 74-year-old Cambridge professor said the world is facing huge environmental and [technological challenges](#) and needs to unite and work together to protect the humanity.

**Traditional means of deciding,  
judging & planning no longer  
work...**

# We live in a Complex Adaptive System:



- Large number of dynamically interacting elements
- Interactions are non-linear – small effects can cause large outcomes
- Nature of influence of element is modulated by neighbor
- Any interaction can feedback onto itself
- Overall behavior of system not predicted by behavior of individual elements

# Complex Adaptive Systems

- Can be open and boundaries difficult to define
- Operate at far from equilibrium conditions, requiring constant flow of energy to maintain organization
- Have a history that influences present behavior
- Elements may be ignorant of system as a whole - responding only to local information

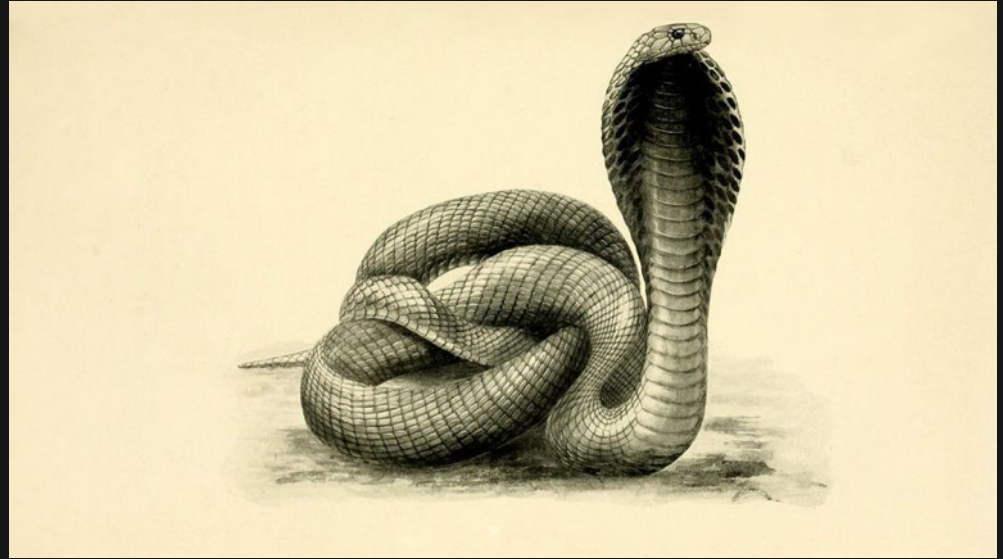


*Paul Cilliers*

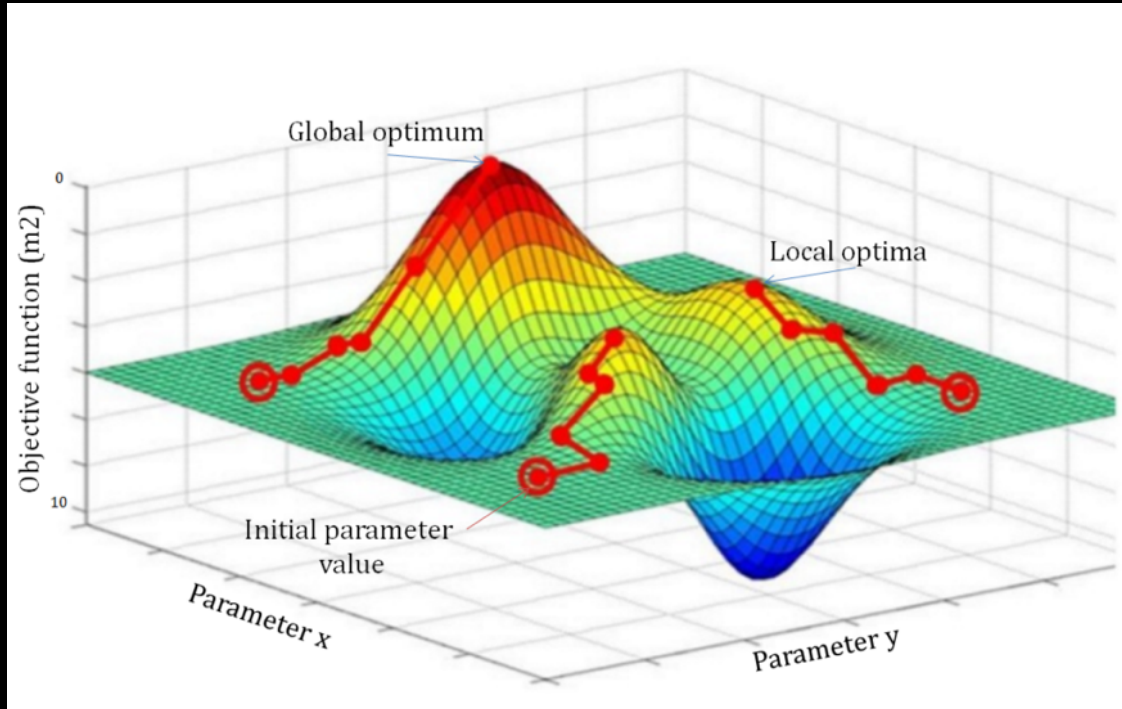
**Changing & unstable,  
Unpredictable  
Entangled**

# “Cobra Effects”

- unintended consequences of over-simplistic “solutions” to complex problems
- linear thinking
- Not considering the complex adaptive system we live in



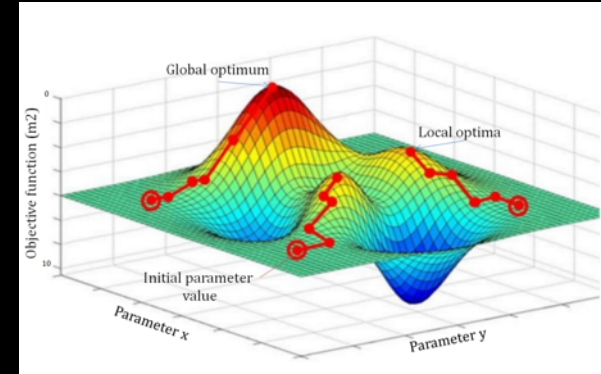
# Navigating out of danger...





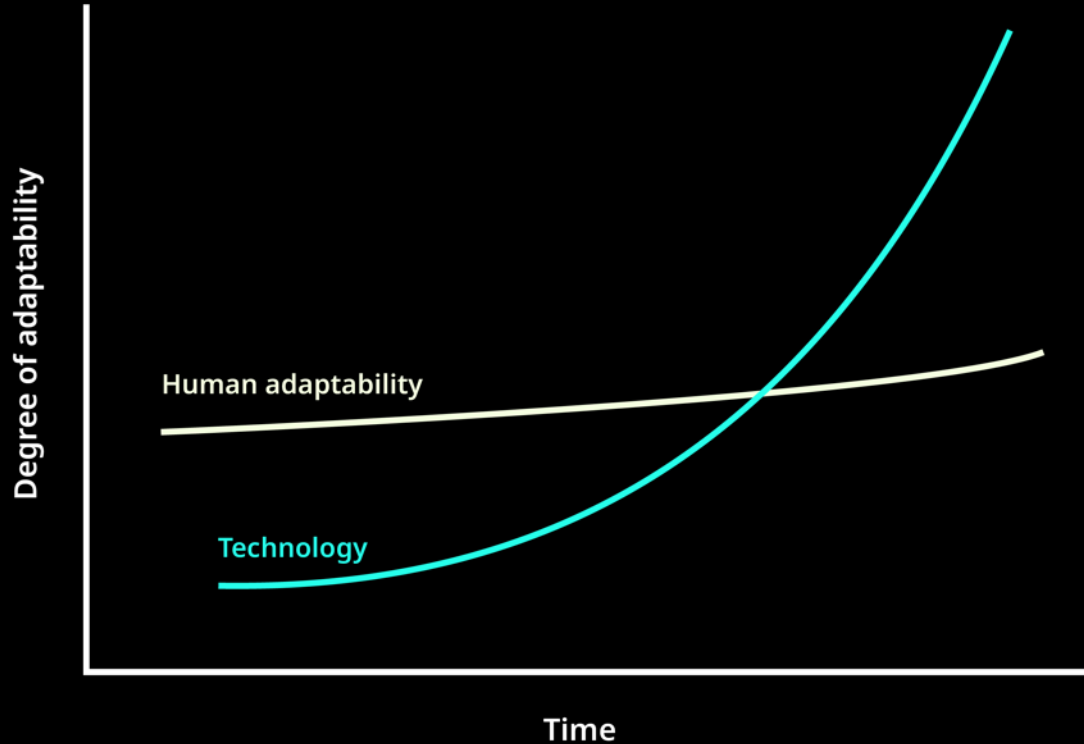
# The only formula: diversity & collaboration

- Diversification & difference
- Include diverse perspectives
- Stop doing the same thing over and over again!
- Work together!



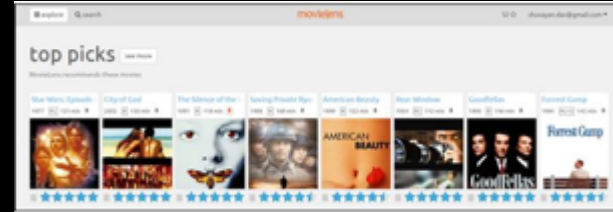
**Are we making things  
worse?**

# Technology & human adaptability

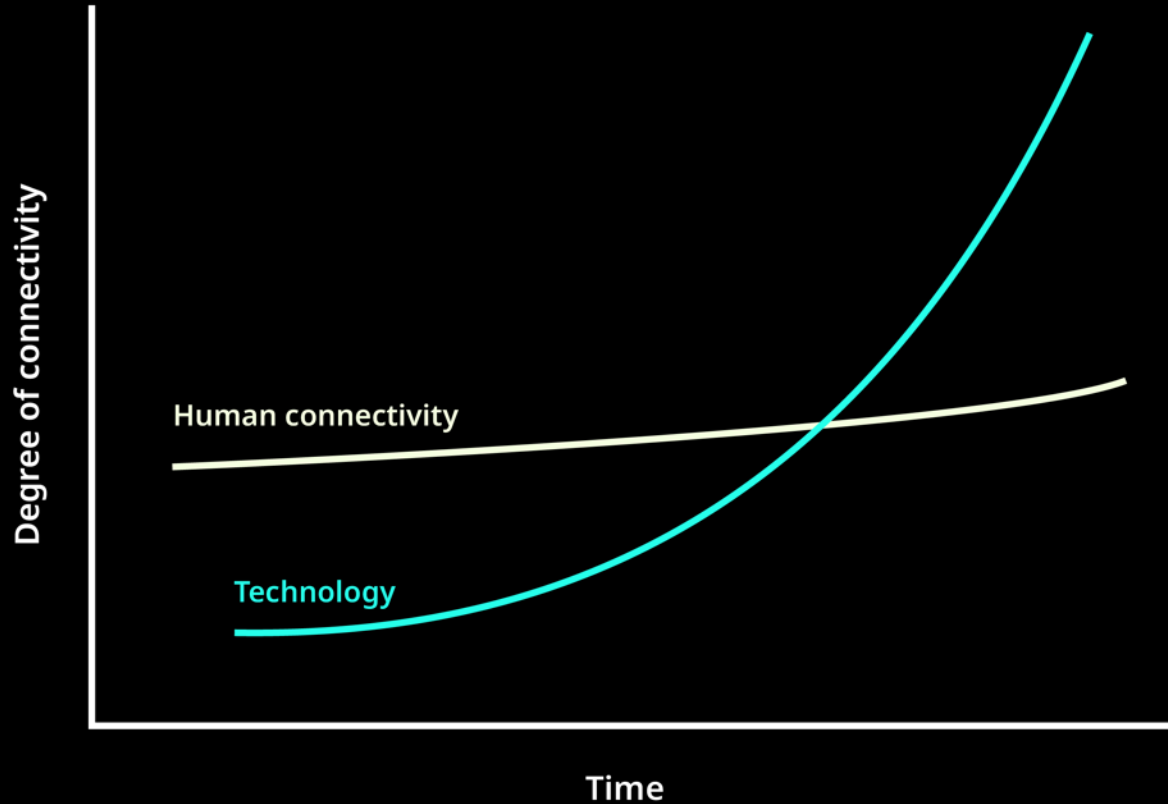


# Impeding human adaptability?

- Cushioning from dissonance and diversity
- Recommender systems – “people like you”
- Search engine optimization
- Popularity bubble
- UX conventions and technical lock-in
- Map reading, calculation, letter writing e.g., Smart Compose
- Evidence-based decisions



# Technology & human connectivity

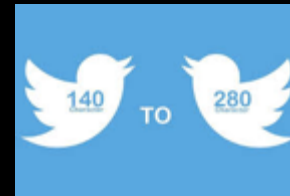
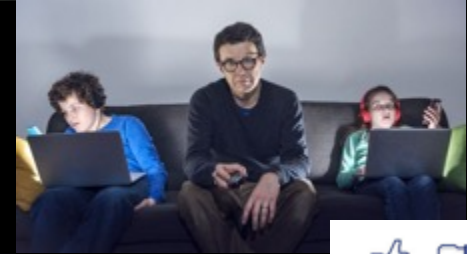


# Connected technology

- Aggregating data
- Single sign-on
- Internet of things and 5G
- Platform monopolies

# Impeding human connectivity?

- Digital divide
- Shallow sense of friendship, device mediated, virtual tribes
- Not fulsome representation of self
- Consequences of bad behavior reduced
- Device addiction, reducing local connection
- Decreased time and space to express deeper message
- Fragmented entertainment, fragmented social media platforms
- Expect faster, binary feedback



**Automating & amplifying the  
same pattern...**





# Alice and the unexpected...



Smarter is not always  
better...



# The problem with reduced Truth...

- If you are not like the average, probability is wrong

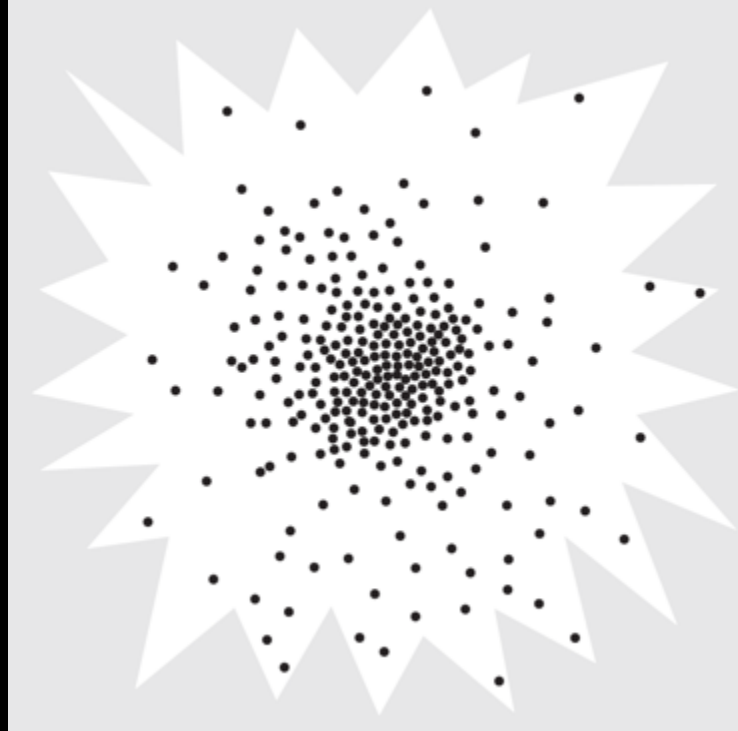


# The power tools of AI..

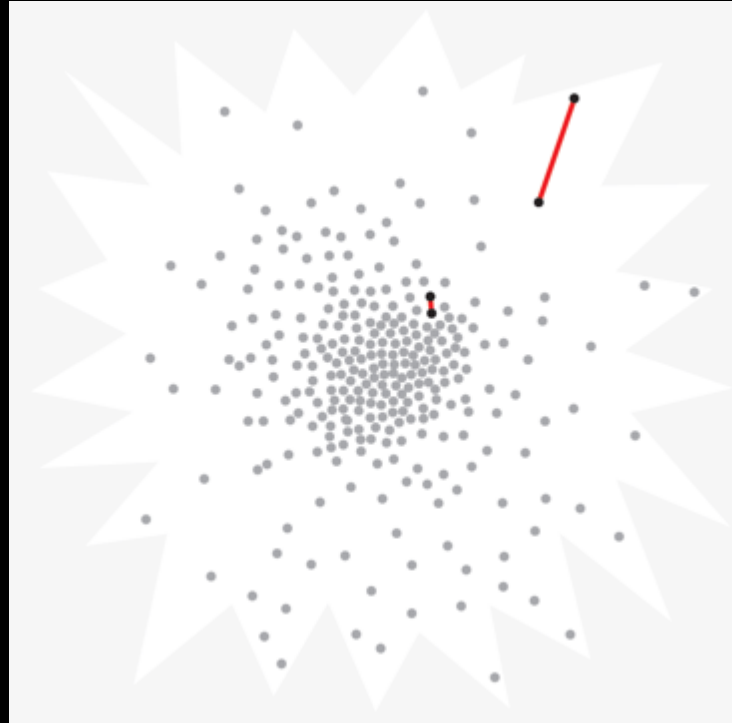
- Unable to handle diversity & complexity
- Unprepared for the unexpected
- Replicates our own inadequacies
- Automate and amplify them

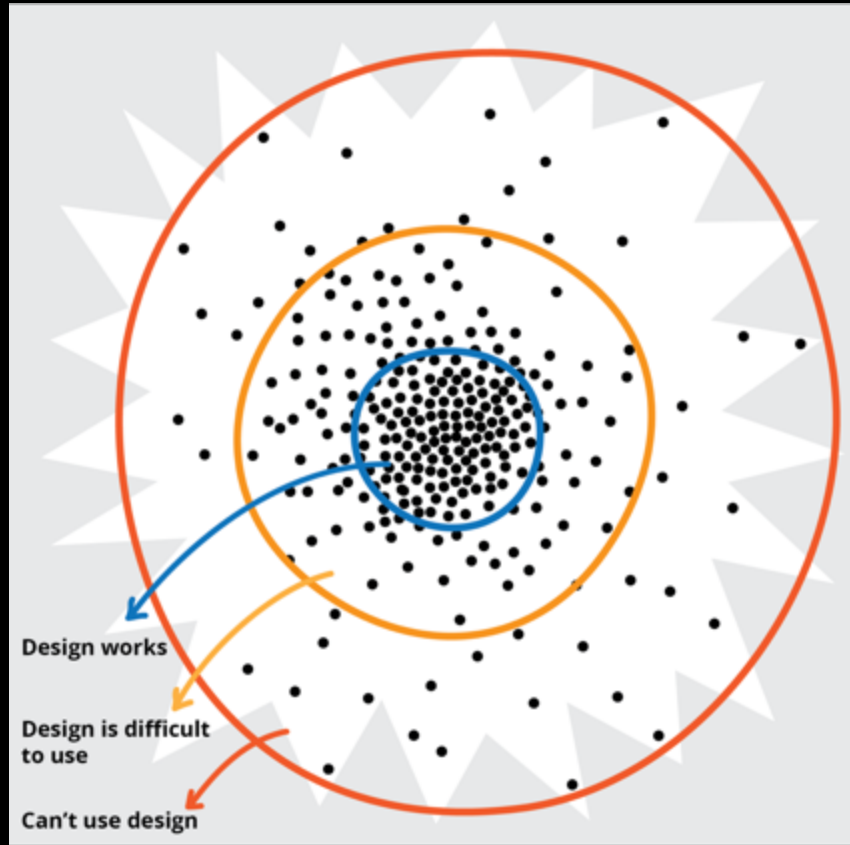
**Worse and worse...**

# Our human starburst...



# Difference...





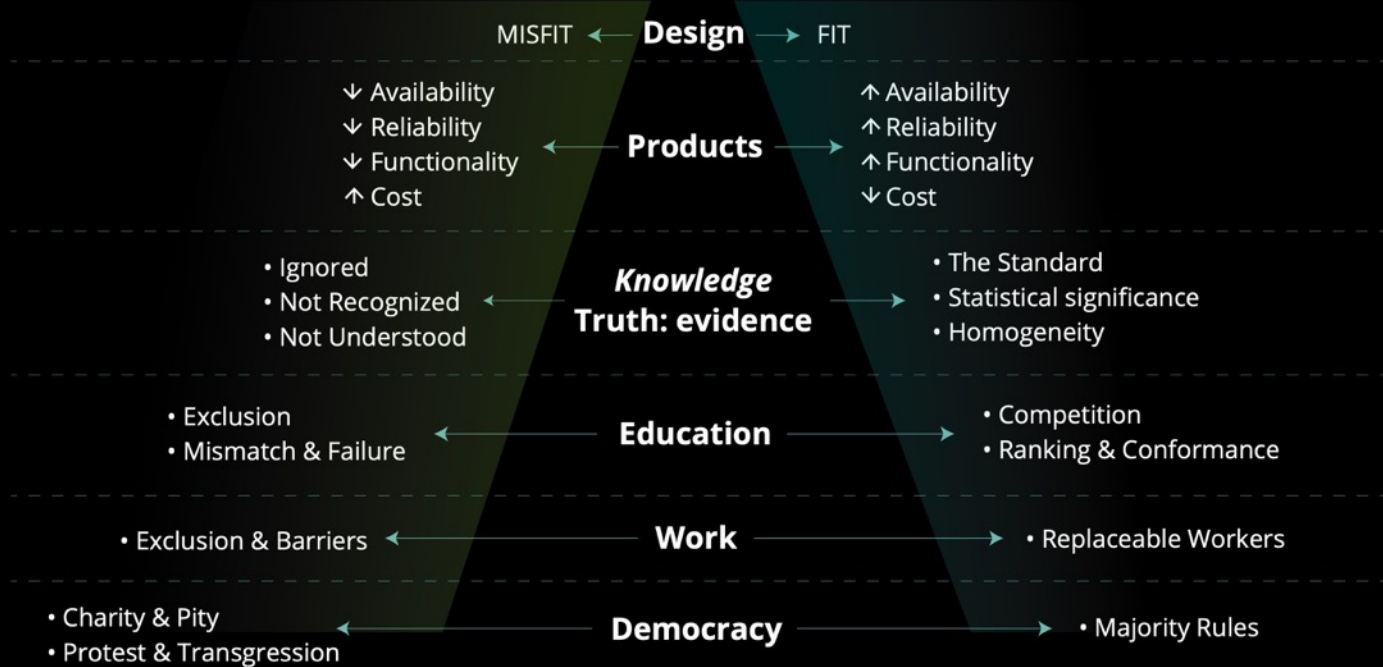
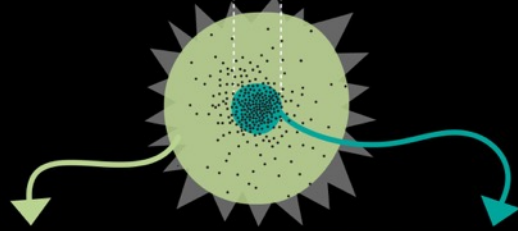


# Pareto

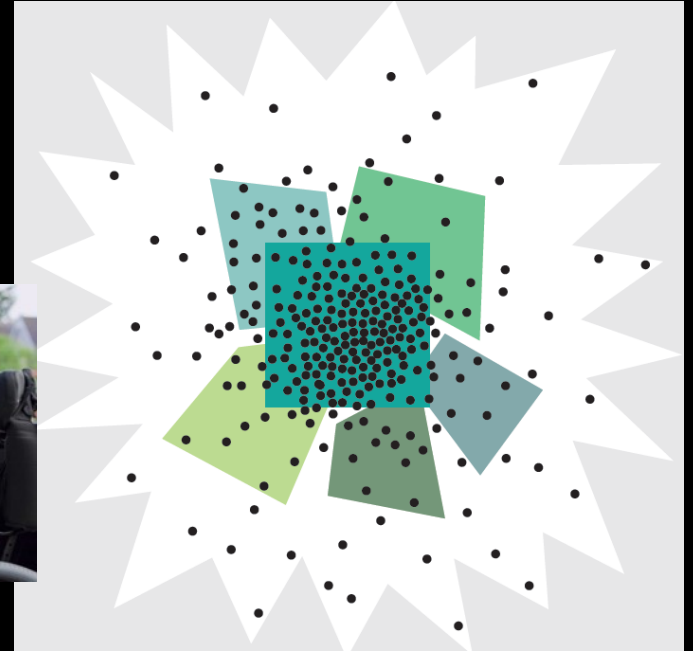


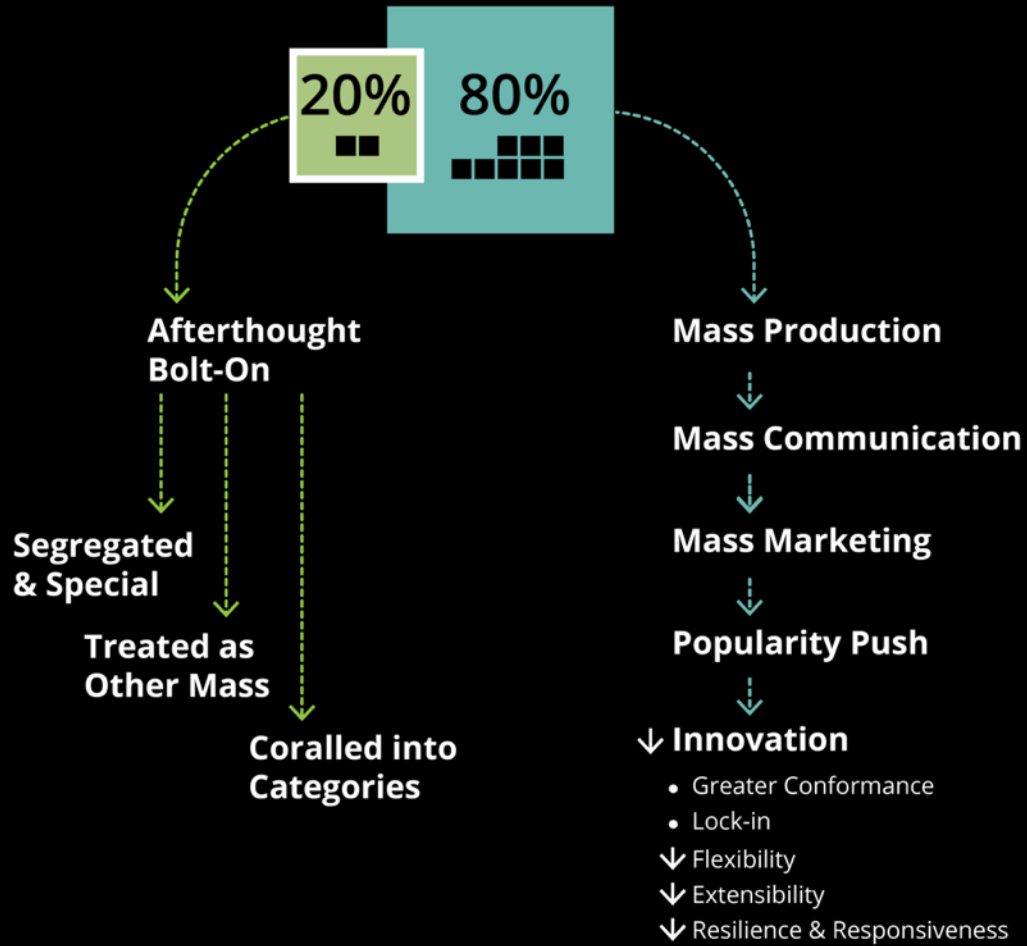
- The 80/20 principle
- (Richard Koch) If you want quick wins, ignore the "difficult 20%" who take 80% of the effort



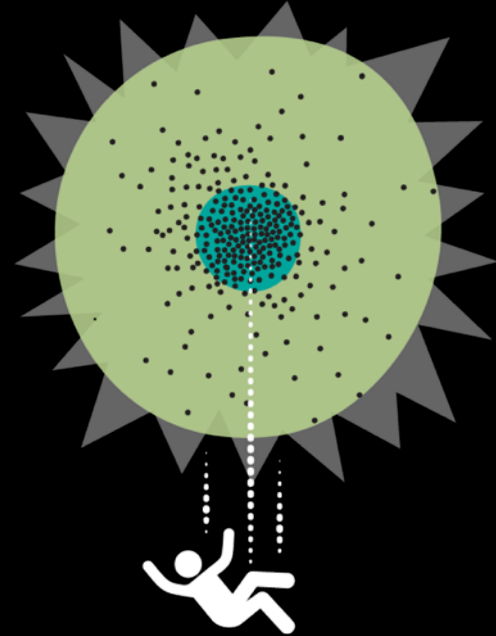


# Social justice strategies based on data...





....enlightened  
self-interest



- Anytime
- When you least expect it
- Greatest Probability

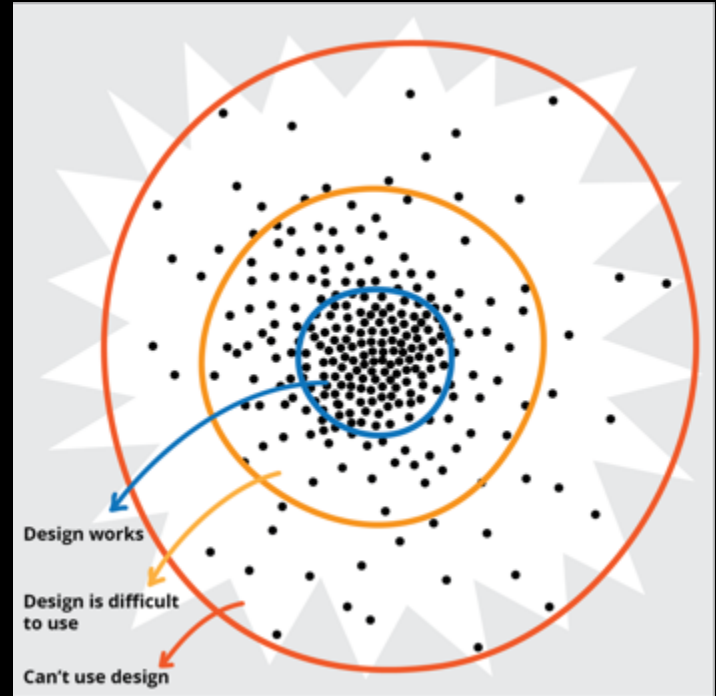
# Pareto reconsidered...

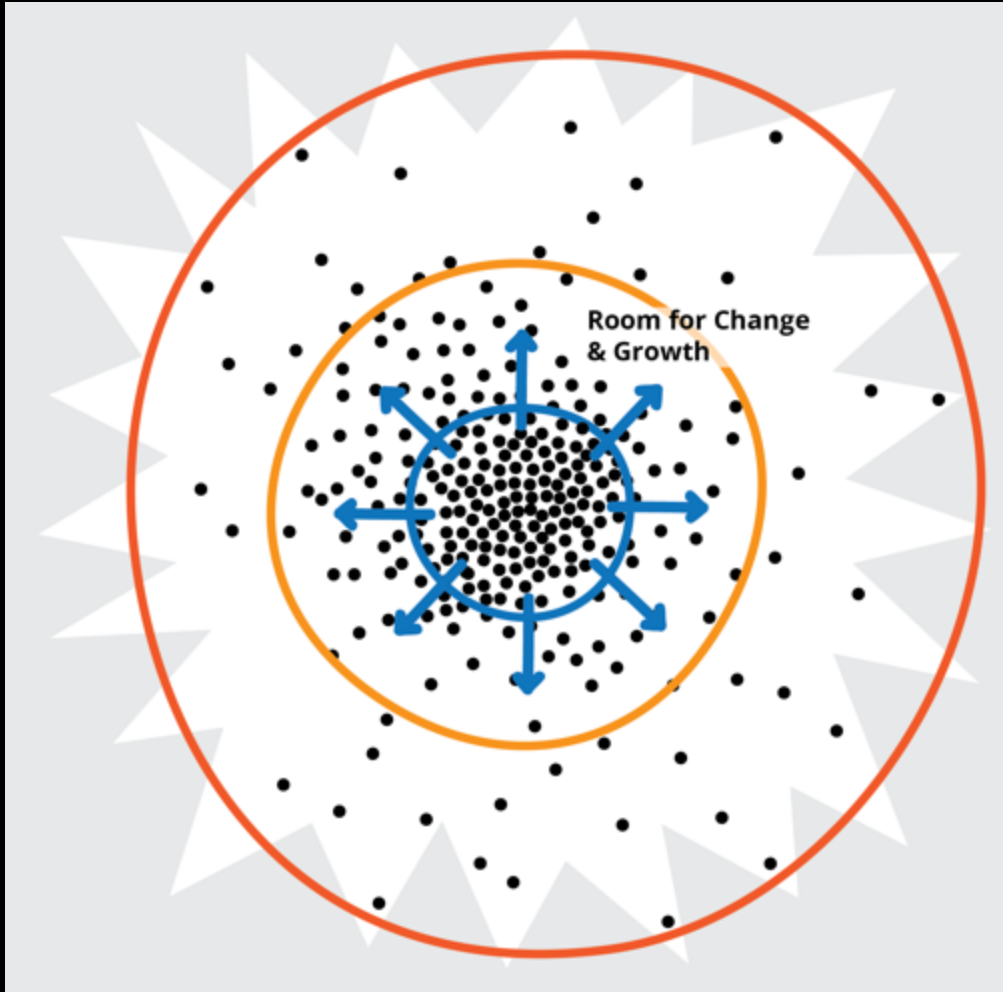
- we have misidentified the modern day vital few as the difficult 20%



# Who are the real vital few?

- If our goal is not greed, quick wins or gaming the system, but..
- Innovation
- Diverse perspectives
- Detecting weak signals
- The “difficult 20%” that occupy 80% of the unexplored terrain

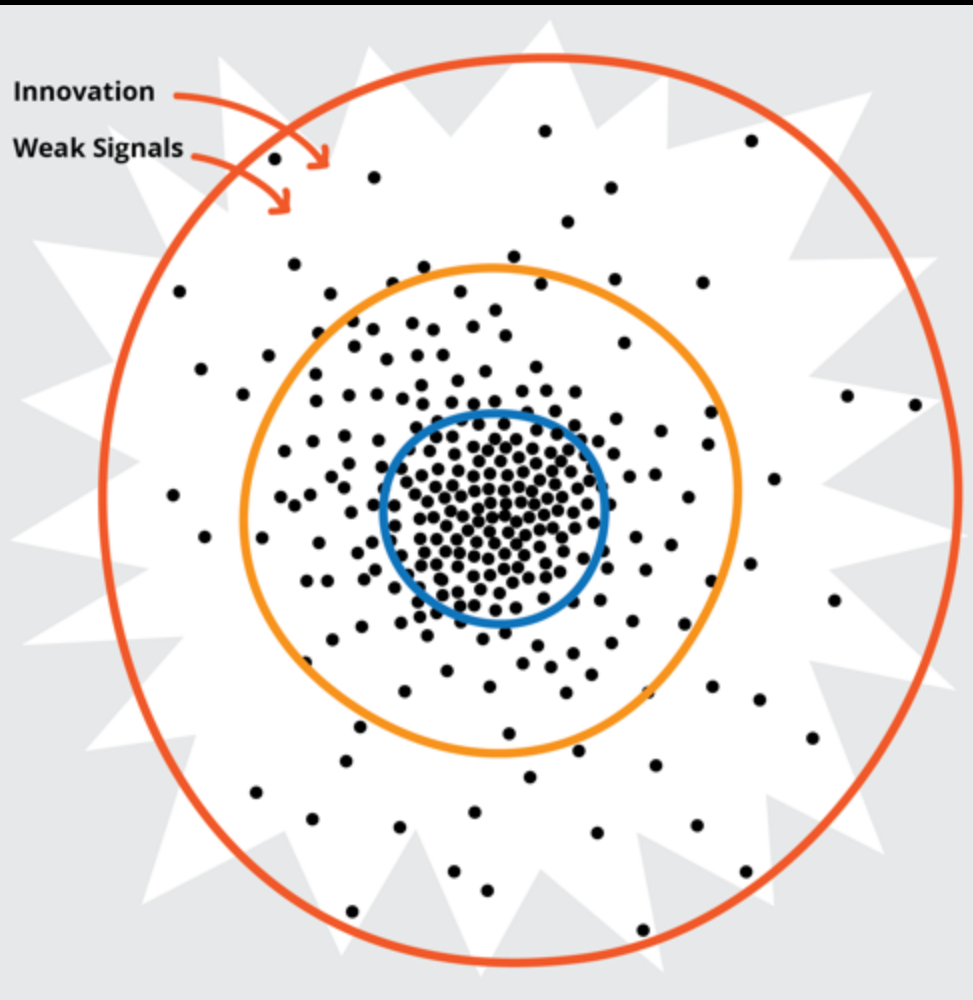






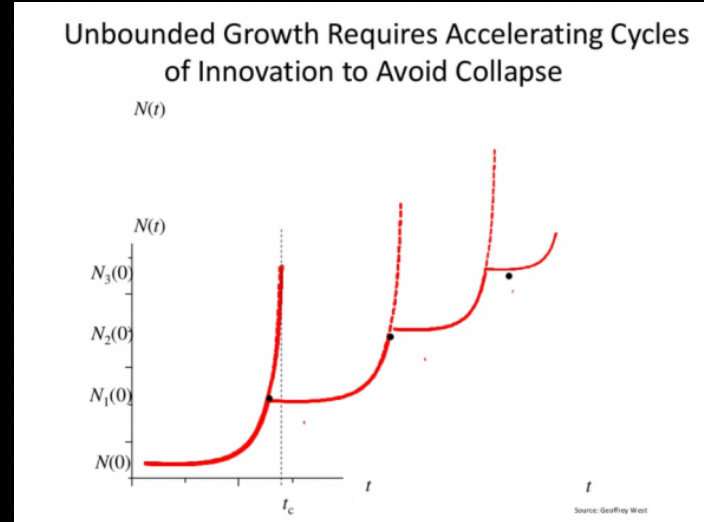
Innovation

Weak Signals



# The Age of Acceleration

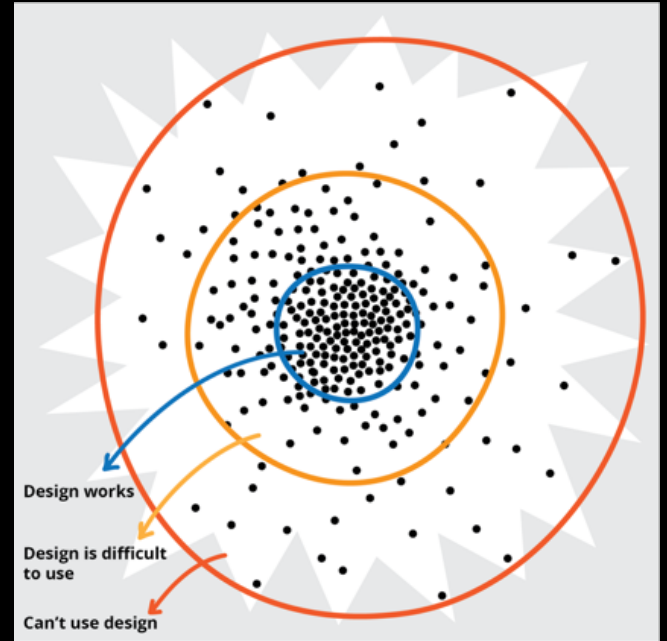
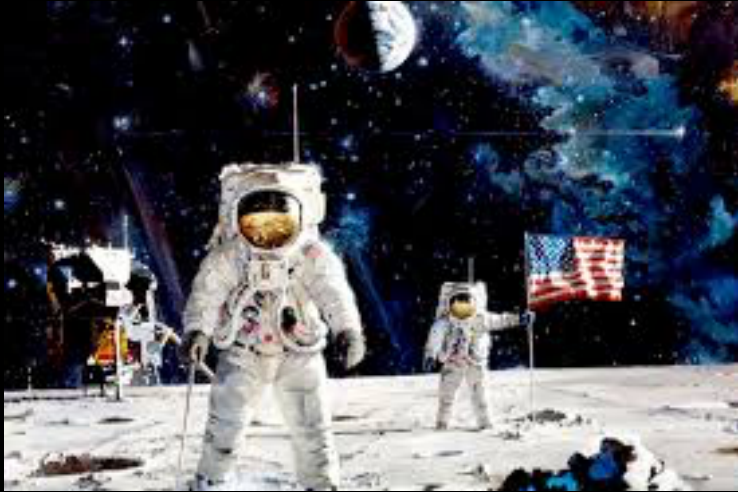
- “A matter of survival”
- Business acceleration imperative
- “Adapt or die”
- Geoffrey West’s “ever accelerating treadmills”



# The next disruptive innovation must be..

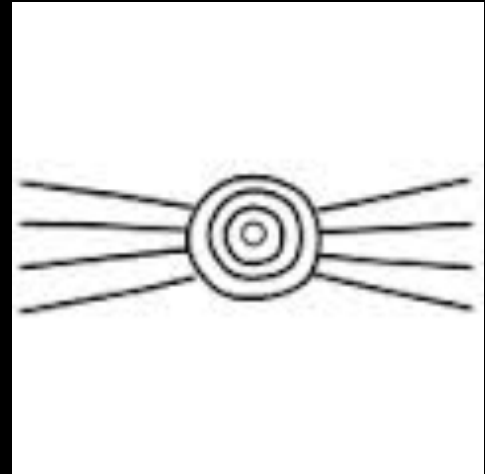
- Designing with diversity
- Treating humans and the world as one organism ...or inclusion

# The next frontier...



# The Role of Standards

- A common meeting place from which to diverge
- Standards that work for diversity and complexity support adaptability

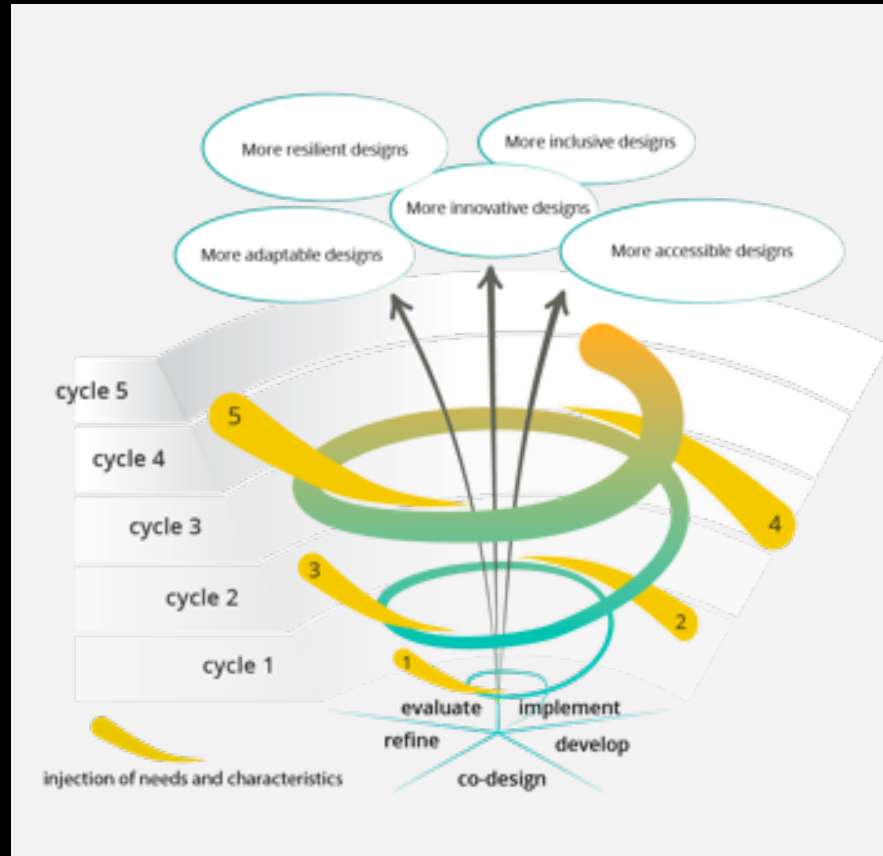


# Decisions based on impact..

- We equate impact with a single measure for a large homogeneous number
- We are heterogeneous and need different measures



# Virtuous Tornado



**What about cost?**



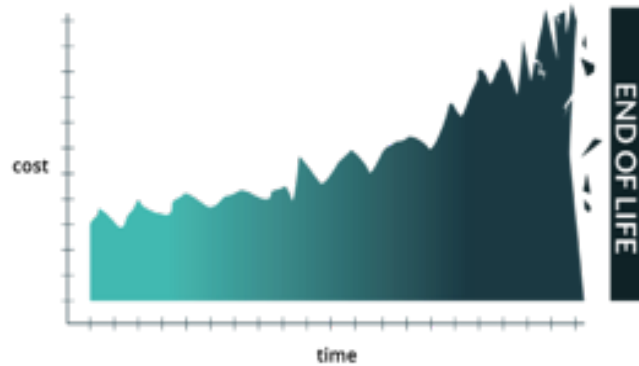
# Full social costing...

- We all eventually pay for the “externalities”

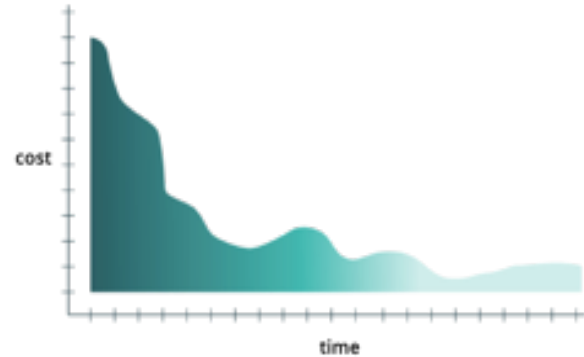


# Cost over time and longevity of system..

Plan for the Centre



Plan with the Edge



**How will we measure, decide  
and judge?**

**‘the true measure of any society can  
be found in how it treats its most  
vulnerable members’ ~ Mahatma Gandhi**

# Intelligence that works with the edge of our human scatterplot is better able to ..

- Adapt to change & respond to the unexpected
- Detect risk
- Transfer to new contexts
- Results in greater dynamic resilience & longevity
- Will reduce disparity
- May hold the key to our survival

# Continuing the conversation:

- <https://idrc.ocadu.ca>
- <https://inclusivedesign.ca>
- @juttatrevira
- <https://medium.com/@jutta.trevira>