COHUBICOL
ERC Advanced Grant 2019-2024

About the project   News   Subscribe   Research blog   Team

COHUBICOL

Counting as a Human Being in the Era of Computational Law

Say cubicle ▪ Think Wittgenstein's cube

Learn more

It would be nice if all of the data which sociologists require could be enumerated because then we could run them through IBM machines and draw charts as the economists do. However, not everything that can be counted counts, and not everything that counts can be counted
— William Cameron, *Informal Sociology* (1963)

Latest news

Hildebrandt discusses her work in the workshop 'Data-driven Law on Edge?'
📅 11 Jan 2021 ▪ 💬 0 comments

J'EXISTE.

What's Up?

- Automation (in law)

- Objectives

- Objections

- Data-driven 'legal tech'

- Affordances, transforming the mode of existence of law

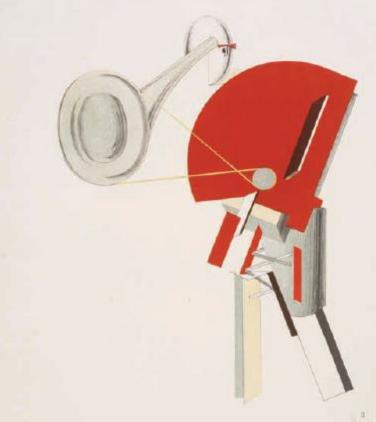- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

What's Up?

- Automation (in law)

- Objectives

- Objections

- Data-driven 'legal tech'

- Affordances, transforming the mode of existence of law

- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Automation (in law)

- A note on terminology:
  - *Darmouth Conference: AI is a marketing term*
  - *Simon preferred 'complex information processing'*
  - *'AI' confuses and misleads*
    (metaphors we live by Lakatos, the living metaphor by Ricoeur)
  - *Let's speak of automation, and distinguish between, eg:*
    - Mechanical automation (steam engine)
    - Electrical automation (transistors, circuits, silicon)
    - Electronic automation (computing systems, control & feedback)
      - *Code-driven (IFTTT: symbolic, blockchain)*
      - *Data-driven (inductive engines: ML, DL, NLP)*

COHUBICOL

Automation (in law)

- ■ Automation has consequences:
  - – *Before the washing machine a woman:*
    - ■ Spent an enormous amount of time on the laundry, or
    - ■ Outsourced the laundry to other women
  - – *After the washing machine a woman:*
    - ■ Who can afford one has the freedom to go to work
    - ■ Or has to go to work to afford one
- ■ Interesting to note the laundry issue is gendered
- ■ Don't forget many women, families can't afford a washing machine

COHUBICOL

Automation (in law)

- Automation has consequences:
  - *Automation of mobility was done*
    - By way of railway infrastructure (public transport)
    - By way of cars bought by individuals (private transport)
- Try to imagine if only public transport had developed
- Note automobile was gendered for a long time

Automation (in law)

- Automation has consequences:
  - *One can operate a washing machine without understanding the engine*
  - *Same goes for a car*
  - *Trustworthiness developed as a result of*
    - Private law liablity
    - Reputation management
- Physical safety risk is augmented by automation due to:
  - *Increased speed and force, potential defects (think of product liability)*

COHUBICOL

Automation in law

- Automation has consequences:
  - *Washing machines freed our hands and our time to do more interesting things, it did not change the nature of washing our clothes (?)*
  - *Washing machines democratised freedom to do other things, which no longer depends on having a servant (?)*
  - *Does automation in law do the same?*
    - Does it affect the nature of legal practice and the rule of law?
    - Does it democratise access to law, because we may no longer need a lawyer?

Automation in law

■ Automation has consequences:

- *Is automation in law just a matter of efficiency for the law firm?*

- *Or does the efficiency allow to replace the profession or change its role?*

■ Does automation of law make lawyers less dependent or more dependent (on what)?

■ How does automation of law affect the skill-set of legal practitioners?

- *Example of legal research into role of purpose limitation in data protection law*

    ■ Search in databased of both European Courts

COHUBICOL

What's Up?

- Automation (in law)
- **Objectives**
- Objections
- Data-driven 'legal tech'
- Affordances, transforming the mode of existence of law
- Rearticulating the rule of law in data-driven 'law'

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Objectives

1. efficiency (less time, less labour)

2. democratisation (disintermediation)

3. effectiveness (performative effect of search and prediction)

4. improved accuracy (what is the baseline, what is the target?)

What's Up?

- Automation (in law)

- Objectives

- Objections

- Data-driven 'legal tech'

- Affordances, transforming the mode of existence of law

- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Objections

1. technological solutionism

2. Matthew effect for Big Law

3. diminishing human agency

4. deskilling of lawyers

5. rule of law issues

What's Up?

- Automation (in law)
- Objectives
- Objections
- Data-driven 'legal tech'
- Affordances, transforming the mode of existence of law
- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Data-driven legal tech

- Machine learning (ML)

- Deep learning (DL)

- Natural language processing (NLP)

Data-driven legal tech

■ **Machine learning (ML)**

– *"A computer program is said to learn from experience E with respect to some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E." Mitchell*

COHUBICOL

Data-driven legal tech

■ **Machine learning (ML)**

- *experience E = digital data,*
  e.g. text as data, metadata, voice pitch, or voting behaviour of justices

- *class of tasks T = find relevant case law, predict case outcome*

- *performance measure P = [accuracy, precision, sensitivity](#)*

- *if its performance at tasks in T, as measured by P, improves with experience E = performance on the data*

COHUBICOL

Data-driven legal tech

- **Machine learning (ML)**
  - *class of tasks T = find relevant case law, predict case outcome*
  - *Tasks must be described in a machine readable way:*
    - This requires proxies for concepts such as
      - *'relevant case law'*
      - *'case outcome' (usually binary: violation/non-violation, guilty/not guilty)*

COHUBICOL

Data-driven legal tech

■ **Machine learning (ML)**

    – *Target function that defines the data in function of the task = unknown*

    – *Hypothesis function =*
mathematical function that supposedly approximates the target function

    – *The target/hypothesis function:*
assumedly compresses the dataset into one mathematical function

COHUBICOL

Data-driven legal tech

- **Machine learning (ML)**
  - *if its performance at tasks in T, as measured by P, improves with experience E = performance on the data*
  - *assumption: distribution of future data similar to historical data*
  - *fundamental disconnect with what matters in law:* *'freezing the future, scaling the past'*
  - *Understanding the role of 'legal certainty' legality/legalism – formal positivism/hermeneutics*

COHUBICOL

Data-driven legal tech

■ **Deep learning (DL)**

- *artificial neural networks* *with multiple hidden layers*

- *feedforward, backpropagation*

- *supervised, unsupervised*

- *high dimensionality (incredibly large feature space)*

- *compression or complete memory?*

COHUBICOL

Data-driven legal tech

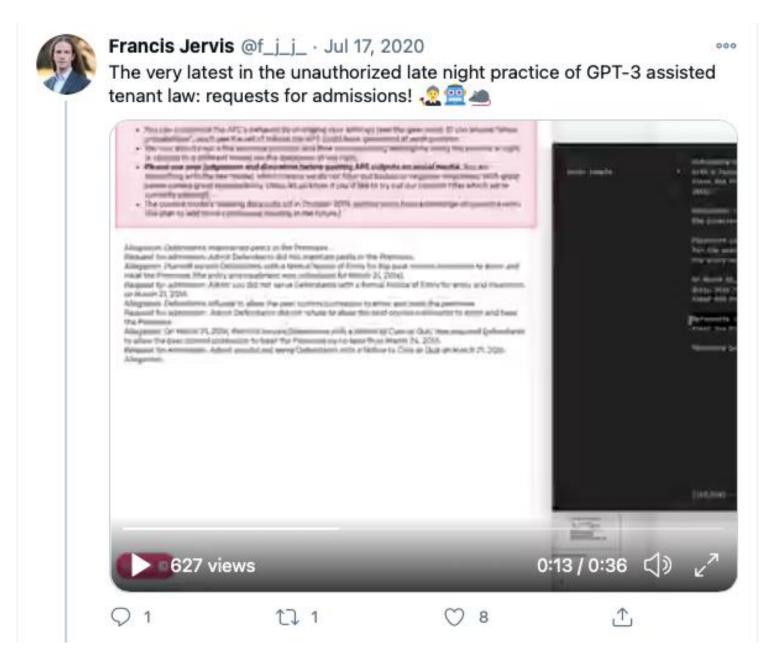- **Natural language processing (NLP)**
  - *Training data = corpus of textual data (text as data)*

  - *Classification of text elements as relevant to a specific task*
    - pattern recognition, clustering
  - *Generating text in function of a specific task*
    - answers to questions or vice versa (Jeopardy), summarising, machine translation

  - *Tasks may be:*
    - Search for relevant precedent, statutory law, doctrine
    - Argumentation mining (= also search)
    - Checking for missing links (= also search)

Vocabulary taken from Russell & Norvig 2020:

- We define a **language model** as a probability distribution describing the likelihood of any string.

- The application of naive Bayes to strings of words is called the **bag-of-words model**.

- As we have seen, some machine learning models work better when we do **feature selection**, limiting ourselves to a subset of the words as features.

- We can compromise with a **Markov chain model** that considers only the dependence between adjacent words. This is known as an **n-gram model**.

- One common model for POS tagging is the **hidden Markov model (HMM)**. [..] A HMM takes in a temporal sequences of evidence observations and predicts the most likely hidden states that could have produced that sequence.

- Naïve Bayes and HMM are **generative models**. That is, they learn a joint probability distribution, $P(W,C)$, and we can generate a random sentence by sampling from that probability distribution to get a first word (with category) of the sentence, and then adding words one at a time. Logistic regression on the other hand is a **discriminative model**.

Francis Jervis
@f_j_j_

Replying to @f_j_j_

Here it is in easy-to read still image format: we present, perhaps the most boring part of lawyering, the RFA, fully automated with GPT-3!

This is about half of $100m-funded Legalmation's product, cloned to the first approximation, with three examples.

> Allegation: Defendants maintained pests in the Premises.
> Request for admission: Admit Defendants did not maintain pests in the Premises.
> Allegation: Plaintiff served Defendants with a formal Notice of Entry for the pest control contractor to enter and treat the Premises (the entry and treatment was scheduled for March 21, 2016).
> Request for admission: Admit you did not serve Defendants with a formal Notice of Entry for entry and treatment on March 21, 2016.
> Allegation: Defendants refused to allow the pest control contractor to enter and treat the premises.
> Request for admission: Admit Defendants did not refuse to allow the pest control contractor to enter and treat the Premises.
> Allegation: On March 21, 2016, Plaintiff served Defendants with a Notice to Cure or Quit, that required Defendants to allow the pest control contractor to treat the Premises by no later than March 24, 2016.
> Request for admission: Admit you did not serve Defendants with a Notice to Cure or Quit on March 21, 2016.
> Allegation: Defendants continued to refuse to allow the pest control contractor to treat the Premises.
> Request for admission: Admit Defendants did not continue to refuse to allow the pest control contractor to treat the Premises.
> Allegation: Therefore Defendants continued to maintain pests at the Premises.
> Request for admission: Admit Defendants did not continue to maintain pests at the Premises.

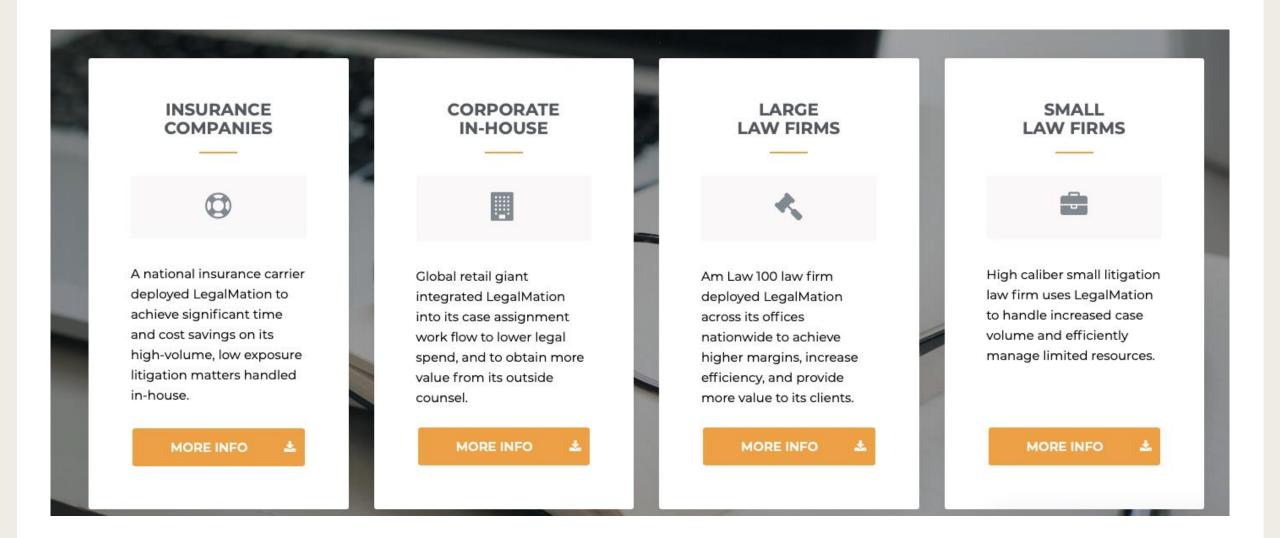11:02 AM · Jul 17, 2020 · Twitter Web App

Data-driven legal tech

■ **Westlaw Edge**

efficiency

<mark>**QUICK CHECK**</mark>

Quickly and securely upload your briefs to see highly relevant authority that traditional research may have missed. In addition to checking your own work, you can also analyze your opponent's work to identify potential weaknesses in their arguments, and compare multiple filings from a single matter.

COHUBICOL

Data-driven legal tech

■ **Westlaw Edge**

insights

<mark>LITIGATION ANALYTICS</mark>

Discover a new level of insight with data-driven analysis on judges, courts, attorneys, law firms, and case types across the most practice areas. Be more informed to stay ahead of competition and easily gather relevant information from a comprehensive visual representation to respond to clients even faster.

COHUBICOL

Data-driven legal tech

- **Westlaw Edge**

accuracy

KEYCITE OVERRULING RISK

Trust you're citing good law with KeyCite Overruling Risk. Only Westlaw Edge has a citator warning that cautions you when a point of law in your case has been implicitly undermined based on its reliance on an overruled or otherwise invalid prior decision.

COHUBICOL

Data-driven legal tech

- **Westlaw Edge**

efficiency

<mark>WESTSEARCH PLUS</mark>

Find authoritative legal answers even faster with WestSearch Plus, the only search engine built for the legal industry. Attorneys can find what they need in minutes, not hours.

COHUBICOL

Data-driven legal tech

■ **Westlaw Edge**

accuracy

STATUTES & REGULATIONS COMPARE

Quickly understand how a statute or regulation has changed over time. With Statutes Compare and Regulations Compare on Westlaw Edge, you can see the most recent changes to a statute or regulation from the document or compare any two versions.

COHUBICOL

Data-driven legal tech

- **Westlaw Edge**

efficiency

JURISDICTIONAL SURVEYS

Jurisdictional Surveys allows you to quickly retrieve a customized and relevant compilation of laws across all U.S. jurisdictions on virtually any topic to expedite the creation of your survey.

COHUBICOL

Data-driven legal tech

■ **Westlaw Edge**

insights

LEGISLATIVE INSIGHTS

Be a more effective advocate by staying on top of proposed federal legislation that could impact your client, company, or agency. Westlaw Edge has partnered with Skopos Labs to bring you the most advanced AI technology for proposed legislation.

COHUBICOL

Data-driven legal tech

■ **What could possibly go wrong?**

1. efficiency (less time, less labour)

2. democratisation (disintermediation)

3. effectiveness (performative effect of search and prediction)

4. improved accuracy (what is the baseline, what is the target?)

Data-driven legal tech

■ **What could possibly go wrong?**

1. technological solutionism

2. Mathew effect for Big Law

3. diminishing human agency

4. deskilling of lawyers

5. rule of law issues

COHUBICOL

What's Up?

- Automation (in law)

- Objectives

- Objections

- Data-driven 'legal tech'

- Affordances, transforming the mode of existence of law

- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Affordances, transforming the mode of existence of law?

- ■ 'Affordances are the possibilities for action that are available to agents in their environments' (Manuel Heras-Escribano 2019, cf. Gibson)
  - – *agency is enabled by the affordances of an environment*
    - ■ ecological and relational understanding of agency
  - – *perception is focused on affordances*
    - ■ discernment of the action-potential
    - ■ connection with American pragmatism and *Gestalt* psychology
  - – *agency is embodied and situated*
    - ■ acuity is always specific to the agent and its niche
    - ■ depending on the *Aufforderungscharakter* of things
    - ■ Cf. also postphenomenological philosophy of technology (Ihde)

COHUBICOL

Affordances,
transforming the mode of existence of law?

- 'Affordances are the possibilities for action that are available to agents in their environments' (Manuel Heras-Escribano 2019, cf. Gibson)
  - *A concept used in design, architecture, robotics*
  - *Highlighting that environments, things, infrastructures invite or enforce some behaviours and inhibit or rule out other behaviours*
  - *Directly related to the 'power' of design (what does your design afford?)*
  - *Deeply relevant for engineering and computer science*
    - Insisting on a reflection on:
      what software, hardware and their integration afford their 'users' and 'end-users'

COHUBICOL

Affordances, transforming the mode of existence of law?

- ■ 'Affordances are the possibilities for action that are available to agents in their environments' (Manuel Heras-Escribano 2019, cf. Gibson)
  - – *Printed text affords modern positive law*
  - – *Whose affordances in turn depend on the affordances of text:*
    - ■ Conveying meaning across time and space
      - – *Distantiation between author and text (loss of control, adaptive autonomy)*
      - – *Distantiation between author and reader (emancipation of the audience)*
      - – *Distantiation between text and meaning (text cannot speak for itself)*
  - – *Interpretation becomes the hallmark of modern positive law*
    - ■ Not the King but the Judge speaks the law (*iudex non rex lex loqui*)

Affordances, transforming the mode of existence of law?

- ■ 'Affordances are the possibilities for action that are available to agents in their environments' (Manuel Heras-Escribano 2019, cf. Gibson)

    - – *A new data-driven layer will mediate the relationship between lawyer and legal text*

    - – *As the lawyer begins to trust the output of this layer, they will begin to deskill in terms of close reading, hopefully becoming skilled in 'distant reading' (Moretti)*

    - – *The legal subject will not be disintermediated but find themselves interfacing with a double mediation (lawyer plus software), or a new mediation (software)*

    - – *The new layer has specific affordances for the lawyer and for the relevant legal subject*

Affordances, transforming the mode of existence of law?

- 'Affordances are the possibilities for action that are available to agents in their environments' (Manuel Heras-Escribano 2019, cf. Gibson)
  - *New affordances:*
    - Distant reading, computational pattern recognition
    - New level of search, from query to inference
    - Summarisation, argumentation mining
    - Text generation (can GPT3 take over from Legalmation)?

What's Up?

- Automation (in law)

- Objectives

- Objections

- Data-driven 'legal tech'

- Affordances, transforming the mode of existence of law

- Rearticulating the rule of law in data-driven 'law'

OXFORD

LAW FOR
COMPUTER
SCIENTISTS
and OTHER FOLK

MIREILLE
HILDEBRANDT

Rearticulating the rule of law in data-driven 'law'

- **Developing a new hermeneutics**
  - *Based on a proper understanding of ML's assumptions and operations*
  - *Instigating agonistic or adversarial machine learning*
  - *Addressing the difference between NLP and NLU*
  - *Addressing the difference between machine agency and human agency*