

## The Human Factor

Week 6 – 24<sup>th</sup> February 2026

# Bringing the Human Factors Together

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Slides adapted from Dr. Susan Lechelt



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# What we've touched on so far:

- Importance of considering a variety of human factors in technology design and evaluation:
  - **A**nthropometric factors: *physical, anatomical and physiological aspects (Week 5)*
  - **B**ehavioural factors: *what can users see, perceive and act on? (Week 4)*
  - **C**ognitive factors: *what cognitive processes are involved when someone uses a system? (Week 4)*
  - **S**ocial factors: *what is the social context in which a system is used? (Week 3)*
- Say, do and make methods for evaluating technology

# Today...

- Importance of considering a variety of human factors in technology design and evaluation:
  - *Anthropometric factors: physical, anatomical and physiological aspects*
  - *Behavioural factors: what can users see, perceive and act on?*
  - *Cognitive factors: what cognitive processes are involved when someone uses a system?*
  - **Cultural factors: how do beliefs, values, traditions, norms shape perceptions and use of a system?**
  - *Social factors: what is the social context in which a system is used?*
- Say, do and make methods for evaluating technology
  - **Reflecting on evaluation in relation to goals and human factors**

**What is culture?**

# What is culture?

... the meanings, behaviors, and practices that groups of people develop and share over time as well as the tangible manifestations of a way of life, such as artifacts, values, and states of consciousness.

(Geertz, 1973)

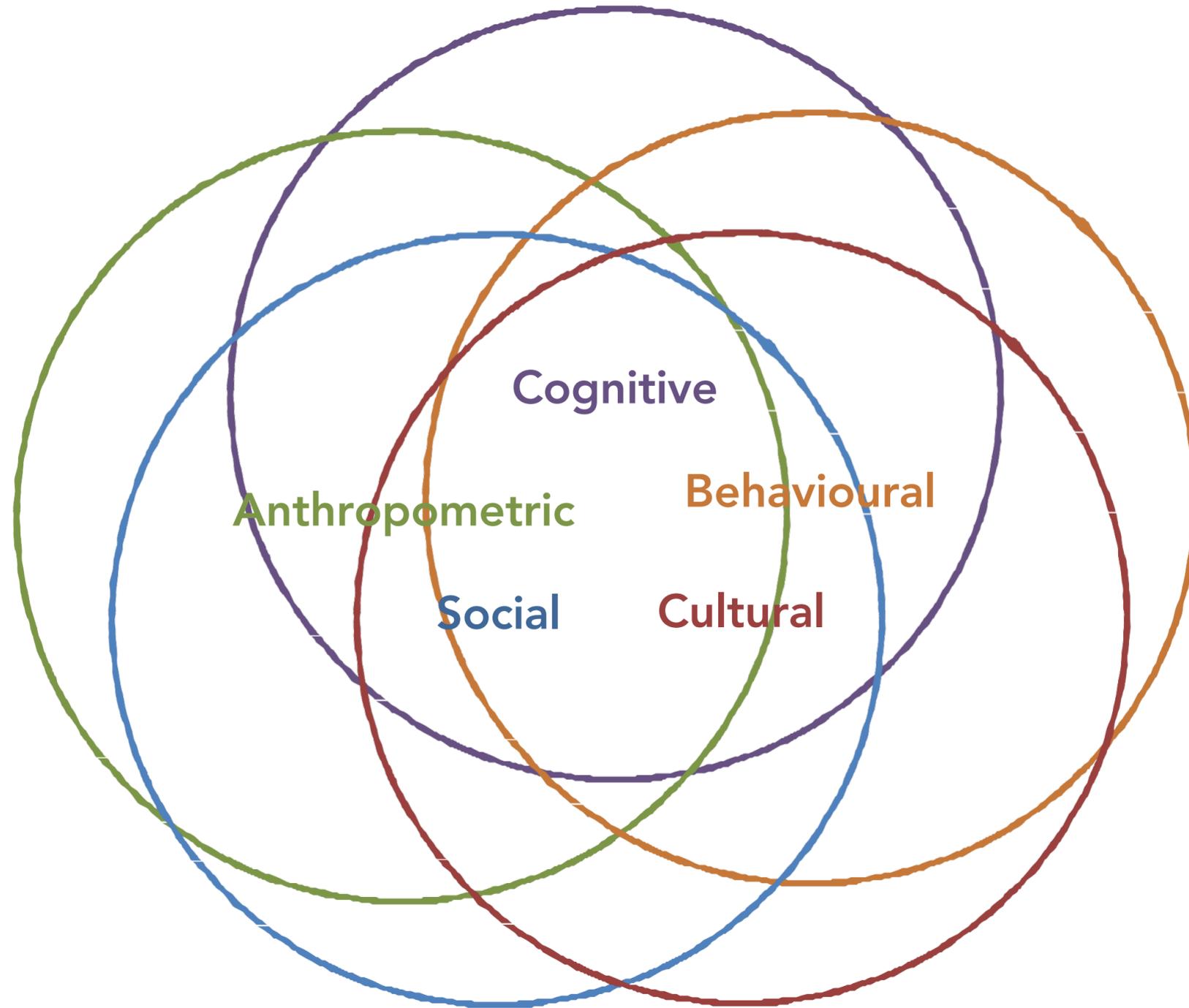
# What is culture?

Linked to beliefs, values, traditions and norms

Goes beyond just national cultural to cultures of groups and communities more broadly

e.g., ethnic groups, specific communities (in person or online), subcultures, countercultures, etc.

# ABCCS



# A bit on culture

*Technology **shapes** culture*

- *How we communicate*
- *Development of new cultures, e.g., over distance*
- *Our social norms and traditions*



# A bit on culture

*Cultural norms shape technology*

*Technology is designed **with** cultural norms*

*Designed by Apple in California*

# A bit on culture

Technology is designed **with** cultural norms

- What is aesthetically appealing
- What is acceptable/unacceptable
- What is valued (e.g., privacy, individualism, autonomy?)
- What metaphors resonate (e.g., folders)
- How people communicate and act

*Designed by Apple in California*

# Cultural mismatches

These days often technology is internationalised rather than localised - this can often lead to cultural mismatches and failure of products in particular contexts.

Peter Kariuki - ACM CHI Keynote 2023 - <https://www.youtube.com/watch?v=vRYlokboxzmM> (24'-30')

# Cultural mismatches

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“water hyacinth effect” – negative side effects introduced by technology



# Technology and identity

Gender **Custom** ▾

Gender **Friends** ▾

Ge

- Gender Fluid
- Gender Variant
- Genderqueer
- Gender Questioning**
- Gender Nonconforming
- Agender
- Bigender
- Cisgender
- Cisgender Female
- Cisgender Male

Birthday

Registered In  Women  Men

Facebook's initial attempt to allow users to create additional genders, circa 2014. Image courtesy of Slate, reproduced from *Data Feminism*

## Sign Up

It's free and always will be.

First name  Last name

Mobile number or email

New password

Birthday

May ▾ 4 ▾ 1994 ▾ Why do I need to provide my birthcay?

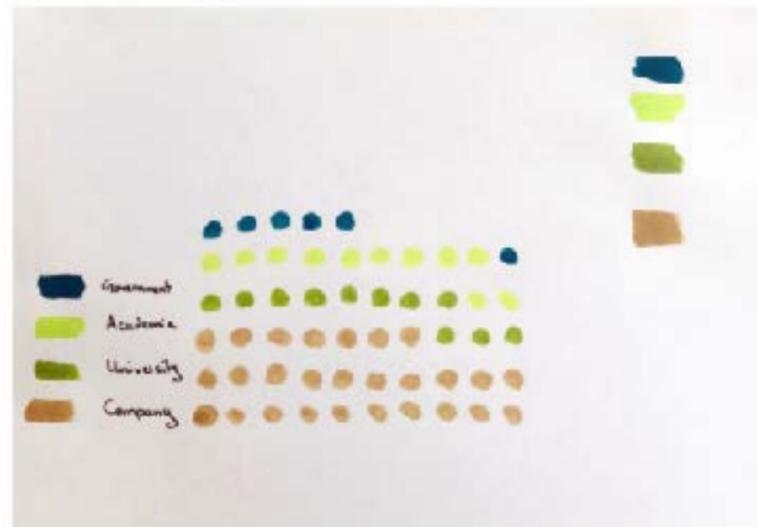
Female  Male

By clicking Sign Up, you agree to our [Terms](#), [Data Policy](#) and [Cookies Policy](#). You may receive SMS Notifications from us and can opt out any time.

**Sign Up**

View of Facebook's new account creation page, circa 2018. Screenshot by Lauren F. Klein, reproduced from *Data Feminism*

# Technology and identity



Response Time	Argument	Outcome	Feelings
Promptly (< 24h) 16	None 16	No change 26	Exhaustion 19
Delayed (>24h) 12	Deference to unknown future 12	Systemic change 9	Frustration 10
None 9	External constraints 7	Individual solution 5	Gratitude 7
Misgendering 8	Need for discussion/documentation 6	Incomplete change 5	Anger 5
Phone 5	Apology 3	Silent change 2	Defeat 5
	Ignored 2	Voucher 1	Anxiety 4
	Nice thought, thanks 2		Excitement 2
			Confusion 2

*“This is getting draining beyond compare and I thought at the start that I [was feisty enough] to challenge this on the level I am, but oh [expletive] this is super hard.” - Dr. Katta Spiel*

## Key Reference

Spiel, K. (2021). "Why are they all obsessed with Gender?"—(Non) binary Navigations through Technological Infrastructures. ACM DIS.

# Questions that arise

*Need to be aware of our **own** ways of seeing when designing and evaluating...*

- *Who is the technology for? Who is involved in the process?*
- *What are our assumptions/values as designers/ developers and do they match those of the intended users?*

*What do we consider to be 'good' and do those who we intend to use the technology agree?*

*What might we be missing and how do we account for*



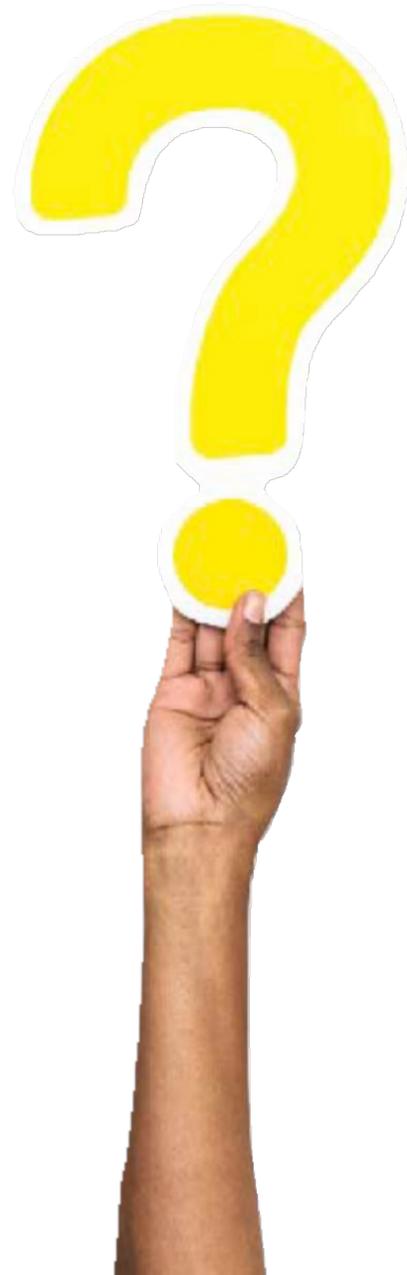
# Questions that arise

*Need to be aware of our **own** ways of seeing when designing and evaluating...*

- Who is the technology for? Who might be excluded?
- Who is involved in the design process?
- As designers, what are our assumptions/values? Do these match the assumptions/values of intended users?
- What do we consider to be "good" and do those we intend to use the technology agree with this?
- What might we be missing and how do we account for this?



**What do we mean by 'evaluating' a technology?**



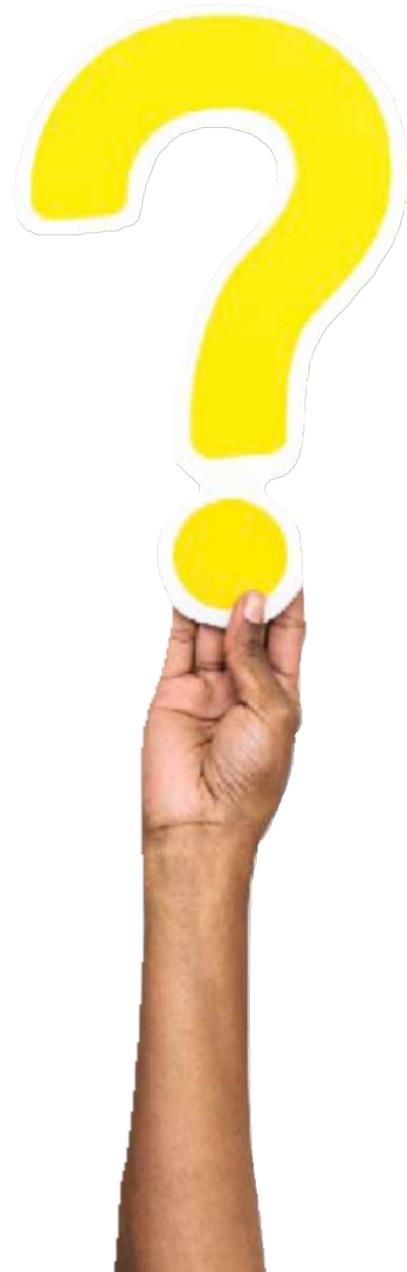
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- Who is the technology for? Who might be excluded?
- Who is involved in the design process?
- **As designers, what are our assumptions/values? Do these match the assumptions/values of intended users?**
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# What do we mean by 'evaluating' a technology?

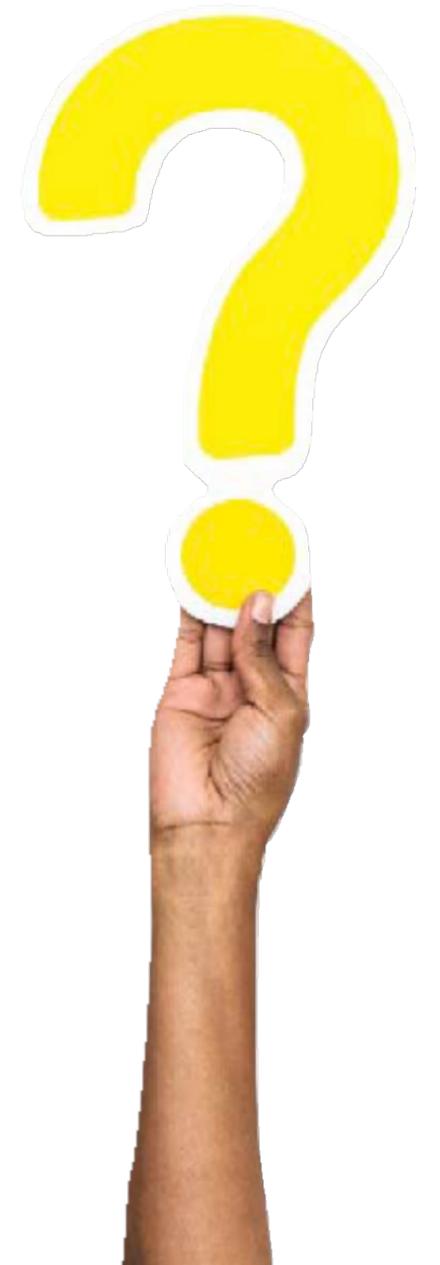
- The idea of "evaluation" is often oversimplified and also influenced by values and assumptions
- It does not have to be about low error rates and fast completion time
- The focus can be on user experience and emotions
- *How* something is achieved (process), rather than *what* is achieved (outcome)
- Alignment with users' values and with everyday life in practice
- Need to consider how a particular methodology considers participation, context, human factors, focus and data gathering/analysis



# What do we mean by 'evaluating' a technology?

## Lens of participation:

- Who is involved and how?
  - E.g., Are they contributing to the design? Do they have a say in shaping the technology? Or are they just providing feedback?
- Conversely, who is not involved? Is this an issue?



# What do we mean by 'evaluating' a technology?

## Lens of context:

- 'Controlled' studies - researcher present in a predetermined setting, able to control many 'confounding' factors
  - e.g., lab usability testing, interviews in a researcher-booked room
- 'In situ'/'in the wild studies' - in the intended context
  - e.g., ethnographic work, observation, contextual inquiry, etc.

### Key Reference

Yvonne Rogers. 2011.  
Interaction design gone wild:  
striving for wild theory.  
interactions 18, 4

# What do we mean by 'evaluating' a technology?

## Lens of human factors:

- **Anthropometric factors:** *physical, anatomical and physiological aspects*
- **Behavioural factors:** *what can users see, perceive and act on?*
- **Cognitive factors:** *what cognitive processes are involved when someone uses a system?*
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- **Social factors:** *what is the social context in which a system is used?*

# What do we mean by 'evaluating' a technology?

## Lens of focus:

### E.g.,

- How easy/intuitive a technology is to use
- How it makes people feel
- Whether it achieves a particular desired effect (e.g., collaboration, supporting focus, supporting behaviour change, etc.)
- How it aligns with their values and life
- How it fits into life in practice
- Does it change how things are normally done?

# What do we mean by 'evaluating' a technology?

## Lens of data gathering and analysis:

- Quantitative
  - Reporting patterns and trends, generalising to a larger population
- Qualitative
  - Exploratory research, e.g., familiarising with a topic, defining problems, exploring potential design solutions
  - Rich qualitative understandings of phenomena/experiences

# Critically reflection on your methods

In your groups, focus on *one* of the methods you've each decided to use for your project and have each group member spend *5 minutes* summarising the method in terms of:

- **participation** - who are the participants? How are they involved? Who might be left out?
- **context** - is the method a controlled or 'in the wild' approach? Or something in between?
- **human factors** - which human factors does the method address?
- **focus** - what question(s) does it help us answer about the technology?
- **data gathering/analysis** - is it qualitative or quantitative? Is it important for the results to be generalisable, or is the aim to provide a rich descriptive account?

Then for *5 minutes* discuss: What is the value of this method/approach? What are its limitations? What is addressed and what is (potentially) missed that might be important for this technology?

Switch the presenter and repeat!

# Further reading suggestions

D'ignazio, C., & Klein, L. F. (2023). *Data feminism*. MIT press.

Friedman, B. (1996). Value-sensitive design. *interactions*, 3(6), 16-23.

# Thursday workshop (Week 6)

- *Each group present their project progress*
- *3min presentation + 2min questions*
- *All groups present from Miro*

- *Question(s)/problem(s) in focus*
- *Say, Do, Make methods*
- *Early insights*
- *Initial design ideas*
- *Challenges, questions, aspects on which you want feedback*



# Thursday workshop locations

- *Uta: 2.14 Appleton Tower*

[https://miro.com/app/board/uXjVGHckjoo=/?share link id=335706162111](https://miro.com/app/board/uXjVGHckjoo=/?share_link_id=335706162111)

- *Tara: Lecture Theatre 5 Appleton Tower*

[https://miro.com/app/board/uXjVGFxWnX8=/?share link id=303641329390](https://miro.com/app/board/uXjVGFxWnX8=/?share_link_id=303641329390)

- *Sarah: LG.09 40 George Square Lower Teaching Hub*

[https://miro.com/app/board/uXjVGFwMSwc=/?share link id=519970412096](https://miro.com/app/board/uXjVGFwMSwc=/?share_link_id=519970412096)