



The Science Inside

The  
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# CAISS

Computation & AI for Social Science Hub

**Newsletter in collaboration with The Alan Turing Institute and Lancaster University**

## How do Social Scientists Engage with Data Scientists?

A primary goal of the CAISS Hub is to foster a collaborative community, encouraging work between disciplines and to this end we asked Professor Wendy Moncur of Strathclyde University for her thoughts around “how do social scientists and data scientists engage?” Here is her answer:

### “Embedding understanding of human behaviour and activities into the design of new Privacy Enhancing Technologies: Notes from the field”

“How can nuanced insights into the online privacy needs of people going through significant life transitions be gathered, analysed then communicated across an interdisciplinary research team, in such a way that appropriate new Privacy Enhancing Technologies (PETs) can be built that serve those needs? It’s no mean task, and one that the **AP4L** team is working on right now.

The AP4L project (Adaptive PETs to Protect & emPower People during Life Transitions <https://ap4l.github.io/>) is a 3-year, £3.6 Million interdisciplinary programme of research. It is supported through the UKRI Strategic Priority Fund as part of the wider Protecting Citizens Online programme and is associated with the National Research Centre on Privacy, Harm Reduction and Adversarial Influence Online (REPHRAIN <https://www.rephrain.ac.uk>).

AP4L involves a team of 17 Investigators from human factors in cybersecurity, computer science, psychology, criminology, sociology, and business studies, plus 26 partners across industry, Third sector and Government. We aim to develop new, personalised PETs for people undergoing significant life transitions, taking four very different transitions - cancer, LGBT+, relationship breakdown and leaving the military – as examples. The project comprises three Workstreams: understanding privacy and vulnerability (WS1); technology response (WS2); evaluation (WS3).

As a team, we face the usual challenges of working across academic disciplines. Differences in language, motivations, perspectives, assumptions, epistemological and methodological positioning, and underlying knowledge. When these challenges are embraced, we can step out of our silos and produce fresh knowledge that can have a positive impact on the world. Communication is key.

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As a starting point, the human factors and psychology experts in WS1 are running 'Data Days' to share findings from our initial mixed-methods survey, which was conducted online with 400 participants drawn from across our four transitions. We have rich participant quotes, that focus on transitions within complex and diverse populations and the associated online privacy considerations. Social science colleagues have contributed theory that allows us to structure these quotes and our associated thematic analysis. And, of course, we have extensive supporting literature reviews. Downstream, we're excited to deploy ground-breaking co-creative cybersecurity approaches in WS1 to work closely with our target users and understand their needs more deeply. So far, so good.

The trick now is to share this material *effectively*. Our first step was to present quotes and insights at an 'All Hands' meeting with the whole team. It quickly became clear that we needed to structure content to be more tractable. Whilst the WS1 team were excited to know about and understand lived experiences, the WS2 team needed to know what *practical* requirements for new PETs had surfaced. To this end, we developed a novel, theoretically informed matrix to structure our findings. All quotes have been coded to align with the matrix, so examples can easily be 'pulled out' by the WS2 team to aid their understanding of online privacy considerations associated with individual or multiple life transitions.

Our next task is to leverage this matrix as we begin to build a user model and enable WS1 insights to be operationalised. Members of WS1 and WS2 teams will collocate and work closely in the early stages as the first PET is developed, so that we learn from each other, build a shared language, and ground the practical requirements for PET design in our empirical research. The user model – and tools - will develop iteratively, as we carry out co-creation activities and build further knowledge.

Further data days, collocated working and – *always* – good communication will be key to ensure that the needs of people living through significant transitions are truly incorporated into the PETs that we develop.

**Bio:** Professor Wendy Moncur leads the Cybersecurity Group in Computer and Information Science at the University of Strathclyde, and leads WS1 on the AP4L project. She has developed the concept of 'Data Days' across a series of EPSRC and UKRI -funded cybersecurity projects that she has led since 2014. With a background in academia and industry, she is passionate about communicating across disciplines, and ensuring that an empirically-grounded understanding of human behaviour and activities is built into the impactful design of new digital technologies."

*Please feedback to us any comments and we will pass these on to Professor Moncur.*



## CAISS Bytes

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Tesla and Elon Musk unveiled a robot – Optimus which is a prototype humanoid robot in October 2022. One argument is that a human type robot is better at working with human tools, however, actually getting a robot to stand upright involves an enormous amount of work. People have an expectation that robots should be like them, this is often not the case as a robot is designed for a specific purpose. For example a robot to investigate bombed out buildings may need to cope with rough terrain. Robots who carry out medical procedures do not need to be aesthetically pleasing, but need to perform their task effectively (e.g. prostate operations).

**So What:** There is a phenomenon called “the uncanny valley” where something looks human like but not believably so resulting in it becoming frightening and scaring people. Robots that work in care homes might be better suited to looking more human as vulnerable people could become distressed if something in this context does not look human enough. robots with humanoid traits raises questions not only around the ethical design and development of robots (including morals, bias, risk of harm and responsibility), How humanoid robots are treated and used could have a negative impact back into society (i.e. sexist attitudes and behaviours and unrealistic standards of women). <https://www.bbc.co.uk/news/technology-63130363>

### CSS Interest Group.

The Alan Turing Institute have a Social Data science group, seeking to address the challenges around the vast quantities of data that are becoming available within 2 primary themes: developing foundational theories of human behaviour at diverse and temporal scales and identifying methodological challenges and solutions to enable social scientists to delivery robust and credible results in key application domains. <https://www.turing.ac.uk/research/interest-groups/social-data-science>

### CSS in Education.

The University of Oxford offer a multidisciplinary MSc in Social Data Science to provide the social and technical expertise needed to collect, critique and analyse unstructured data about human behaviour.

<https://www.ox.ac.uk/admissions/graduate/courses/msc-social-data-science>

### Book review by Georgina Mason (Researcher CAISS)

*Bit by Bit, Social Research in the Digital Age* by Matthew J.Salganik

All data is social data whether from social media, smart phones, a business system or a public database. The collection, processing and dissemination of this social data will influence how the information is collected and manipulated, this means that it is critical anyone studying these outcomes needs to carefully reflect on the agency that went into defining this information. This book is an introduction for data scientists to aid the understanding of social science research and compliments this by offering social scientists an insight into how best to run experiments, observe behaviour, real world examples and exercises to challenge the reader - all underpinned by keeping an eye on ethical challenges. The intersection of data science and social science should happen seamlessly, but too often one or the other can be brought in at the end of a project instead of them working collaboratively from the beginning.

This book written by a professor of sociology who also works in the Centre for Information Technology Policy and the Centre for Statistics and Machine Learning at Princeton University offers a great guide to maintaining rigour and relevance for both social and data scientists. This book is a great starting point for someone new to CSS and ideal to dip into and out of, linking social and data science with great examples. **Score 9/10**

Salganik, Matthew J. 2018. *Bit by Bit: Social Research in the Digital Age*. Princeton, NJ: Princeton University Press

## More CAISS Bytes

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### What does the AI and Social Science intersection mean?

Human behaviour is notoriously difficult to understand and predict. With the huge rise in computational and information technologies, huge datasets are now available along with vastly powerful approaches to analyse this data. AI is a fundamental tool that we can use to achieve more but technology is moving at breakneck speed which allows for our understanding to be enhanced rapidly. Using AI does need to have some guiding principals, for example: fairness, reliability, safety, security and inclusiveness along with transparency and accountability. Social science involvement via CSS can provide a powerful approach to analyse and predict the social world and remove bias. Ideally a holistic view can be taken to appreciate and understand the field of CSS but how easy is this?

**So What?** There are two highly relevant beliefs people typically hold that make cognitive bias a noteworthy concern for CSS. Firstly the fallacy of technological protection, which is a belief that technology is objective and free from bias i.e. relying on a computational prediction removes any human bias. Secondly – the illusion of control which concerns peoples belief that they will be able to change in a way that counteracts the effects of any bias.

#### Questions?

What can we do to ensure that bias is mitigated and can we ever really remove it?  
How do we ensure that ethical concerns are addressed especially in a military domain?  
How can we conceptualise the term fairness across disciplines?  
How can we ensure that decision making is not affected by contextual information?

**What do you think – let us know?**

### Chat GPT: New AI chatbot has everyone talking to it

OpenAI, an artificial intelligence research firm has launched a chatbot (November 2022) which saw users pass one million in less than a week on its launch. ChatGPT (Generative Pre-Trained Transformer) has learned through fine tuning conversations with human trainers and from access to Twitter data. It has done this by optimising language models for dialogue and is capable of understanding natural human language, however, it does like to remind you that it has no thoughts, feelings or emotions. It's no surprise that Elon Musk was previously on the board of Open AI. Although results are impressive the company warns that it can produce problematic answers and exhibit biased behaviour. The project says the chat format allows the AI to answer "follow-up questions, admit its mistakes, challenge incorrect premises and reject inappropriate requests". Users report its taboo avoidance system is pretty comprehensive but it can sometimes write plausible sounding but incorrect or nonsensical answers.

**So What?** It is still a chatbot, is there a danger that output will be taken as ground truth? Tell us what you think.

<https://www.bbc.co.uk/news/technology-63861322>