

Ethical Issues in Mobility Data Analysis

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Tectonix Tweet

March 24, 2020



Tectonix
@TectonixGEO



Want to see the true potential impact of ignoring social distancing? Through a partnership with [@xmodesocial](#), we analyzed secondary locations of anonymized mobile devices that were active at a single Ft. Lauderdale beach during spring break. This is where they went across the US:

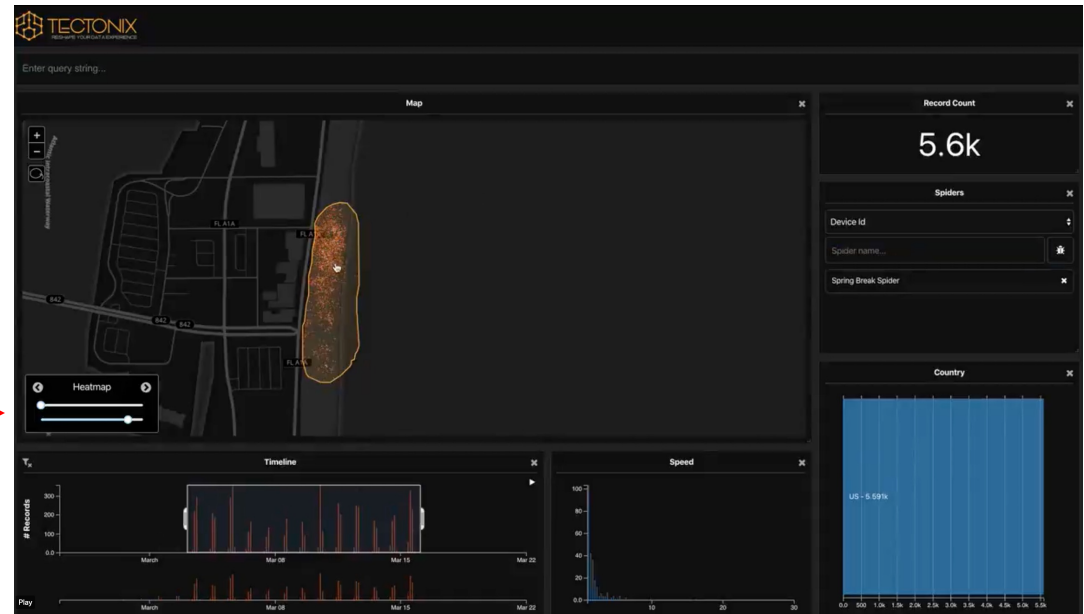


7:44 PM · Mar 24, 2020 · Twitter Web App

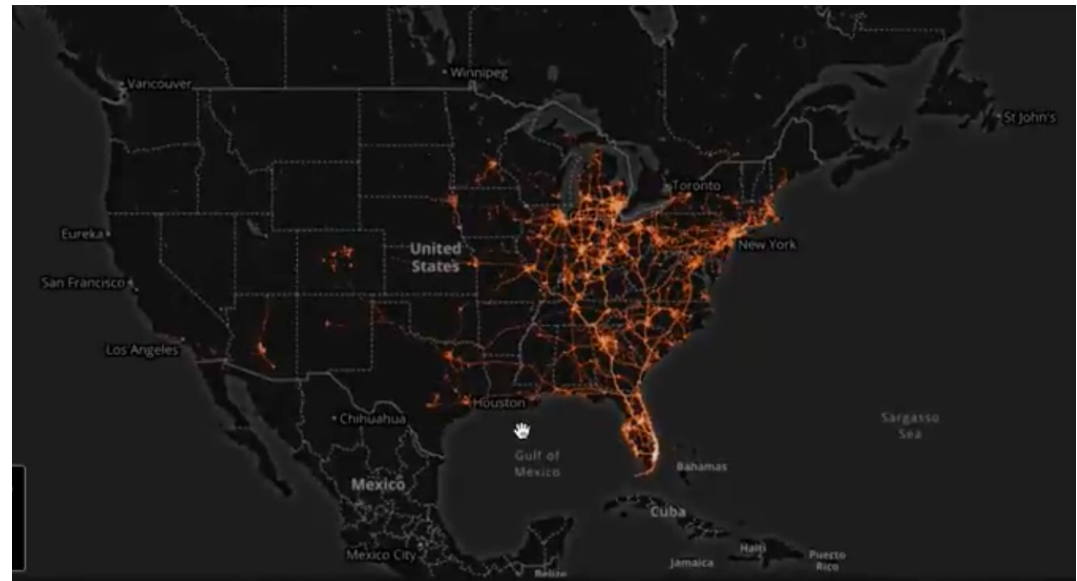
15K Retweets **5,722** Quote Tweets **20.4K** Likes

Tectonix Video

Screen Shot of
“Spring Break Spider”
with **Date Range** and
Location Selected



Screen Shot of
Secondary Locations



WE ARE X-MODE

Empowering Innovation with Quality Location Data.

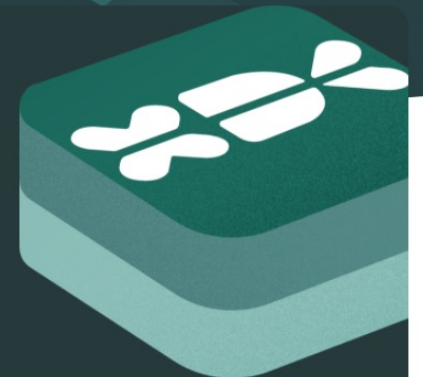
DATA LICENSING

Power your business with high quality location data to build great products and services.



APP PUBLISHERS

Easily integrate the X-Mode XDK to generate incremental revenue and invest in your app's success.



Response on Twitter

 Mar 25, 2020 ...

Replying to [@TectonixGEO](#) and [@xmodesocial](#)
Amazing to see the tracking but also scary when you think about [#privacy](#)

 22  17  524 

 · Mar 26, 2020 ...

Replying to [@TectonixGEO](#) and [@xmodesocial](#)
Out of curiosity: What exactly is an "anonymized" location data point, in particular when tracing individuals' time series?

 3   22 

Response on Twitter 2

[Redacted] · Mar 25, 2020 ...
Replying to [@TectonixGEO](#) and [@xmodesocial](#)



   1 

How can think through the ethics of such a case?

Outline:

- **Why bother** with ethics?
- **Principles** as a start
 - How to go beyond principles?
- **Privacy**
- **Ethical Theories**
- Ethics can do better

My Commitments:

- Ethics is **not a specialization**
- Ethics is **not about solutions**
- Ethics is **ongoing attention**
- What matters is **communication** and **culture of ethics**

Chatham House Rule:

Participants free to use info received, neither identity or affiliation of speakers/participants to be revealed.

Why bother with ethics: some reasons

- **Media** attention
- **Trust** of public
- **Social contract**
- **Expectation** of government
- **Political support** for innovation
- **Cost** of unethical uses
- **Threat** of regulations

“Close to 60% of organizations have attracted legal scrutiny and 22% have faced a customer backlash in the last two to three years due to decisions reached by their AI systems.” Capgemini Report, p. 3

Big Data Principles

Big Data Ethics Principles:

- Ownership (and Consent)
- **Transparency**
- **Privacy** (and Security)
- Intention
- Outcomes

(Cote, Harvard Business School Online)

EFF Urges for Devs of Proximity Apps:

- **Consent**
- Minimization
- Information Security
- Transparency
- Addressing Bias
- **Expiration**

(Crocker et al. 2020)

Some conclusions from the literature

“Ultimately, if residual risk is acceptable, **analysis of mobility data can be justified** if it can yield actionable insights that benefit public health.”
(de Jong et al. 2019)

“three major locational data issues implicated by the current pandemic: (1) **anonymized data** sometimes are not anonymous, (2) locational data are often **not representative** and can exacerbate inequality, and (3) location data are a key part of the extension of the **surveillance state**. We conclude by asking whether this moment of visibility for location data collection could provide an opportunity to push for new media literacies.” (Frith & Saker 2020)

Ethical Principles: What's the Point?

Questions

- What is the **use** of principles?
- How can they be **used or misused**?
- What are the **limitations**?
- What are some ways to **operationalize** principles?

Operationalizing Principles

- **Checklists**
 - Assessments
- Training
- **Ethics Framework** for organization
 - Leadership
- Ethics **Ombudsman**
- **Whistleblowing** System

Algorithmic Impact Assessments

Proposal From the AI Now Institute

- Publically **list and explain what algorithmic systems** are used to identify people.
- Allow **external audit** (make sure people who aren't creating or using the software agree that it is fair to use).
- **Ensure agencies are experts on the systems they're using** - they should know how the systems work, what their strengths and weaknesses are, what they're taking into account, etc.
- **Empower the public** to hold agencies accountable.

Elements of a Comprehensive Framework

Leadership

- Informed **leadership**
- Clear ethics **ombuds** with power to challenge projects
- Ethics **charter**
- Staff ethics **training**
- **Whistleblowing** system

Development

- Identify projects for **well-being/good**
- Involve **stakeholders**
- **Diverse** dev team
- Include ethics **advocate**
- Impact **assessment**

Security and Maintenance

- Regular **testing** of assumptions, data and algorithm
- Regular **training** and **discussion** of use/impact

Transparency

- Internal **communication** (devs to internal users)
- **Public information**
- **Informing** those impacted
- **Process** for those impacted to get explanation/redress

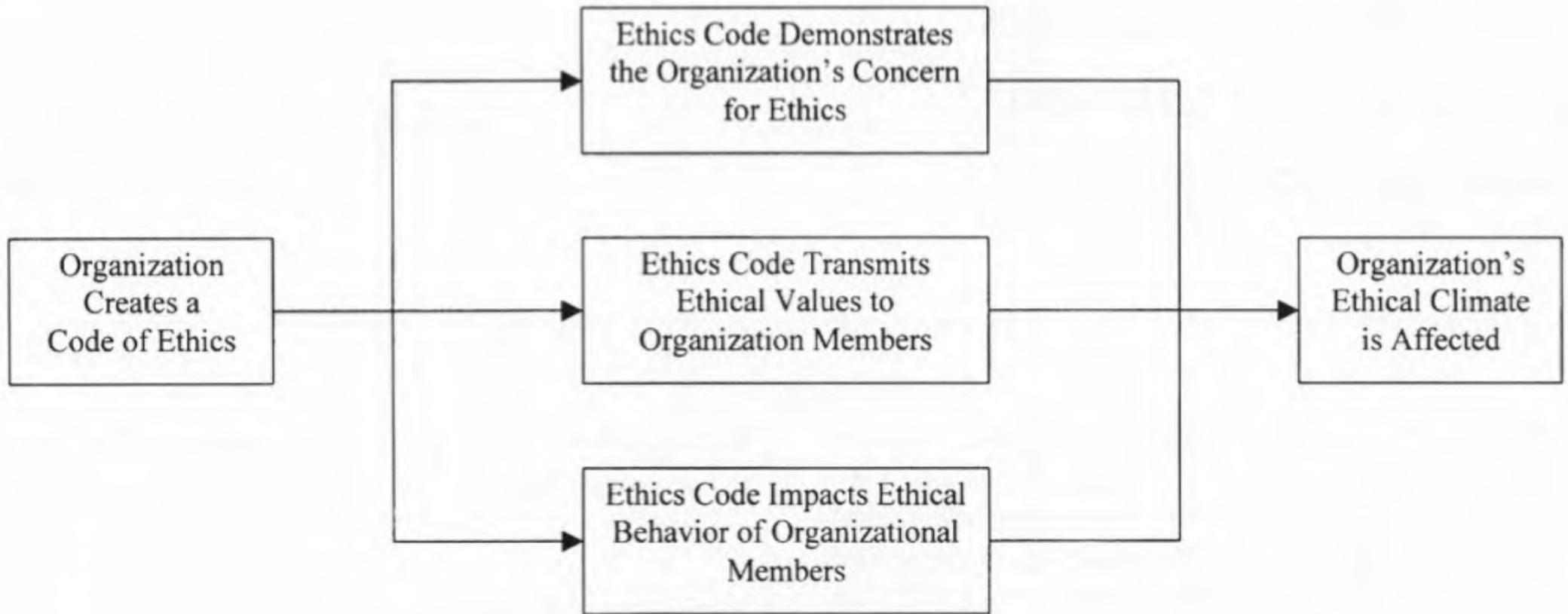


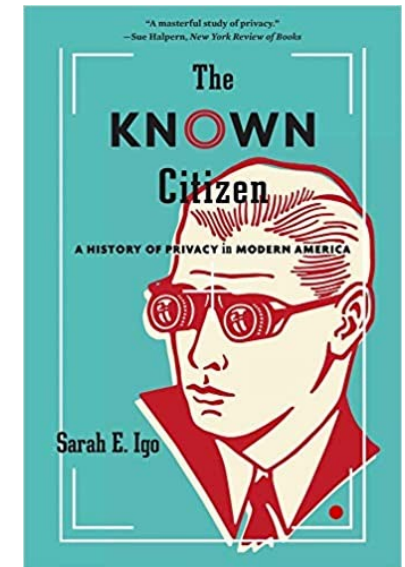
Figure 1. An Ethical code process.

Wotruba, The Impact of Ethics Code Familiarity on Manager Behavior, 2001

Privacy

Igo, *The Known Citizen: A History of Privacy in Modern America*, 2018

- By my definition, an individual or group has privacy in a **situation** if and only if in that situation the individual or group or information related to the individual or group is **protected** from intrusion, observation, and surveillance by others. (Moor 1990)
- **Informational privacy** is the protection of personal information relating to daily activities, finances, and lifestyle. **Expressive privacy** is the desire to protect oneself from the influence of peer pressure or ridicule and to be free to express one's own identity. It is the ability to control what is said about you. (Raynes-Goldie 2010)
- People should – and do – care deeply about privacy. But privacy is not simply the control of information. Rather, **privacy is the ability to assert control over a social situation.** (boyd 2011)



Ethical Approach 1: Duty-based Ethics

- **Deontology: Deon** – (duty - that which is binding) + **logos** (theory)
- About the **rightness of actions** in and of themselves (not consequences)
 - **Principles** of mobility data and analytics
 - **Human Rights**
- Can be an **absolutist** framework - **inflexible**
- Not treating people as means to an end
- Kant's Categorical Imperative:

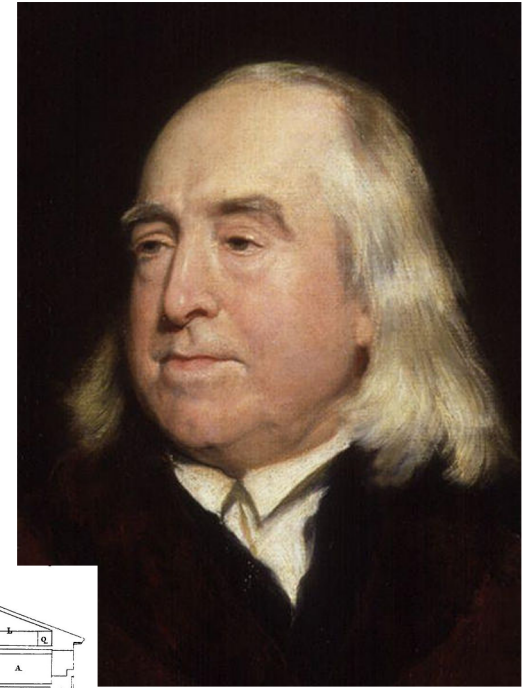
Act only in such a way that you would want your actions to become a universal law, applicable to everyone in a similar situation.



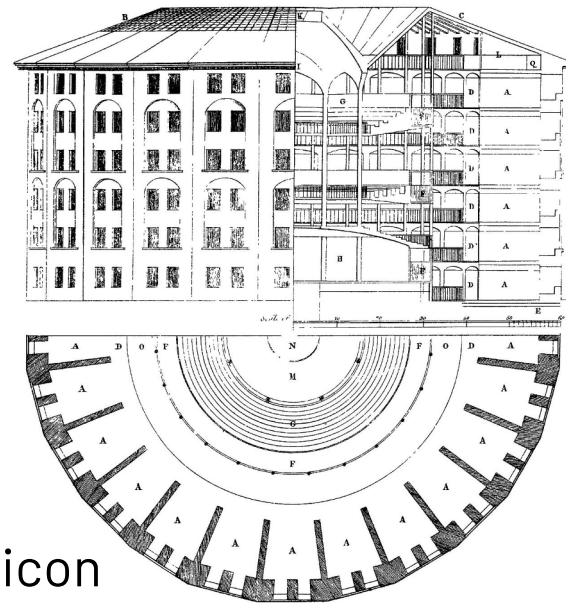
Immanuel Kant
(1724-1804)

Ethical Approach 2: Consequentialism

- Ethics that focuses on **consequences**
- Utilitarianism: “**the greatest amount of good for the greatest number**”
- How do you **calculate** utility?
- Issue of **dictatorship of majority**
- Bentham, the Panopticon and **Surveillance**



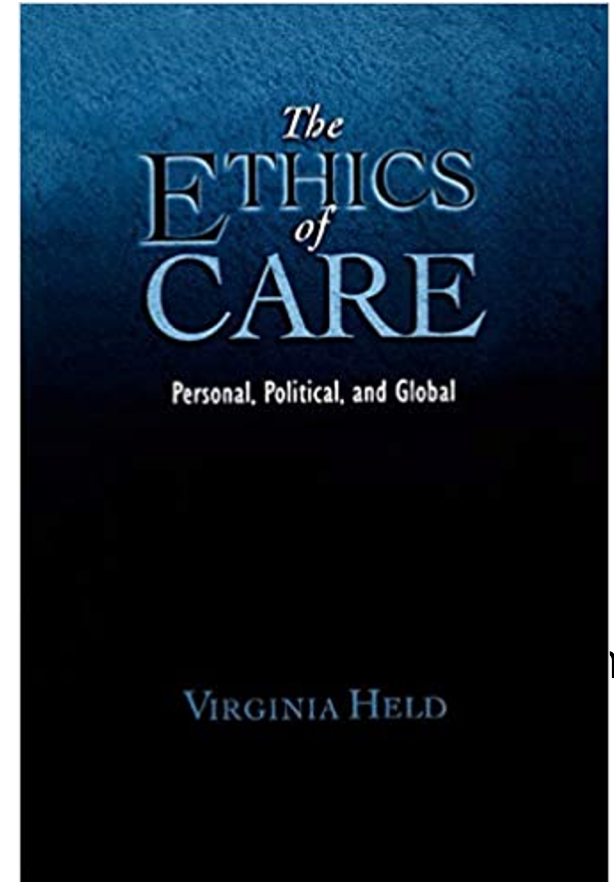
Jeremy Bentham
(1748-1832)



Panopticon

Ethical Approach 3: Ethics of Care

- Ethics that focuses on **care** for others
- Can be considered a form of **virtue ethics** that focuses on character
- Reaction to rights-oriented ethics that assumes **empowered individuals**
- Attention to context of **relationships of power**
- Paradigm is **care for children** or **elderly**
- Involvement of **stakeholders**



Thinking Through Theories

What is the role of stories? The arts?

Deontological Approach

- What are the **relevant principles**, guidelines, codes of ethics?
- How can they be **applied/operationalized**?

Consequentialist Approach

- What are the **consequences** of acting in a particular way?
- What are the **risks** and **opportunities**?
- How can consequences be **balanced**?

Ethics of Care

- **Who** is affected? Who are the **stakeholders**? How are we/they **positioned**?
- What are your **relationships** with stakeholders? How can **better structure** the relationships?
- **What do we know** about ourselves and our project? How can we **document** this?
- How can we **care** and **repair** training **data** and **analytics**?

We can do better!

Why is ethics:

- Seen as way of **restricting development?**
- Treated like a **step in development process?**
- Seen as a **PR smokescreen?**

Why can't ethics:

- **Generate** design ideas
- Be a **partner in innovation**
- Make a **difference for good**

Checkbox guidelines must not be the only “instruments” of AI ethics. **A transition is required from a more deontologically oriented, action-restricting ethic based on universal abundance of principles and rules, to a situation-sensitive ethical approach based on virtues** and personality dispositions, knowledge expansions, responsible autonomy and freedom of action. (Hagendorff, “The Ethics of AI Ethics,” 2019)

What would it be like to have a **culture** of ethics?

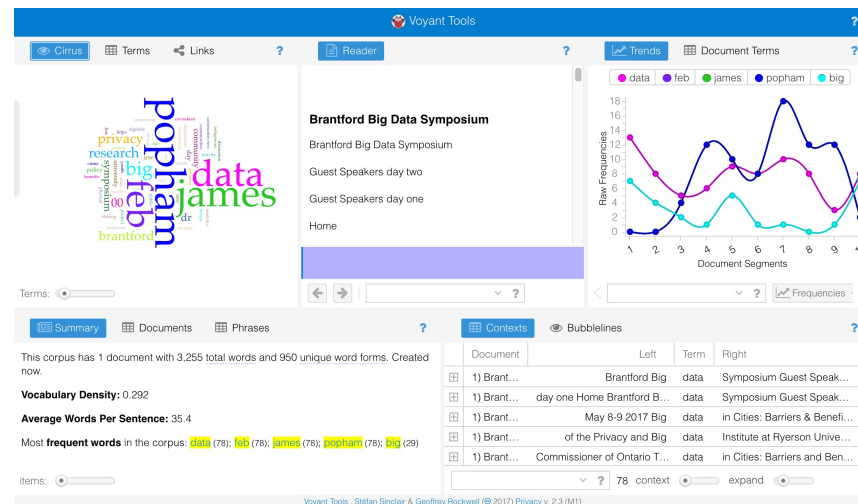
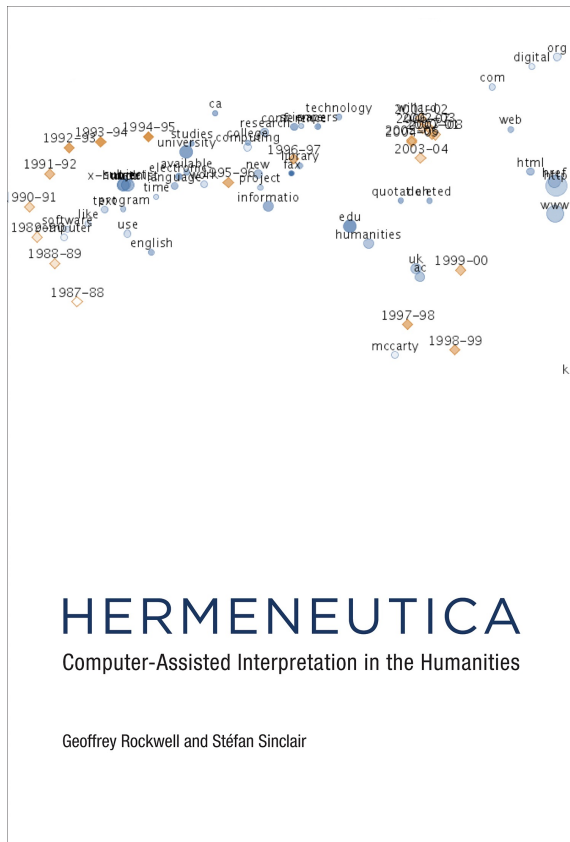
Compared to medicine, AI development lacks

- (1) **common aims and fiduciary duties,**
- (2) **professional history and norms,**
- (3) **proven methods to translate principles into practice, and**
- (4) **robust legal and professional accountability mechanisms.**

These differences suggest we should not yet celebrate consensus around high-level principles that hide deep political and normative disagreement.

(Mittelstadt, “Principles alone cannot guarantee ethical AI” 2019)

Thanks voyant-tools.org



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Stakeholders

- Engaging stakeholders is important to **Transparency** and **Inclusion**
- Importance of hearing from those **impacted** from the beginning
- Importance of **domain expertise**

- **Who are you**, the owners and developers of the project? Is your group representative?
- Who would be the **stakeholders** you need to consult? **How might you consult** the different stakeholders? How can you consult **vulnerable groups**?
- Can stakeholders be **involved in the development**? How can you **report back**?