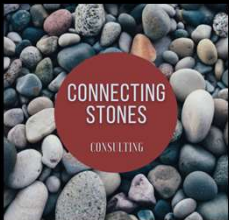




# Building Responsible AI: Turning ethically reflective data practice into practical action

CIC@UTS, 30 August 2024



Dr. Theresa Dirndorfer Anderson  
Founder and Lead Data & AI Ethicist  
Connecting Stones Consulting

# Heart and Home

Symbolic Welcome to Australind

by Nic & Alex Mickle, Safehaven Studios  
Designed in Consultation with  
Noongar Elder, Dennis Jetta and artist,  
Cassie Jetta



“Our Noongar First People, convicts, free settlers, English-Indian stud farmers, Quakers, Anglicans, Irish Catholics, daring prison escapees, farmers, hippies, Buddhists and fresh generations of settlers, have all sought refuge here or called this place home. And still, today, what binds us all is the natural environment that surrounds us: the birds, aquatic life, the flora, the fauna, and the seasonal changes of our beautiful waterways. This is what makes this place special.

“This circular artwork reminds us of our human connection with nature, our waterways and the importance of the ecosystem it supports... sustaining us both physically and to many spiritually as well. It represents the spirit and identity of this place – the evolving nature of place and history. The circular pattern a fusion of both indigenous and settler cultural heritage.”

Statement by the Artists

<https://harveyregion.com.au/blog/operator/heart-home-sculpture/>





*sharing "red threads" of my  
ethically reflective practice*



# Humans and Technology

*The most exciting breakthroughs of the 21st century will not occur because of technology but because of an expanding concept of what it means to be human.*

John Naisbitt, Megatrends 1982

Image by Evgeni Tcherkasski from Pixabay

T.Anderson, Connecting Stones, 2024





## Humans and Data

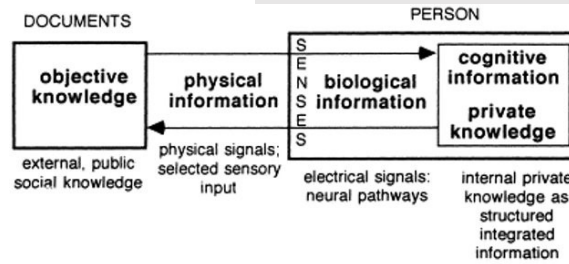
*Much needs to occur, however, between the collection of data and observations, the extraction of parallel material from the existing record, and the final insertion of new material into the general body of the common record.*

*For mature thought there is no mechanical substitute.*

**Vannevar Bush (1945) As We May Think Part 3**



"information is data of value in decision-making"



$$K[S] + \Delta I = K[S + \Delta S]$$

## Machine perspectives of Relevance & Uncertainty in Decision-making

## Human perspectives of Relevance & Uncertainty in Decision-making

$$\text{precision} = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{retrieved documents}\}|}$$

$$\text{recall} = \frac{|\{\text{relevant documents}\} \cap \{\text{retrieved documents}\}|}{|\{\text{relevant documents}\}|}$$

extreme, if one of the probabilities of choice is unity and all others are zero, then the situation is completely determined and the value of the expression is maximal:

$$\sum_{i=1}^m |P(a_i) - 1/m| = (1 - 1/m) + (m - 1) |0 - 1/m| = 2 - 2/m \quad (4.15)$$

The value  $V$  of the decision state  $DS$  at time  $t$  is a function of the probabilities  $\{P_t(a_i)\}$  and can be expressed by

$$V(DS_t) = \frac{\sum_{i=1}^m |P_t(a_i) - 1/m|}{2 - 2/m} \quad (4.16)$$

If the decision state is completely indetermined (i. e., the DM has no information on which to base a choice), then  $V(DS_t) = 0$ ; if the state is completely determined (i. e., the DM has no uncertainty whatsoever about which alternative to select), then  $V(DS_t) = 1$ . Hence, in all cases it is true that  $0 \leq V(DS_t) \leq 1$ .

measure of information contained in dataset

"data are not collected, they are co-authored"  
(Kvale, 1988)

What are you looking for?  
How do you know you found it?  
(T. Anderson, 2004)



# Phase States of Creativity and Innovation

Playing with Pauses

Supporting creative information ecologies

[What are we about?](#)  
[Artful engagements](#)  
[Background material](#)  
[Want to know more?](#)



Anderson, T.D. (2013). The 4Ps of innovation culture: conceptions of creatively engaging with information  
*Information Research*, 18(3) paper C28



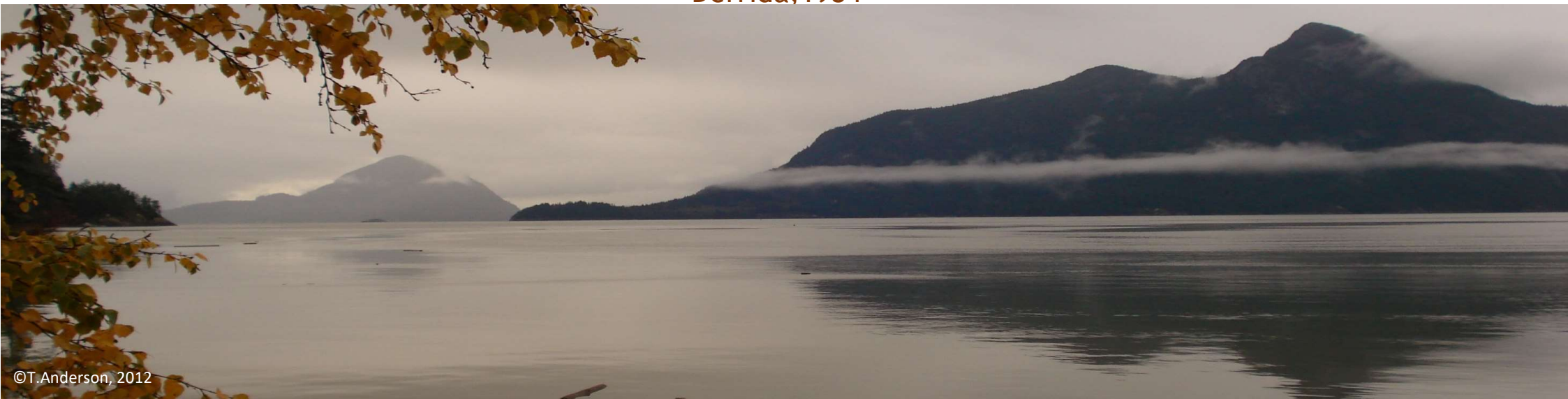


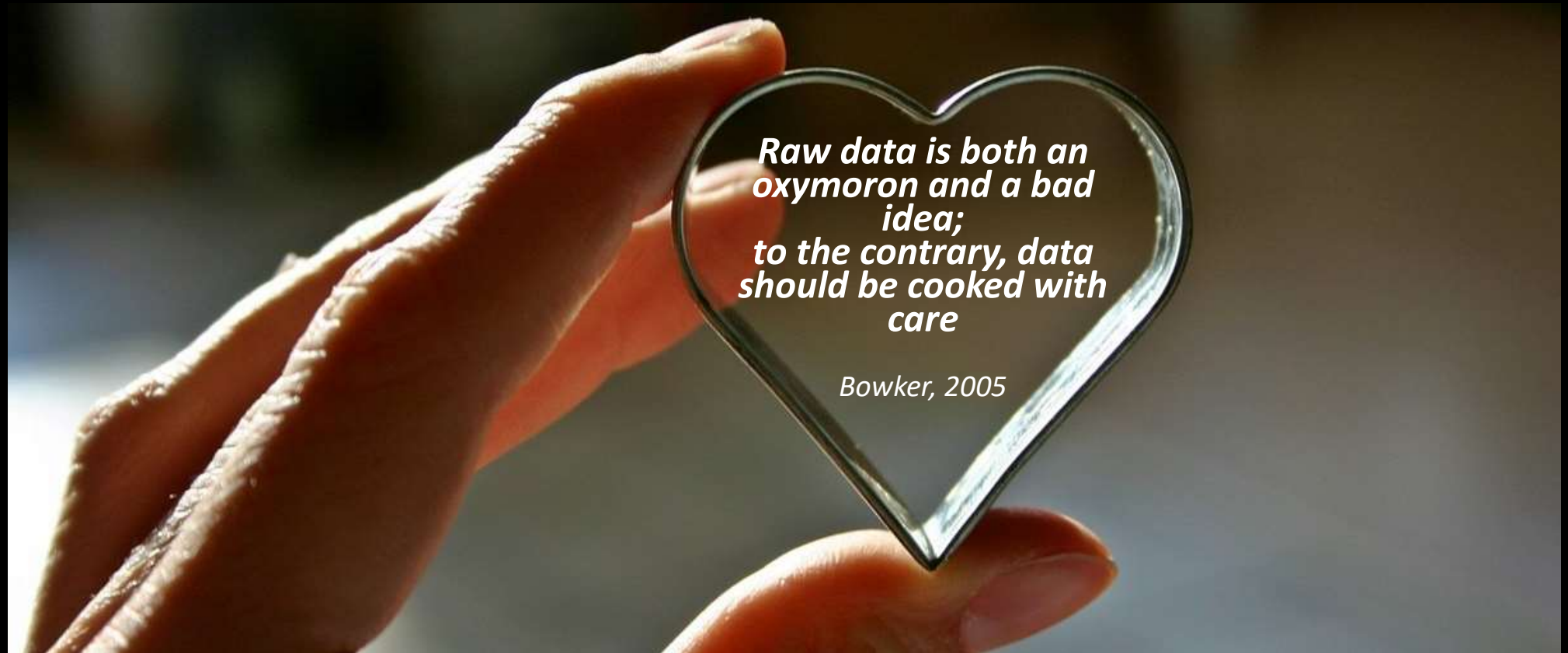




*What is the right speed, then? ...the critical slowdown may thus be as critical as the critical acceleration*

Derrida, 1984



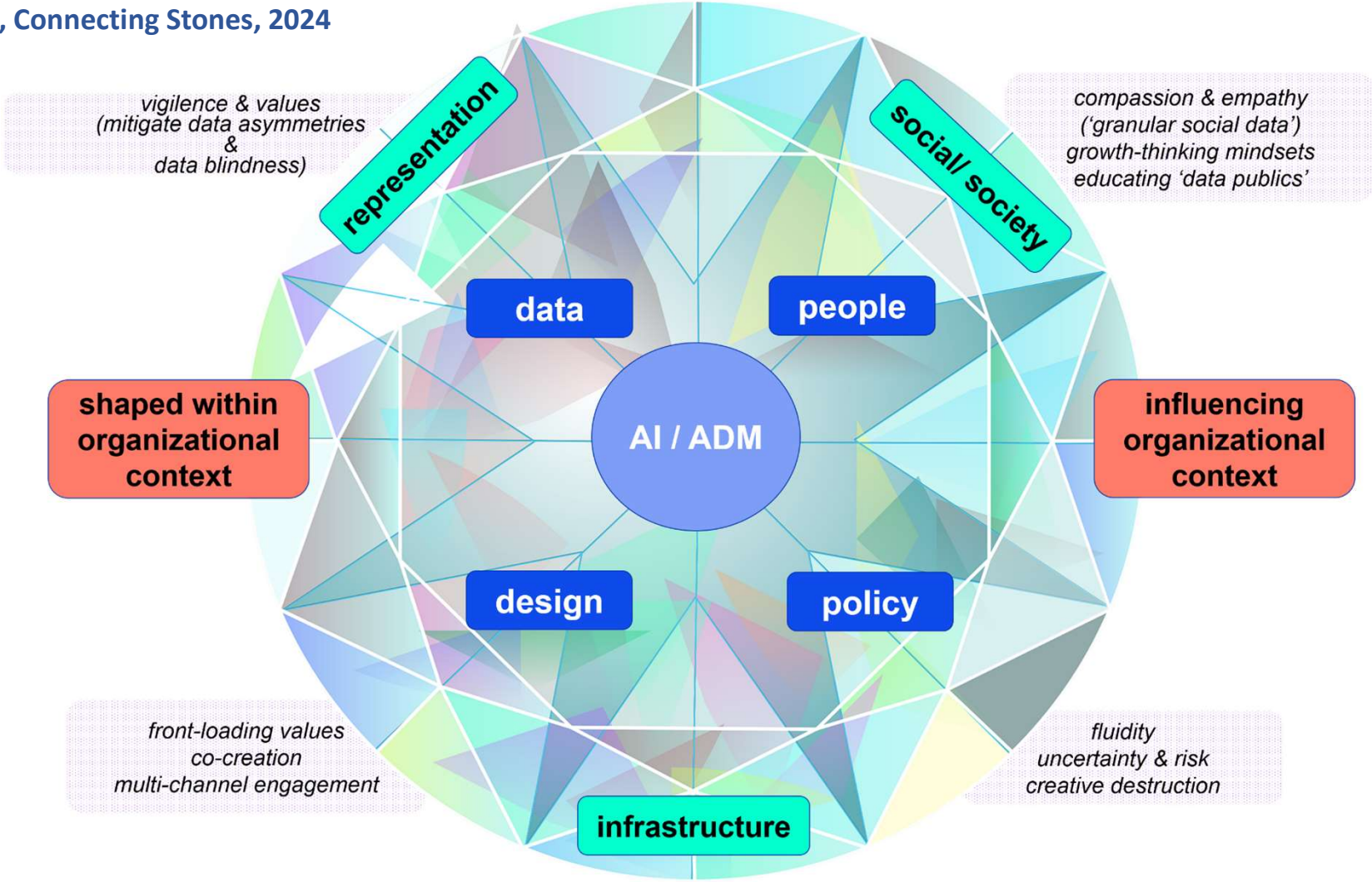


# Making the Invisible Visible

recognize, uncover & address the missing, underrepresented, or misrepresented

# Sociotechnical framework for responsible data & AI practice

Theresa Anderson, Connecting Stones, 2024



# Key Lessons: Process tracing & audit trails



Integration of observation, data collection and analysis must be respected



Participant-driven approaches require sensitivities to context both in collection and analysis



Using "criteria of soundness" builds confidence in the data and demonstrates credibility and transferability to others



Building trust can make data matter





**If both human and machine intelligence are to be maximised for the benefit of human and planetary flourishing, the capacity for imaginative problem solving and problem finding must be nurtured alongside technical know-how.**

**Building a culture of care into all we do involves...**

**Creation**  
**Compassion**  
**Contemplation**  
**Connection**





## **Seven Lessons for building compassionate AI Futures**

1. Trusting tools has its social limits
2. To be worthy of trust takes more than authority, especially in crisis
3. Hard borders are a construction
4. A leap of faith is needed to transcend that which divides
5. Security is a human right
6. Empathic Leadership moves us beyond intentions and transactions
7. Creating cultures of care: 'it takes a village to raise an AI'

Anderson (2023) "Looking at Securitization as a Sociotechnical Activity: Lessons From a Cold War Past for AI Futures," *IEEE Technology and Society Magazine*, vol. 42, no. 2 : <https://ieeexplore.ieee.org/document/10174800>

# Seven Elements for ethically reflective practice

**Element 1 – Trust**

**Element 2 – Codesign**

**Element 3 – Uncertainty**

**Element 4 – Boundary-spanning**

**Element 5 – Inclusion**

**Element 6 – Insight**

**Element 7 – Creativity**



T.Anderson, Connecting Stones, 2024





*transforming ethical intention into action*

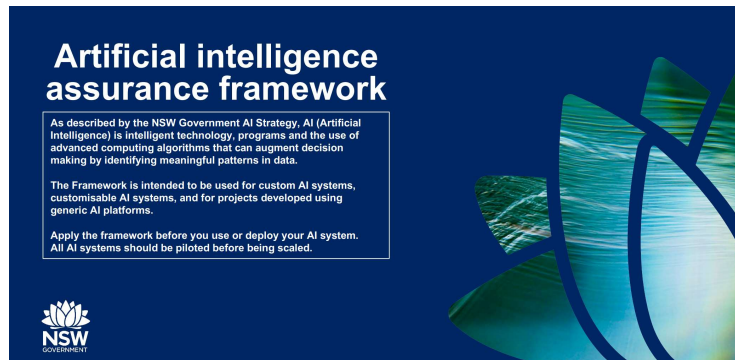
# Shaping 'good' through Standards & Frameworks



September 2017



Data Sharing Frameworks  
Technical White Paper



## Artificial intelligence assurance framework

As described by the NSW Government AI Strategy, AI (Artificial Intelligence) is intelligent technology, programs and the use of advanced computing algorithms that can augment decision making by identifying meaningful patterns in data.

The Framework is intended to be used for custom AI systems, customisable AI systems, and for projects developed using generic AI platforms.

Apply the framework before you use or deploy your AI system. All AI systems should be piloted before being scaled.



STANDARDS Australia 100

CELEBRATING 100 YEARS 1922-2022



WHITEPAPER

## Responsible and Inclusive AI

October 2023

Shaping "good" & "responsible" is an ever-evolving process with Social & Cultural as well as Technical Considerations

T.Anderson, Connecting Stones, 2024





# Humanising Data Science

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## Embedding Data Humanism in the Training of Data Scientists

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*From UTS MDSI Graduate Attributes  
(2014-2019)*

*“Raw data is both an  
oxymoron and a bad idea;  
to the contrary, data should  
be cooked with care”*

*Bowker, 2005*

### **Making the invisible visible:**

recognize, uncover & address the missing, underrepresented, or misrepresented

### **Embracing ethical responsibilities:**

Interrogate and justify ethical responsibilities to create a framework for practice

### **Leading data science:**

Take a leadership role in promoting positive change in data science contexts

# Rise of the Machines? Can we code human values into AI?

The good of a human being relates to being human  
all knowledge and every pursuit aims at some  
good ...What then do we mean by the good?  
Aristotle (Nicomachean Ethics)

Image Source: <https://www.itchronicles.com/automation/robots-among-us-future-ai-living-robots/>

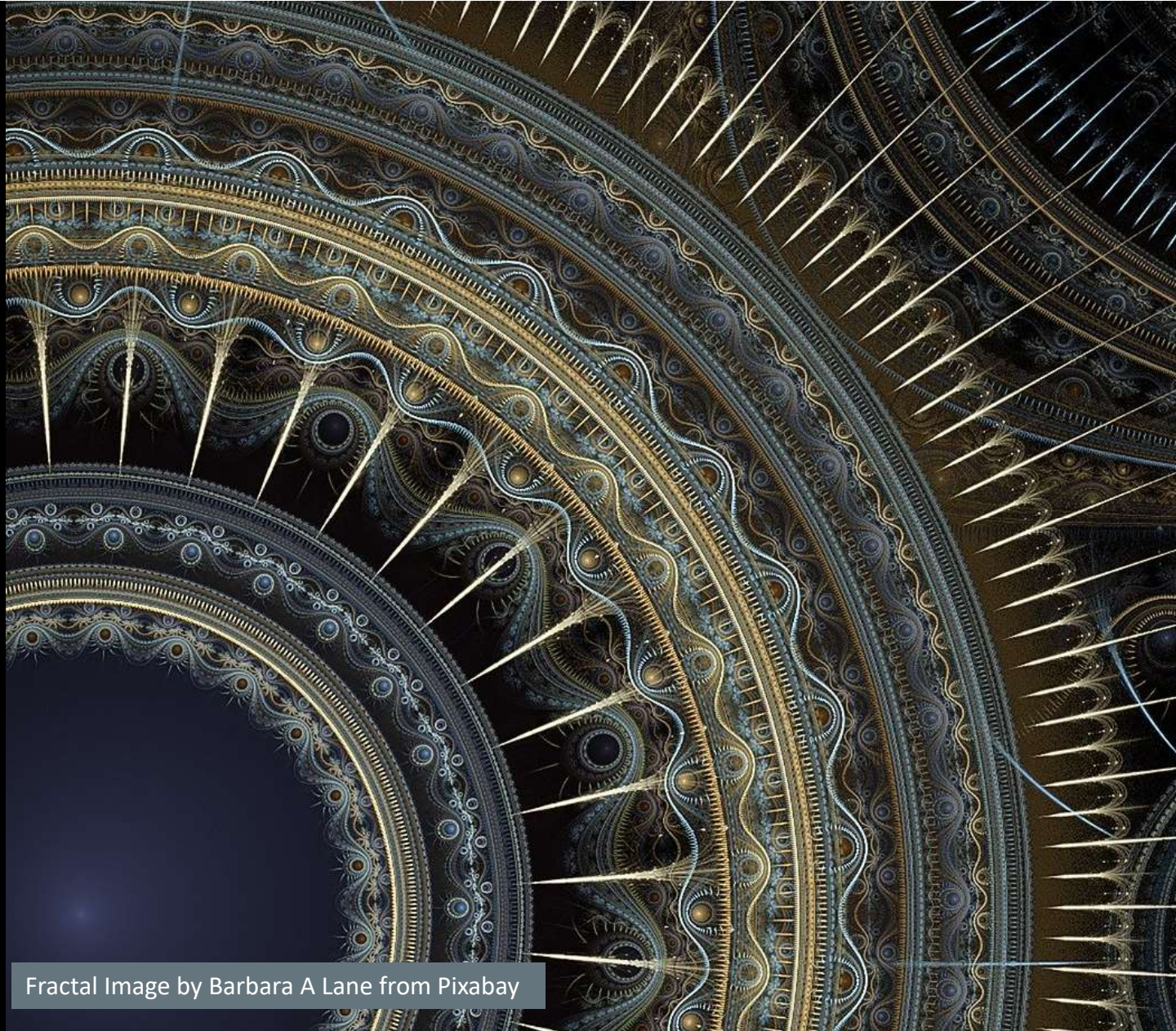
# SEVEN ACTIONS FOR NOW

Practicing compassionate data  
science

Laying a foundation for  
responsible use of data and AI  
technologies by making time to  
think and reflect  
connect with community  
build trusted relationships



T.Anderson, Connecting Stones, 2024



Fractal Image by Barbara A Lane from Pixabay

# Action 1: Appreciate the fluidity of boundaries



# Organising information & data is a political act

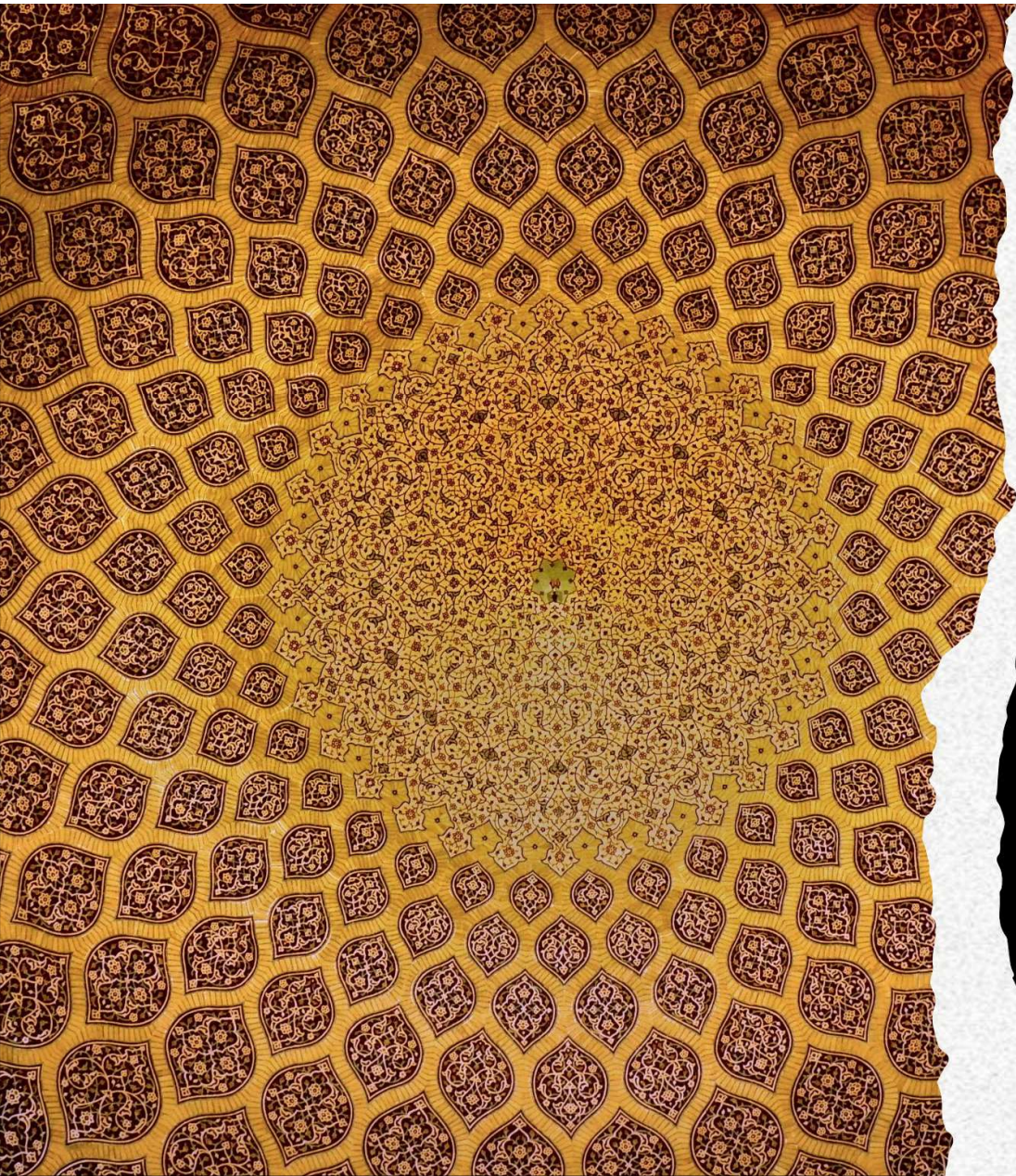
*There is always class in our classes [because] **the act of classing itself presupposes power...** authorized to decide the membership of the categories specified. **A system of classes (of whatever kind) always implies evaluation,** and hence its inevitable if guilty accompanist, subordination.*

Richard Terdiman, 1989

*it is politically and ethically crucial to recognize the vital role of infrastructure in the "built moral environment." Seemingly purely technical issues like how to name things and how to store data in fact constitutes much of human interaction, and much of what we come to know as natural.... **[A] key for the future is to produce flexible classifications, whose users are aware of their political and organizational dimensions, and which explicitly retain traces of their construction.***

Geof Bowker & Leigh Star, 1999





# Naming matters Categorisation matters

Language is

*...one of the most intimate and most political of human activities. The power of naming in fact shapes and defines the institutions that structure so much of our lives.*

Mary Ellen Capek, 1987



# Borders, Edges & Boundaries

*...data points in a graph are tiny portholes onto a rich human world, and encapsulates some of the concerns that educators have about the misuse of blunt, blind analytics — proxy indicators that do not do justice to the complexity of real people, and the rich forms that learning take.*

*Buckingham Shum, 2015*

**“Who” we are  
“Where” we are  
“What” we are ...**

**... does not always  
fully correspond with  
where people or  
ideas are “placed” in  
a data set**



*uncertainty as a “white knuckle ride”*



## **Action 2: Embrace the opportunities in uncertainties**



T.Anderson, Connecting Stones, 2024

*Image by Ulrike Mai from Pixabay*

# Living with Uncertainty & Risk

*Phase States of Creativity & Innovation (Anderson, 2013 & 2023)*

The past and near past do not limit future possibilities

Data is never complete, information never certain, action still required

There is no universal playbook

Appreciate complexity, but focus on local context



**One of the best ways to navigate uncertainty and risk is through open and honest sharing within trusted relationships to support your learning & growing**



**See Uncertainty as Signal**

**Have Hope & optimism**

**Aim for mindset of Abundance**

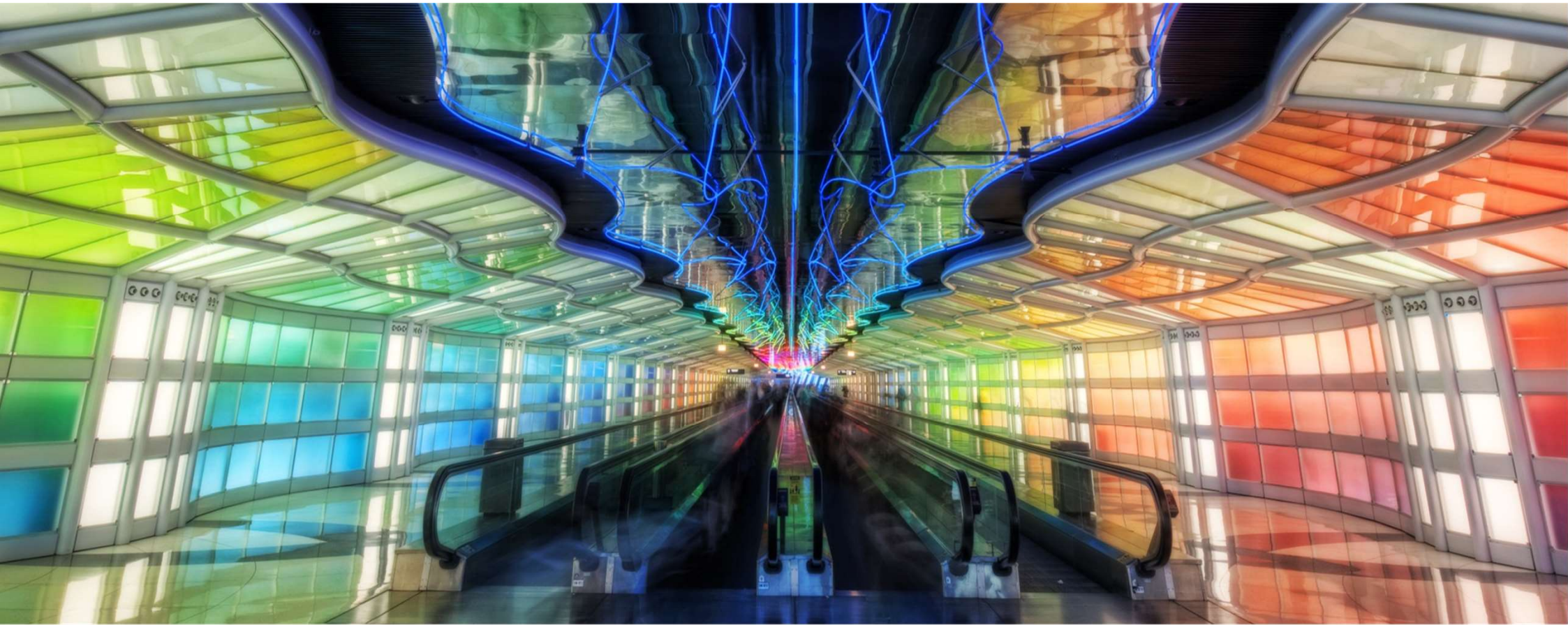
**Reflect & embrace the pause**

**Explore uncertainties for opportunities**





## **Action 3: Make ‘green spaces’ for the mind**



*...we are losing the time to look and to think at exactly the moment we have produced a remarkable new set of tools.*

David Levy, 2007

A tropical beach scene with a wooden bench in the foreground, turquoise water, and mountains in the background. The image is framed by palm fronds at the top and sides. The text is overlaid in the center of the image.

**The invisible work of the 'pause':**  
Thinking at the edge  
Untapped potential of intuitive judgments



©T.Anderson, 2008

# Give yourself time to think

1. develop stillness needed to make sense of what is visible & what is not
2. remain alert for things that have remained hidden, unnoticed or incomprehensible
3. build in quick pauses through  
breathwork  
reflective writing  
sitting in place

T.Anderson, Connecting Stones, 2024

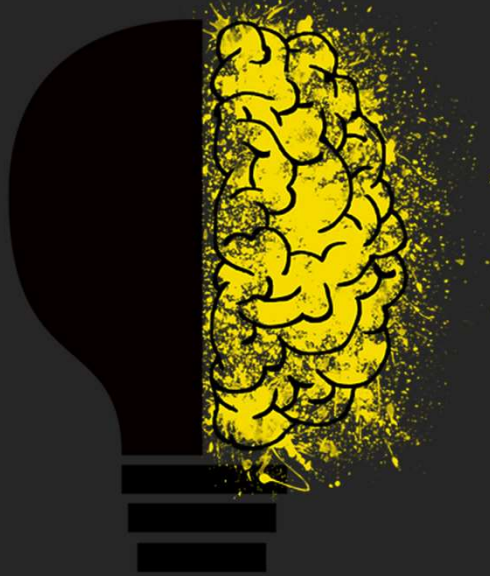




## Action 4: Nurture personal and collective creativity



Challenge your imagination & 'obviousness' of the world



Slow down your  
thinking

Tap into a  
"felt sense"

## Helping crystallise individual & collective reflection on learnings & actions

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**Brain**- a new idea

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**Hand** – a helping hand you might need

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**Heart** – feelings you experienced

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**Ear** – something you heard that gave you pause

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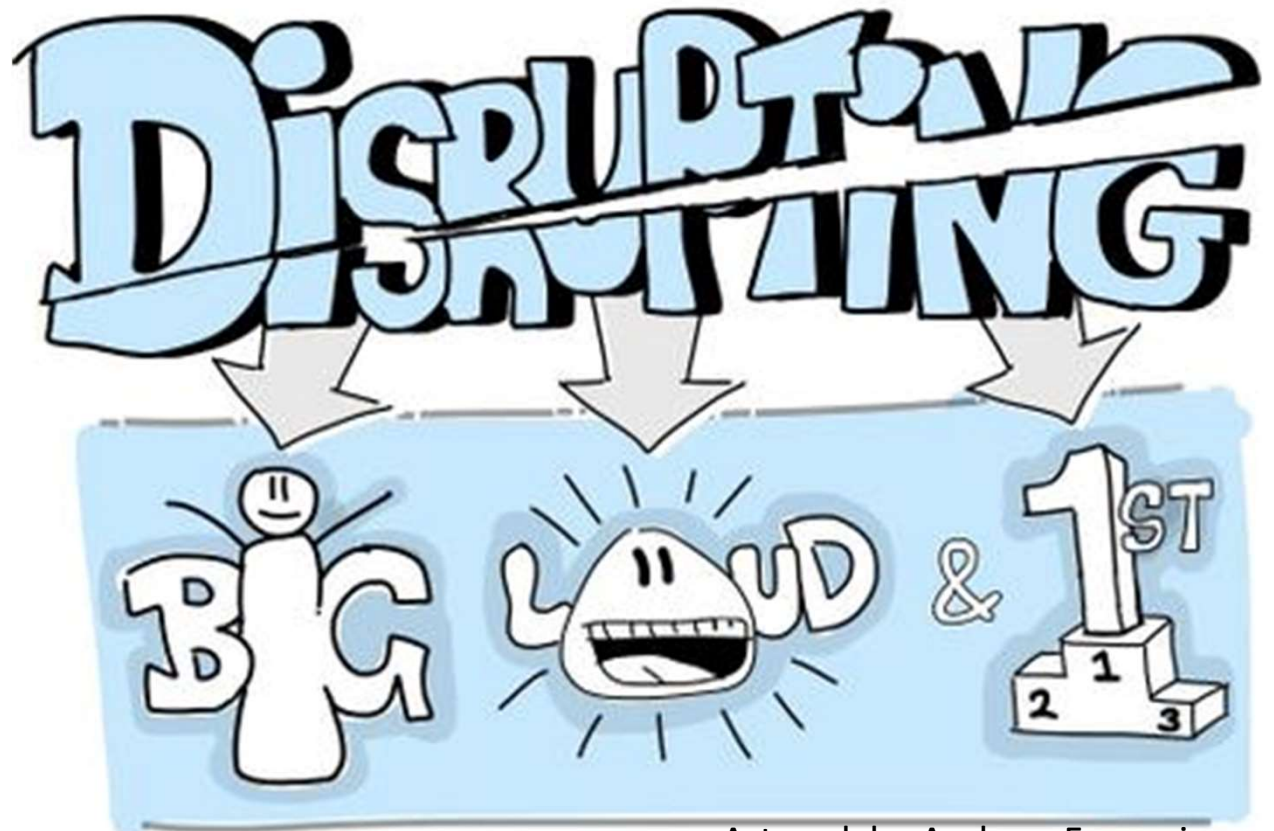
**Eye** – something you saw differently

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**Feet** – an important take-away action



**Action 5:  
Disrupt  
'big, loud  
and first'  
behaviours**



Artwork by Andrew Francois



# BREAKING THROUGH THE MARZIPAN LAYER

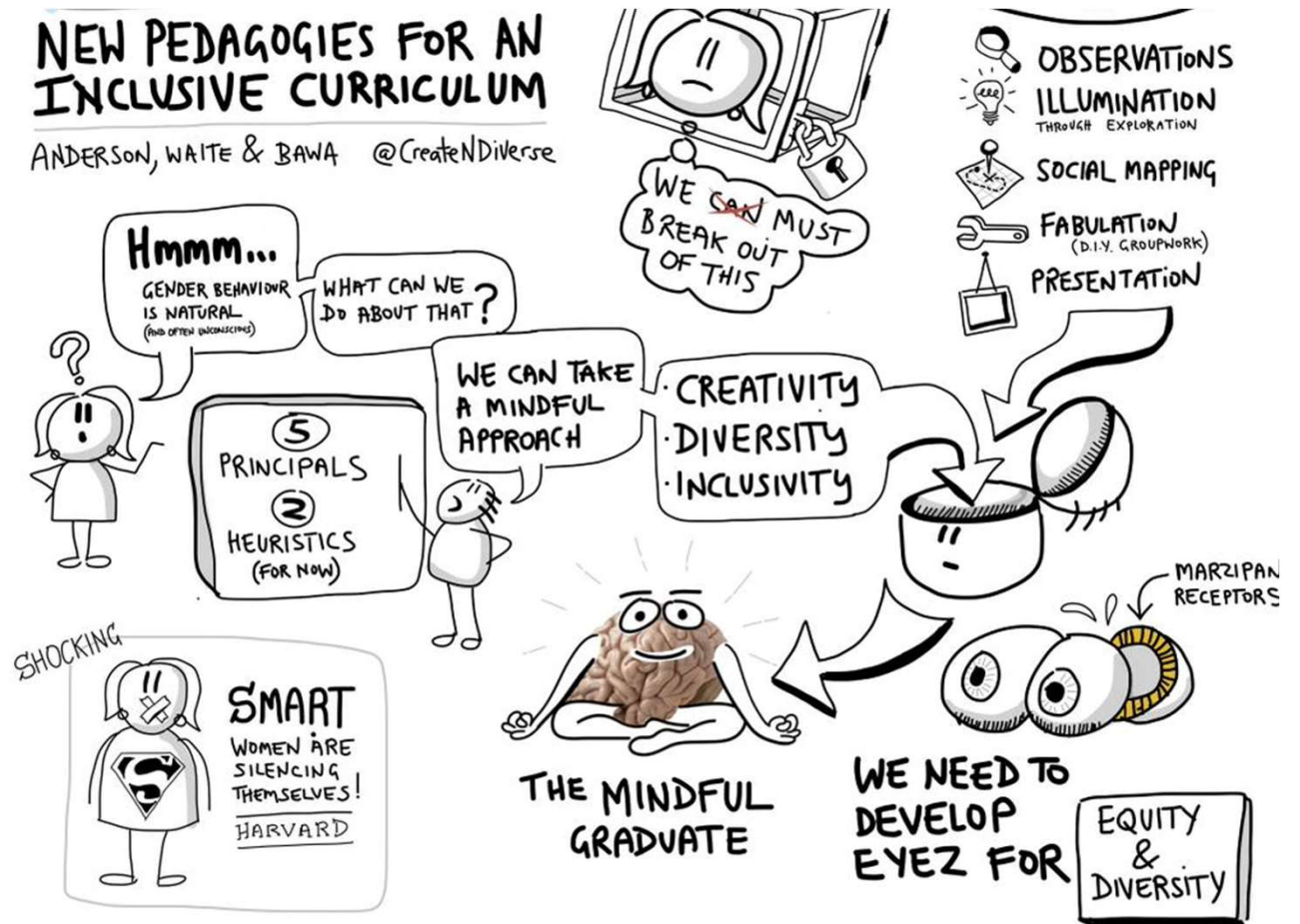


Gender and inclusion in higher education pedagogy and curriculum

Waite.K, Anderson.T, Bawa.M

## NEW PEDAGOGIES FOR AN INCLUSIVE CURRICULUM

ANDERSON, WAITE & BAWA @CreateNDiverse



Artwork by Andrew Francois

**Action 6:  
Create  
opportunities  
to break cycles  
of  
disadvantage**



# Opening the doors to collaboration & connection

missing

underrepresented

misrepresented

invisible

disrupt “big, loud and first”

make time to “think, link and tinker”

inclusive conversations

support

navigate the edges

what is possible

influence

enable open & frank conversations

‘safe’ environments for sharing

Photo by Filip Kominik on Unsplash

T.Anderson, Connecting Stones, 2024





<https://medium.com/memo-random/turning-data-around-7acea1f7479c>

## Turning Data Around



Jer Thorp · Follow

Published in Memo (random) · 12 min read · Nov 18, 2016



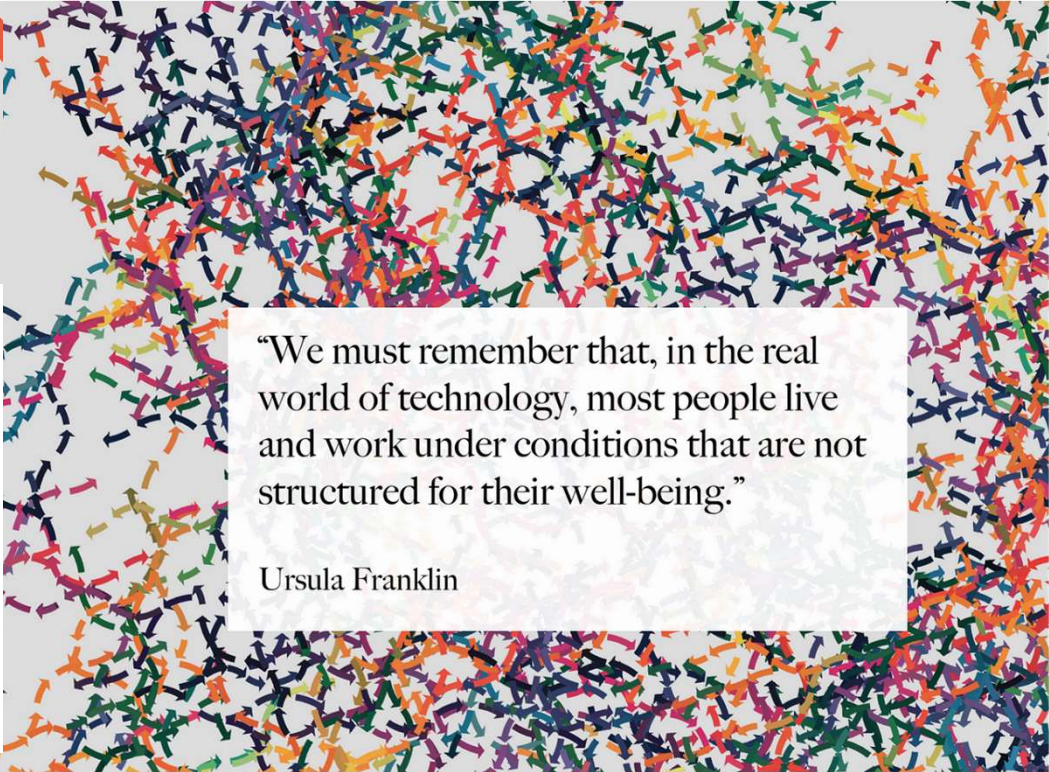
91



5



On a September morning in 2013, the students at Hunter College High School filed past security and into the hallways, to find that their school had been labeled the saddest place in Manhattan.



“We must remember that, in the real world of technology, most people live and work under conditions that are not structured for their well-being.”


Ursula Franklin

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# Action 7: Find ways to design with people not simply for them

T.Anderson, Connecting Stones, 2024

# How do we “turn data around” to build informed, educated and activated communities?



“In creating city success, we human beings have created marvels, but we left out feedback. What can we do with cities to make up for this omission?”

Jane Jacobs

<https://medium.com/memo-random/turning-data-around-7acea1f7479c>

“It’s a world that flows in one direction: data comes from us, but it rarely returns to us. The systems that we’ve created are designed to be unidirectional: data is gathered from people, it’s processed by an assembly line of algorithmic machinery, and spit out to an audience of different people — surveillers and investors and academics and data scientists. Data is not collected for high school students, but for people who want to know how high school students feel. This new data reality is from us, but it isn’t for us”

Thorp, 2016





# Stepping Stones to Designing with Community

Theresa Anderson, Connecting Stones, 2024

## Keystone Practices

**Community**

**Civility**

**Communication**

**Connection**

**Commitment**



# 7 Actions for Now

- Action 1 – Appreciating the fluidity of boundaries
- Action 2 – Embracing the opportunities in uncertainties
- Action 3 – Making ‘green spaces’ for the mind
- Action 4 – Nurturing personal and collective creativity
- Action 5 – Disrupting ‘big, loud and first’ behaviours
- Action 6 – Creating opportunities to break cycles of disadvantage
- Action 7 – Finding ways to design with people not simply for them

**...now it is up to you**



*Thank you*

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**See recent publications for more :**

"Looking at Securitization as a Sociotechnical Activity: Lessons From a Cold War Past for AI Futures," *IEEE Technology and Society Magazine*, 2023 vol. 42, no. 2 : <https://ieeexplore.ieee.org/document/10174800>

"Trust building for data sharing – Understanding trust as a social relationship," in *Data and the Digital Self: What the 21st Century needs*, ACS Publication 2023: <https://www.acs.org.au/insightsandpublications/reports-publications/data-and-the-digital-self.html>

"Keystone Practices to Enable Smart Cities to Flourish" Special Issue on Smart, Sustainable and Fair Cities. *Geography Research Forum* 2021 <https://grf.bgu.ac.il/index.php/GRF/article/view/603>

Responsible service of data, coauthored with Ruth Marshall 2022, <https://www.hoc.one/?p=235716>

*Image by Theresa Anderson, 2009*