Data journeys: Considering a conceptual and methodological tool for studying organisational data practices

Juliane Jarke, Irina Zakharova
Institute for Information Management Bremen (ifib)
Centre for Media, Communication and Information Research, University of Bremen
Schools as “data platforms” in which “a wide range of data tracking, sensing and analytics technologies are being mobilised” (Williamson 2015).

"[M]uch of education today is being influenced and shaped by the production of lines of code that make digital software function, and by the generation of digital data that allows information about education to be collected, calculated and communicated with software products" (Williamson 2017).
DATAFIED: research project & context

- Increasing importance of data across education
- influences decision and meaning-making of educational policy, school supervision/ administrations, teachers, pupils, parents;
- changes the roles of educational actors and their relationships.

Starting point: interpretation and use of data are not (value-) neutral.

Data (practices) reconfigure school organisation and our understanding of good schooling.
How can we research organisational data practices?

It depends on

- **how we understand data and organisation** (ontological premise) &
- **how we understand the role of methods in knowledge production** (epistemological premise)
AGENDA

• Review of relevant concepts of data and organisation
• Review of approaches to study data movement
• Empirical case: Two ways of visualising data journeys
  • Assemblage-oriented data journeys
  • Process-oriented data journeys
• Conclusion: Methodological value of data journeys
Data assemblages

“Data do not exist independently of ideas, techniques, technologies, systems, people and contexts, regardless of them being presented in this manner” (Kitchin 2014, p.24).

Data as central concern of a „complex sociotechnical assemblage“.

Figure 1.3 The intersecting apparatus of a data assemblage

(Kitchin 2014)
• **Social is about circulation**, it is the association of materially diverse entities *and* their circulation (Latour 2004)

• A process view on organisations is **interested in the becoming of organisation** rather than “taken-for-granted states of being” (Cooper & Law 1995)

• **Organisations** as networks or **circuits of continuous movement**: “more like assemblages of organizings” (Cooper & Law 1995)
How to research organisation-as-process?

- Practice-based approaches
  - Nicolini 2009

- Actor-network theory (ANT)
  - Cooper & Law 1995

- Communicative construction of organisation (CCO)
  - McPhee & Zaug 2009

- Process studies of organisation
  - Langley 2007
Data journeys as an analytical lens

“The mobility of data depends on their capacity to adapt to different landscapes and enter unforeseen spaces. As they travel around, data undergo frequent modification to fit their new environments. They acquire or shed components, merge with other data, shift shape and labels, change vehicles and companions, and such transformations prove essential to their usability by different audiences and purposes.”

(Leonelli, 2020, p. 6)
Data journeys as an analytical lens

“The fluid nature of data journeys makes them challenging to identify and reconstruct, and yet it is the very opportunity to articulate and explicitly tackle those challenges that makes data journeys into useful units of analysis to map and compare the situations and sets of practices through which data are mobilised and used.”

(Leonelli, 2020, p. 5)
Data journeys contest the idea of data flowing smoothly between and through various organisational destinations. Data journeys include friction, unaccomplished movements need to be made visible and direct the researchers’ attention to data disregarded and excluded from circulation.

(Edwards et al., 2011; Bates et al., 2016; Aula, 2019)
Approaches to data journeys

Visualisation of weather-turned-climate data,

- organisations are depicted as points of passage, each producing, appropriating, processing and/or interpreting data differently before sending it off to the next stop.

- different journeys/paths are differently coloured distinguishing the production of data, its embedding in citizen science contexts, in the climate science and eventually in financial markets.
Approaches to data journeys

Focus is on **shifting organisational boundaries and actor roles** in change processes

- modelling not only “technical barriers” but also “challenges arising from social aspects of the organisation”.
- step-by-step guide on how to model data journeys across organisational boundaries, explicitly marking those data flows in which friction occurs in order to smooth the flow eventually.

„Data Threads“ by Eleftheriou et al. 2018
Approaches to data journeys

- Colour coding of different organisational contexts, but **different level of detail and complexity**
  - Eleftheriou et al. (2018) models user roles, data bases, data objects and physical infrastructures such as desks
  - Bates et al. (2016) traces the flow of data through different types of stakeholders in climate change policy debates.
- Both focus on the **data’s life journey**
  - from generation through various stages of preparation, cleaning, processing, reporting. Throughout the process the data on this journey undergo "mutations" according to the cultural values and sociomaterial conditions in that they move (Bates et al., 2016).
  - In a way, Eleftheriou et al. (2018) “**zoom in**” to what Bates et al. (2016) depict as nodes in their network.
Data journeys so far focus on...

Data movements and frictions

Organisational and data arrangements

but not on...

How do data practices (re)configure organisation?
How does the methodological framework of data journeys help us to make sense of the complexities of organisational practices and its processes?
DATAFIED project: DATA In and For EDucation

- Interviews with human stakeholders: school staff, software developers in the responsible federal states’ Ministries of Education
- Information systems documentation analysis and modelling, mapping
- Datasets documentation analysis
- Political, legal documentation analysis
Class cancellation process

School Information Systems

- School statistics
- School resources
- School finance
- School personnel
- Student data processing
- Classes & courses
- Timetable planning
- Class cancellation & statistics
- Timetable management

Learning management

- Documents exchange
- Access to colleagues
- Access to guardians

Classroom management

- Absenteeism control
- Special assistance
- Daily documentation

Visualisation by Angelina Lange (adapted)
Assemblage-oriented data journeys
What do we learn from assemblage-oriented data journeys

- Consider the circulation/movement of data in data assemblages as constitutive of organisation
- Data as boundary objects are not only about what they are meant to represent, but they enact organisational boundaries and facilitate stabilisation.
What do we learn from process-oriented data journeys

Work of organisational actors to make data flow becomes visible.

• CIRCULATION: Not one data flow, but multiple systems and gaps in between. Data need to be transferred between systems.

• TRANSLATION: Work of assembling data and aggregating the “right” representation.
What is the role and value of data journeys for the study of organisational data practices?

- To recover messiness and complexity of organisational realities data journeys
  - following Law (2004), messy realities require messy methods (and visualisations)
- **Process-oriented journeys** show (care) work for data flows and organisational values
- **Assemblage-oriented journeys** may show multiple stabilisations
- Both data journeys render visible frictions and enable us to ask questions about how these frictions come to matter (for whom) and why.
What is the role and value of data journeys for the study of organisational data practices?

Data journeys...

In contrast to the theories of practice...

- Illustrate the teleo-affective structures of organisational reconfiguration practices

In contrast to CCO...

- Zoom into particular organisational negotiation practices to render visible organisational boundary-making

In contrast to ANT...

- Prioritise human agency staying sensitive to the “mediating” role of non-human agents

In contrast to the process studies of organisations...

- Incorporate temporal elements of data movements and organising

What is the role and value of data journeys for the study of organisational data practices?

Data journeys...
Conclusion

Data journeys

• as a **conceptual and methodological approach** render organisation not as medium or fixed structure for enabling data flows, but as a process where relations enacted through data movement configure modes of ordering and accomplish organising.

• underscore that data are not merely a static object (or immutable mobile) circulating in organisations; rather, data journeys **bring to the fore the work required to attend to data friction and make data move.**
Thank you!

Irina Zakharova
izakharova@ifib.de @irzakhar

Juliane Jarke
jjarke@ifib.de @juliane_jarke

Institute for Information Management Bremen (ifib) & Centre for Media, Communication and Information Research (ZeMKI)
University of Bremen

Am Fallturm 1
28359 Bremen

Tel.: 0421 218-56580
Fax: 0421 218-56599
E-Mail: info@ifib.de
www.ifib.de