Understanding and Designing Human Data Relations

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# 1 Introduction

[Target X words]

## 1.1 Motivation

[Target X words]

## 1.2 Problem

[Target X words]

## 1.3 Prior Work

[Target X words]

## 1.4 The Research Question & My Approach

[Target X words]

*What role should people’s data play in their lives, and what capabilities do they need?*

Sub-questions:

* RQ1: How do people understand and relate to data?
* RQ2: What role do people have in the world of data?
* RQ3: What role does does play in people’s lives
* RQ4: What would an ideal world of humans and data look like?
* RQ5: What are the barriers and opportunities toward this ideal?

## 1.5 Contribution

[Target X words]

## 1.6 Thesis Structure

[Target X words]

## 1.7 Notes

* Subsection headings are just placeholders for now, need to revise these.

# 2 Literature Review

[Target X words]

## 2.1 The Data-Centric World

[Target X words]

* The status quo - data is a part of everyday life. Services are data-centric
* Rise of cloud, globalisation, cost reduction has made it so
* World Economic forum and others - there is a power imbalance over data
* mention attempts to tackle data imbalance i.e. wikis, open data movements, etc - and the resistance the industry has given, closure of APIs, siloism, etc.
* GDPR - as the first attempt by governments to try and tackle this power imbalance, mention CCPA too.
* emergence of data dashboards
* seems GDPR rights not fully realised in practice. e.g. ad infrastructure breaks it.
* question is, how effective is GDPR , it is even the right approach - what is really needed to combat this power balance, how do people understand and relate to data and how do people understand their place in the world of data, what data is meaingful to people, what does effective access really mean.
* in essence, what is it like to live in a data centric world

Notes: - Does the ‘what is data’ question need to partly addressed in the “data centric world” section or is it ok that that comes into chapter 4 more as a finding. - properly explain ‘data-ism’ and bring that in

## 2.2 Human-Centric Design

[Target X words]

* the three waves of HCI, from operators of machines to users to experiences. recognition that digital systems are not solitary single purpose machines, its an ecosystem > weiser and separating data from machine.
* human-data interaction, as a response to that, mortier et al, people need a relationship with data not just with machines
* following on to calm computing, context aware computing, engaged living, tech to the background
* tech sector thinkers ‘designing for the whole person’ (Harris, Tufecki, etc)
* Human Centric data economy, MyData movement
* framed as an emergent space, more work to be done to explore human centric design in practice, need to explore the barriers and possibilities

Notes:

* is there any design thinking from Digital Civics to come in here?
* possibly bring some things about the roles people play with data here? data subject for example
* consider some sort of diagram - triangle - humans, their data, their world.

## 2.3 Personal Data Interaction

[Target X words]

* continuing from three waves of HCI and Weiser, but this time looking at it as from the tech design perspective
* introduce the Abowd angle of the shift from programming environments to programming *environments*
* Personal information management systems and the history of PIM.
* referencing the HCI shift from work to ‘whole life’ experiences
* Quantified self
* Personal Informatics
* personal data lockers / data stores
* limited state of the art - cover technical perspective on what is happening in human-centric design space
* the limitations are the focus on viewing data, as a static thing, instead of looking at in the wider context of human life (as some of the theorists imply we need to do).
* there is a need to look beyond human data interaction, to design systems that focus outward on data in life. examining data’s role in life.

Notes:

* This section is technology/interface focussed where human-centric design section is more framed around high level approaches to this design space.

## 2.4 Research Gap

[Target X words]

* my research aims to fit upon these three areas by:
  + exploring how people understand and relate to data as they live in a data centric world, what is data to them and what mental models do people have around data (positioned as filling research gap around understanding and exploring existing in a data centric world). aim is to understand realities of data today and understand problems with data today.
  + explore the roles people play with regard to data, looking at their life. in particular there is a need to look at relationships with organisations that hold and use data about people - examining data’s role in their lives and how data affects people in their lives (positioning this as a deeper exploration of human-centric thinking, applied to the world of data specifically). aim is to understand realities of relations today and understand problems with relations today.
  + explore the possibilities for designing and building new data systems that would address the problems identified with data and with relations, what are the practical challenges and to explore the different methods of how they might be overcome.

Frame the overall research question:

*What role should people’s data play in their lives, and what capabilities do they need?*

I will use largely qualitative methods as well as situational embedding and reflection informing design to explore these questions. My approaches are detailed more in the next chapter.

# 3 Approach & Methods

[Target X words]

* this PhD comprises a number of studies conducted between 2016 and 2021.
* there are three strands of enquiry:

## 3.1 1. The Human Perspective on Data Centricism

The objective of this part of the research is to fain a rich understanding of what data IS to people as they live their lives in the modern world.

Epistemiology:

* Here and throughout this thesis, we take a subjectivist perspective, looking more at what people think than trying to discover a single objective truth.
* As Peirce’s pragmatic maxim says, the meaning of anything in the world is understood through the conception of its practical effects, and theories that are more successful at controlling and predicting our world can be considered closer to the truth.
* We take an inductive research approach, finding patterns and forming theories to explain them

Therefore the key approach to this research objective is to be able to meaningfully engage with people about the subject of data, and conduct considered conversations to uncover their points of view.

(insert concentric circles diagram: Your Life > Your Data > )

Using a general approach of leading people into the subject of data using meaningful representations or starting with things that they already know (the devices, software and companies in their own life) I found effective ways to engage with participants and then get them talking about their data.

The interviews I conducted were divided into two strands: - exploring families’ data in a civic context, as it might be used in the provision of care or other state Services - exploring individual ‘digital life’ - the data that participants hold, use, or live with (or is held about them) by the companies they interact with.

(do these need little subsections as in 2 below?)

in the former case, I modelled data types and produced data cards and designed other activities to help stimulate discussion. In the latter, I used sketch interviewing as a technique. Then used standard qualitative interviewing as a technique (how much do I need to say about this?)

### 3.1.1 Data Cards and Card Sorting Techniques

Describe and show Family Civic Data cards used in 2017 study Describe the card-sorting techniques used - the riskiness vs who-should-control-it corkboard technique used in 2017 study

Describe why chose this - boundary objects (REF Star)/things to think with (REF Brandt and Messeter)

### 3.1.2 Family facts

Describe the facts-on-poles technique used in 2017 study.

### 3.1.3 Sketch Interviewing

Describe and show Sketch interviewing as used in the 2017 interviews and GDPR study.

### 3.1.4 Studies undertaken towards this research goal.

* 4 x 2 hr family ‘home visits’ (REF Mannay)
* 3 x 1hr ‘mobile phone/usefulness interviews’
* 5 x 1.5 hr ‘digital life sketch interviews (2017)’
* 11 x 1 hr ‘digital life interviews’ (2019)

## 3.2 2. The Lived Experience of A Data-Centric world

follow same pattern as above.

this time, importance of looking beyond the individual. looking at the way data exists and is used within relationships people have with organisations that hold data, within the data centric world.

additional Epistemiologies we draw on here are foucault’s thinking that meaning comes from discourse, and Deweyan pragmatism, that the purpose of research is to find solutions to real world problems in a manner that the solutions are generalisable.

here we move beyond people’s perspectives and thoughts to their actual lived experiences. our objective here is to understand the lived experience in a data centric world and how data can affect your life and relationships.

building on the prior research around attempts to model and interact with data in a more whole life, systemic way, we step up and look at data from the ‘life’ level - where we can see that, given the fact that most data is not directly held by individuals but by organisations - its role in relationships is key.

### 3.2.1 Early help

* explain the early help context and how it is a good setting to explore data relations especially w.r.t to empowerment

In order to fully explore this we conducted qualitative fieldwork with both sides of the early help relationship, exploring both current experiences of data use but also imagined future uses with different configurations that might be considered more human centric.

### 3.2.2 Card Sorting

### 3.2.3 Sentence Ranking

### 3.2.4 Ideation Grids

### 3.2.5 Group Poster Design

### 3.2.6 Storyboarding Cards

(participatory design) Quick explainer and reference to Golembewski

### 3.2.7 GDPR

* explain the GDPR context and how this is also a way to explore practical experience of real data processes

### 3.2.8 Privacy Policy interviews

as a starting point, having identified companies in people’s lives I start with the objective reality of what those companies say they collect, and use that as a way in to meaningful data conversations with participants.

### 3.2.9 View Your Data interviews

then to explore a real world process, I took participants on a journey of discovery of requesting, accessing and viewing their own held data.

### 3.2.10 Studies undertaken towards this research goal.

HDI in context of care study - 1 x 2h workshop with families (x participants) - 2 x 2h workshop with staff (x participants) - 1 x 2h workshop with staff and parents (x participants)

GDPR study - 10 x 1h+ privacy policy discussion - guiding through email etc - 10 x 2h view your data discussion

## 3.3 3. Uncovering and Exploring Design Constraints and Opportunities

Epistemiology: practical, pragmatism. What is possible. research through design.

This research goal starts from a different perspective, looking from the designer / technologists perspective, to gain an empathetic understanding of the current status quo of data systems and then applying human-centric system to reconsider the design of these systems. The goal is to uncover the barriers and challenges that must be overcome through design of systems and processes, and exploring the possible avenues of design that could be exploited

Here, research was conducted through embedding myself in projects aligned to the research objectives of building new data systems. Not empirical structured research but rather a process of acculturation to the world of building data systems and learning through participation and through research through design and through technical prototyping.

## 3.4 Research Through design

background on how this can be framed as research through design

## 3.5 Rapid prototyping

background on how prototyping is used to explore new ideas - pivoting etc.

### 3.5.1 Studies undertaken towards this research goal

two major projects:

* SILVER (ref early help as earlier)
* BBC R & D/PDS

two minor projects:

* web augmentation
* experimenting with using own data and getting usable data with GDPR

## 3.6 Structure of the following chapters.

Findings from the first research goal, The Human Perspective on Data Centricism, are written up in chapter 4, Understanding data

Findings from the second research goal, The Lived Experience of A Data-Centric world, are written up in chapter 5, understanding data relations.

Findings from the third research goal, Uncovering and Exploring Design Constraints and Opportunities are written up in chapter 6, understanding design constraints and possibilities.

In chapter 7, these findings are brought together to address the overall research question and suggest avenues for future research, design and development that can be applied to design better human data relations.

# 4 The Human Perspective on Data and Data-Centrism

[Target x words]

# 5 Living In A Data-Centric World

[Target x words]

# 6 Human-Centricity: Design Constraints and Opportunities

[Target x words]

# 7 Designing Better Human Data Relations

[Target x words]

# Bibliography