

# › RESPONSIBLE INNOVATION

FOR  
HUMAN-CENTERED ARTIFICIAL INTELLIGENCE  
9 APRIL, EINDHOVEN

**TNO** innovation  
for life

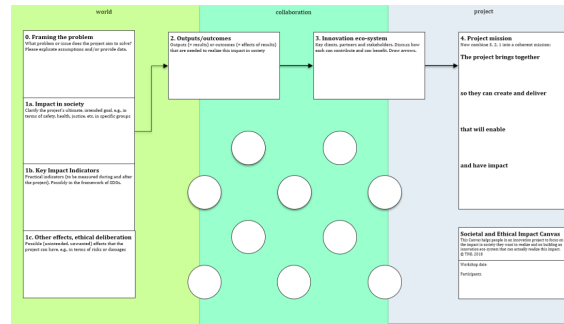
Marc Steen, TNO

## “ACCEPTABLE AI”

“Making systems that are acceptable to end-users”. Is that the best we can aspire to? We create systems that people “accept” as “end-users”?

***Let's start at the human-side; let's support people to live meaningful and fulfilling lives; and let's use technologies as tools to empower them.***

**Plus: I will present a ‘Canvas’ that you can use in your projects to better steer your projects towards promoting people’s wellbeing**



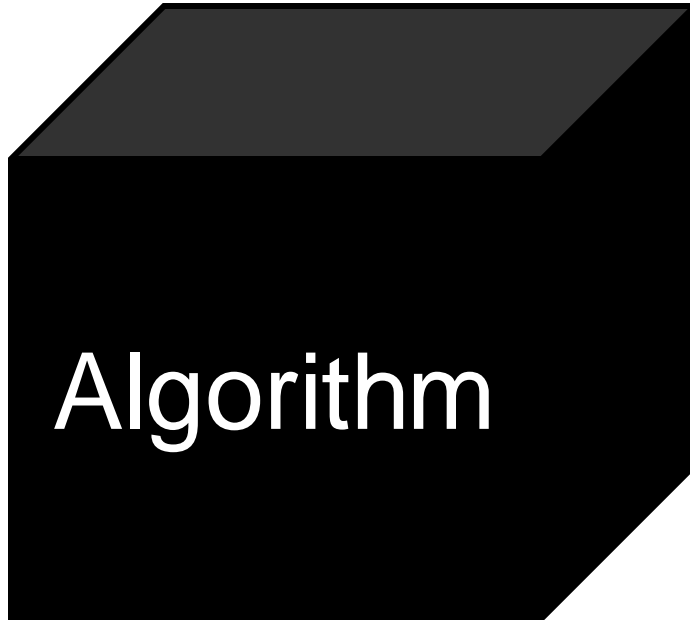
# **PRESENTATION**

- 1. About me**
- 2. What could possibly go wrong?**
- 3. Virtue Ethics**
- 4. Capability Approach**

## ABOUT ME

- › Senior Research Scientist at TNO
- › MSc, PDEng and PhD from Delft University of Technology
- › Expertise in: Human-Centred Design, Responsible Innovation, Applied Ethics in Big Data and Algorithms

# VWData: Transparency of Algorithms / Audit the Algorithm



# CLAIRE

**CONFEDERATION OF LABORATORIES FOR  
ARTIFICIAL INTELLIGENCE RESEARCH IN EUROPE**

**Excellence across all of AI. For all of Europe.  
With a Human-Centred Focus.**

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<https://claire-ai.org/>

## 2. What could possibly go wrong?

# WEAPONS OF MATH DESTRUCTION



HOW BIG DATA INCREASES INEQUALITY  
AND THREATENS DEMOCRACY

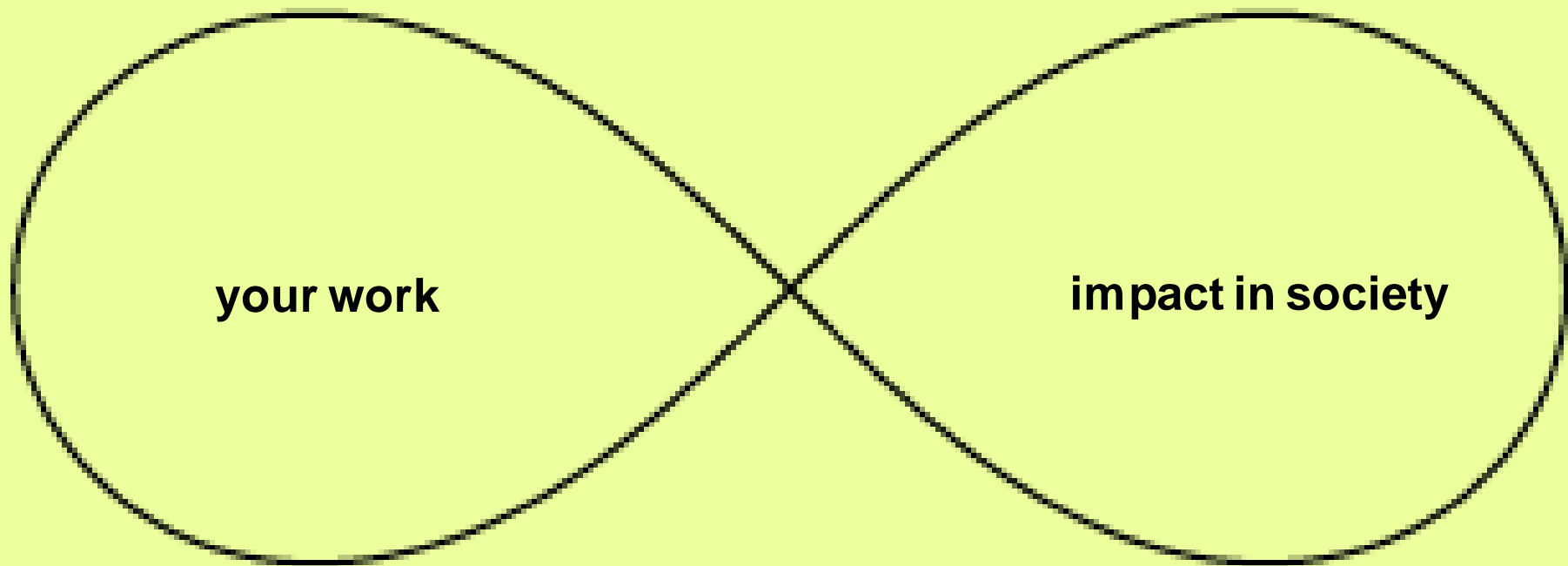
CATHY O'NEIL

“O'Neil, a mathematician, analyses how the use of big data and algorithms in a variety of fields, including insurance, advertising, education, and policing, can lead to decisions that harm the poor, reinforce racism, and amplify inequality.”

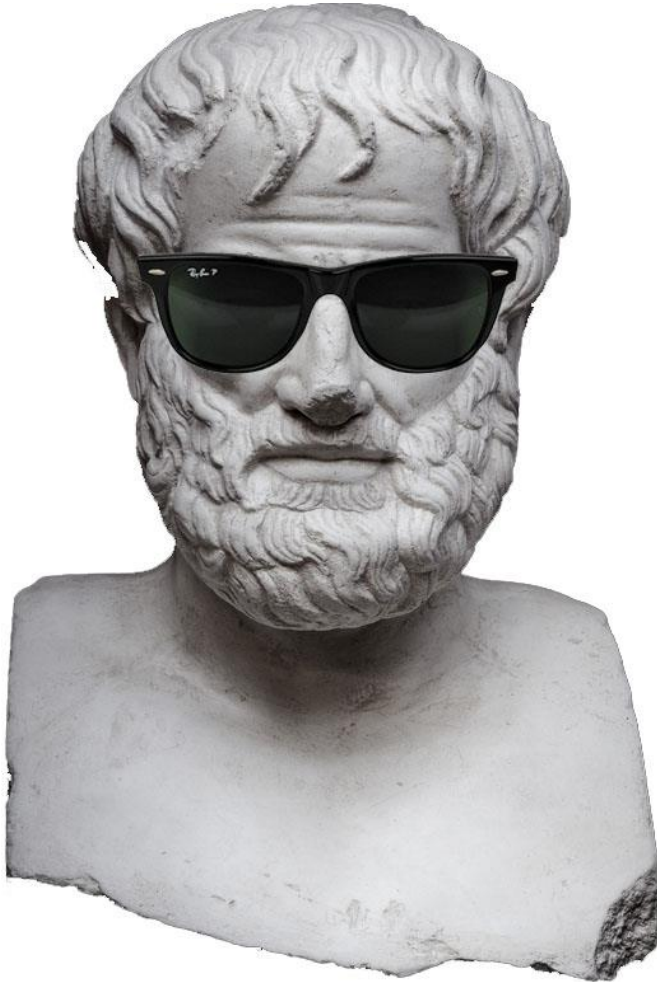
[https://en.wikipedia.org/wiki/Weapons\\_of\\_Math\\_Destruction](https://en.wikipedia.org/wiki/Weapons_of_Math_Destruction)

If I were to put it in binary terms ...

- › *Do you want to be part of the problem?*
- › *Or do you want to be part of the solution?*



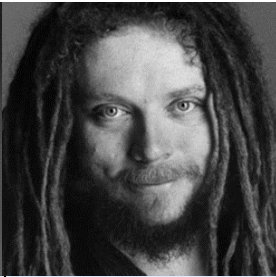









**3. Virtue Ethics:** create a just society in which people can flourish, live 'the good life', meaningful and fulfilling lives



## Virtue Ethics (Aristotle):

- › Shannon Vallor: *Technology and the Virtues* (2016)
- › For emerging technologies
- › Duties and rules are not yet clear
- › Consequences are not yet clear
- › Your thoughts, your feelings and your actions—and aligning these

				
<b>Tristan Harris</b> Virtues: self-control; civility; humility	<b>Kate Raworth</b> Virtues: justice; perspective; empathy	<b>Jaron Lanier</b> Virtues: perspective; justice; flexibility	<b>Cathy O'Neil</b> Virtues: honesty; justice; humility; courage	<b>Yuval Noah Harari</b> Virtues: perspective; humility; empathy
				
<b>Sherry Turkle</b> Virtues: empathy; courage; civility; care	<b>Luciano Floridi</b> Virtues: honesty; perspective; flexibility; justice	<b>Aimee van Wynsberghe</b> Virtues: care; self-control; justice	<b>Edward Snowden</b> Virtues: courage; magnanimity; justice; civility	<b>Safiya Umoja Noble</b> Virtues: justice; honesty; perspective; civility


Exemplars (role models) and their technomoral virtues: [dear.engineer.eu](http://dear.engineer.eu)





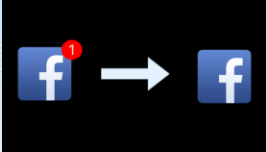
# Tristan Harris

## Self-control

[ Center for Humane Technology ]

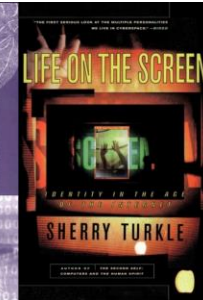
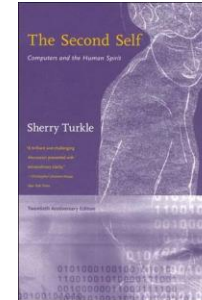


Realigning  
technology  
with humanity's  
best interests.



# Sherry Turkle

## Civility



## Reclaiming Conversation

The Power of Talk  
in a Digital Age

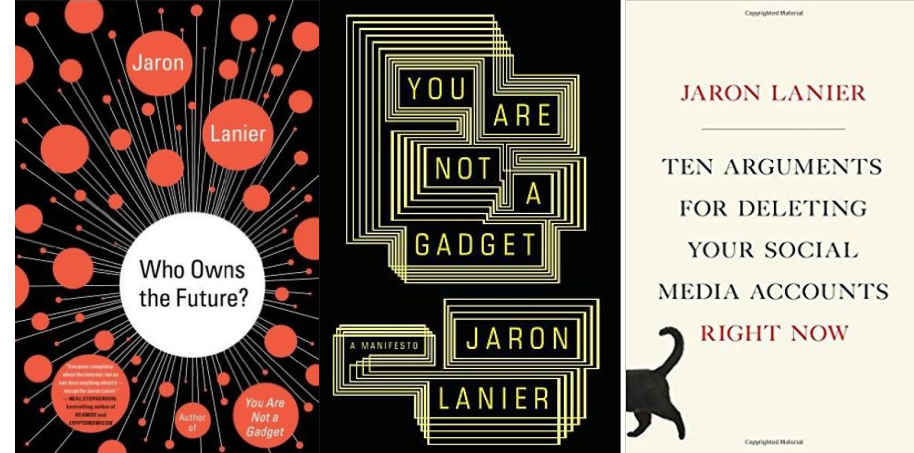


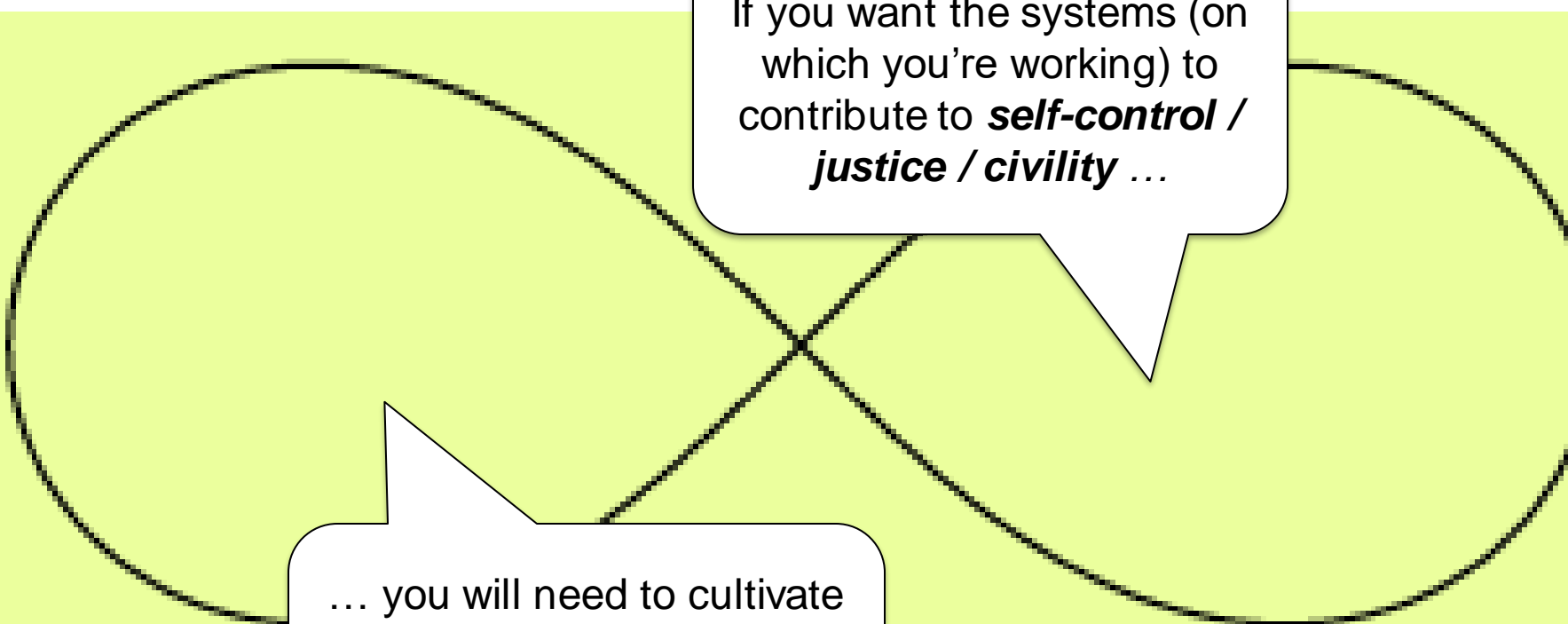
Sherry Turkle

AUTHOR OF ALONE TOGETHER



## Jaron Lanier Justice

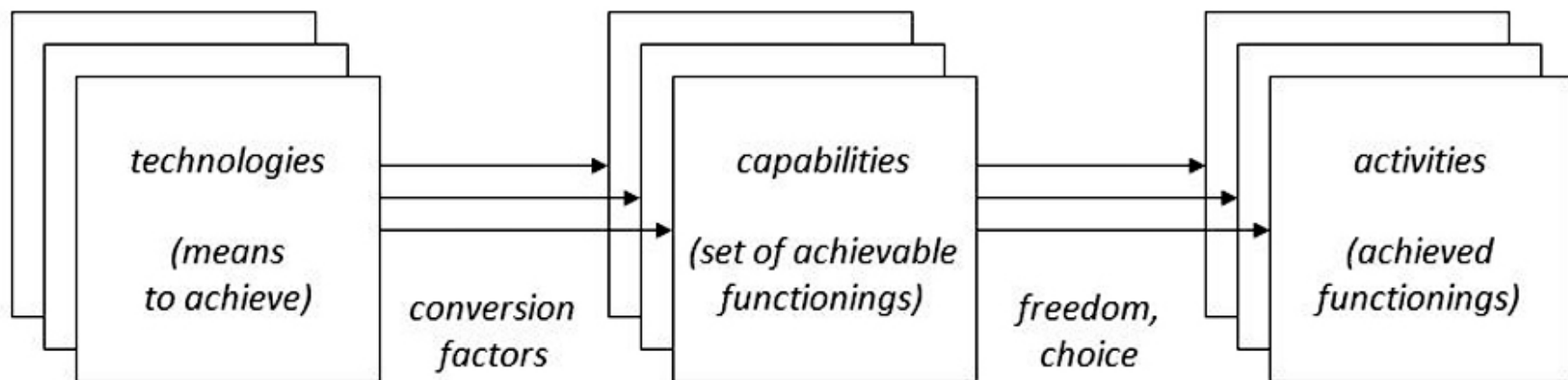




If you want the systems (on which you're working) to contribute to ***self-control / justice / civility ...***

... you will need to cultivate the virtues of ***self-control / justice / civility*** during design and development

- › **4. Capability Approach:** technologies as tools (not ends), to enable people to extend capabilities: agency, autonomy



## Bodily health

Being able to have good health, including reproductive health, e.g. to be able to visit a doctor or hospital; to be adequately nourished; to have adequate shelter.



## Mental health

Being able to be mentally healthy, e.g. the absence of any negative mental states, such as not being able to sleep, worrying, feeling depressed, lonely or restless. Not having one's emotional development blighted by fear and anxiety.



## Safety, security

Being able to be protected from violence of any sort and have adequate shelter and to live in a safe and pleasant environment. Also, e.g. privacy.



## Integration, participation

Being able to participate in political, economic and legal arenas, also to perpetuate advantages in economic and public life.



## Recognition, dignity

Having the social bases of self-respect and non-humiliation; being able to be treated as a dignified being whose worth is equal to that of others.



## Social support, relationships

To be nurtured and cared for, to form and enjoy social relations; sharing emotions and feelings.



## Equal rights and opportunities

Being free from discrimination on the basis of race, sex, sexual orientation, ethnicity, caste, religion, or national origin.



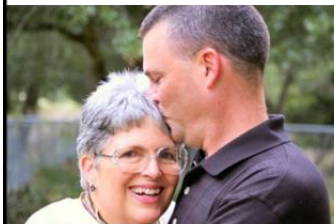
## Meaningful work

Having the right to seek employment on an equal basis with others. In work, being able to work as a human being, exercising practical reason. Also, e.g. fair compensation.



## Care for others

Being able to live with and toward others, to recognize and show concern for other human beings, to love those who love and care for us.



## Self-determination, self-expression

Being able to be express oneself and to be accepted by others. Having one's bodily boundaries treated as sovereign.



## Public and political participation

Having the right of political participation, protection of free speech and association. Being able to participate effectively in political choices that govern one's life.



## Education, critical thinking and reflection

Being able to sense, imagine, think and reason, informed and cultivated by an adequate education. E.g. literacy and basic mathematical and scientific training.



## Self-awareness, practical reason

Being able to form a conception of the good and to engage in critical reflection about the planning of one's life, e.g. the liberty of conscience and religious observance



## Mobility

Being able to move freely from place to place.



## Leisure, play

Being able to have pleasurable experiences. To engage in various forms of social interaction. Being able to laugh, to play, to enjoy recreational activities.



## Care for the environment

Being able to live with concern for and in relation to animals, plants, and the world of nature.



# Health and daily functioning



## Self-determination (‘individual capabilities’)

## Participation (‘social capabilities’)

## External conditions (‘institutional capabilities’)



**0. Framing the problem**

What problem or issue does the project aim to solve?  
Please explicate assumptions and/or provide data.

**1a. Impact in society**

Clarify the project's ultimate, intended goal, e.g., in terms of safety, health, justice, etc. in specific groups

**1b. Key Impact Indicators**

Practical indicators (to be measured during and after the project). Possibly in the framework of SDGs.

**1c. Other effects, ethical deliberation**

Possible (unintended, unwanted) effects that the project can have, e.g., in terms of risks or damages

**2. Outputs/outcomes**

Outputs (= results) or outcomes (= effects of results) that are needed to realize this impact in society

**3. Innovation eco-system**

Key clients, partners and stakeholders. Discuss how each can contribute and can benefit. Draw arrows.

**4. Project mission**

Now combine 3, 2, 1 into a coherent mission:

**The project brings together**

**so they can create and deliver**

**that will enable**

**and have impact**

**Societal and Ethical Impact Canvas**

This Canvas helps people in an innovation project to focus on the impact in society they want to realize and on building an innovation eco-system that can actually realize this impact.  
© TNO, 2018

Workshop date:

Participants:

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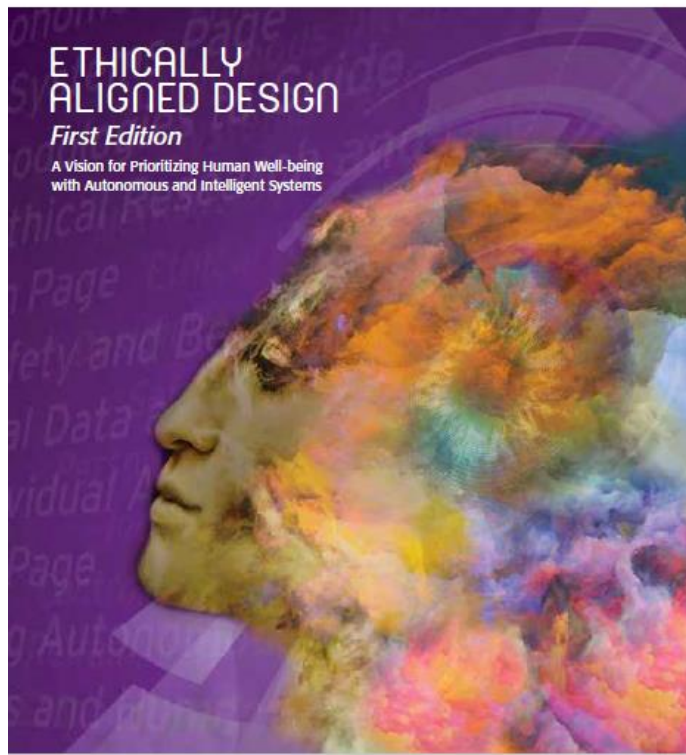
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Tomorrow, back at work, e.g., with a co-worker:

- Choose: A project that you work on, with impact in society
- Focus on the **goals/impact** of the project in society:
  - *Which human capabilities does the project aim to enable people to extend/develop? Health? Participation? Etc.?*
- Focus on **your own role**: which virtue(s) do you need?
  - *Honesty; Self-control; Humility; Justice; Courage; Empathy; Care; Civility; Flexibility; Perspective*



# THANK YOU

› [marc.steen@tno.nl](mailto:marc.steen@tno.nl)

*Virtue Ethics: Virtues and Exemplars*

› [www.dearengineer.eu](http://www.dearengineer.eu)

*Societal and Ethical Impact Canvas*

› [innovationforwellbeing.org](http://innovationforwellbeing.org)

*Capability Approach*

› [I am a Luddite--Well, sort of.](#) *interactions (ACM), 22 (5), 2015.*

