THE ETHICS OF SMART CITYSCAPES

INTERACTING WITH MACHINE AGENTS

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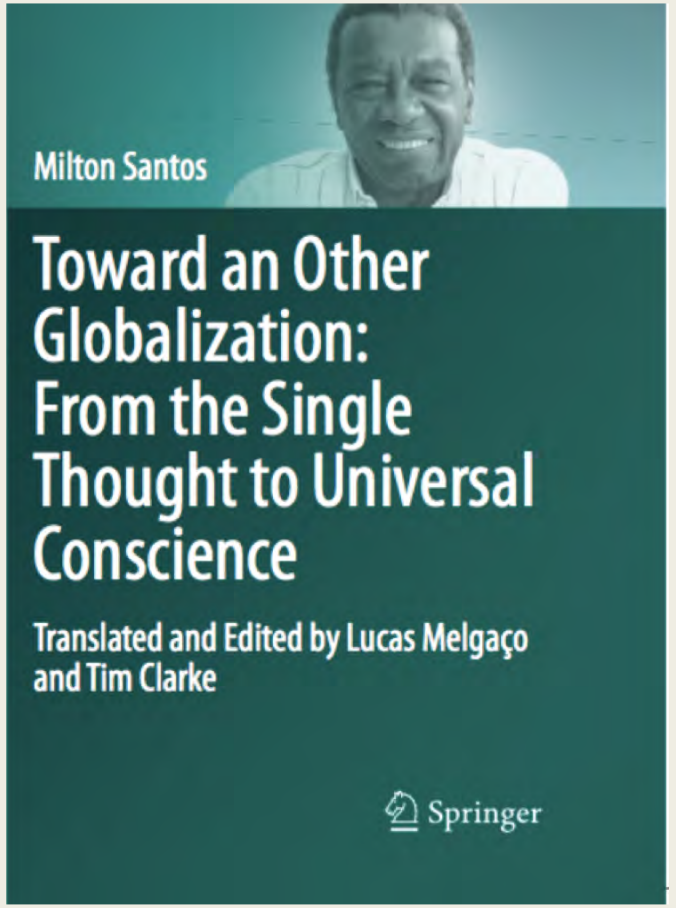
What's so smart about 'smart'?

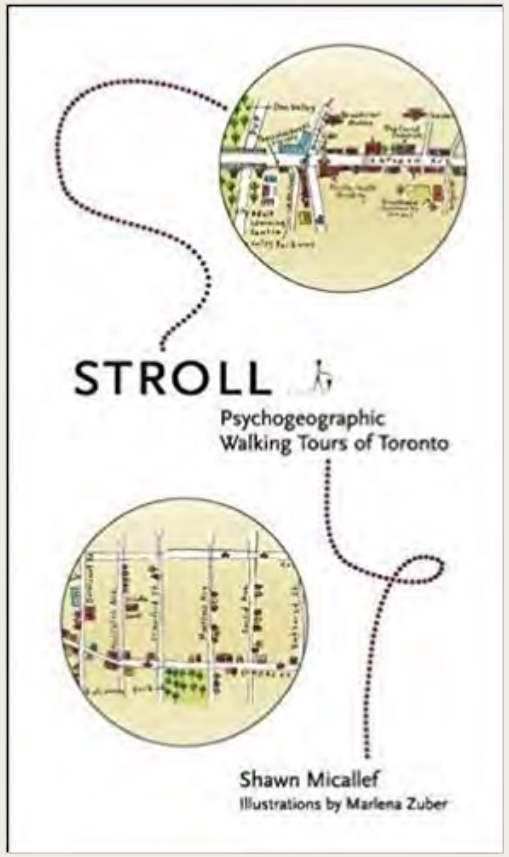
- When do we call a city smart?
- Who determines what is smart?
- Smart for whom?

Santos: concept of ‘used territory’

- network (Castells)
- *banal space* (Perroux)
- ***happenings*** (Santos):
  - *homologous (contiguity, similitude)*
  - *complementary (differentiation)*
  - *hierarchical (rational command)*



Stroll: Psychogeographic walks in Toronto



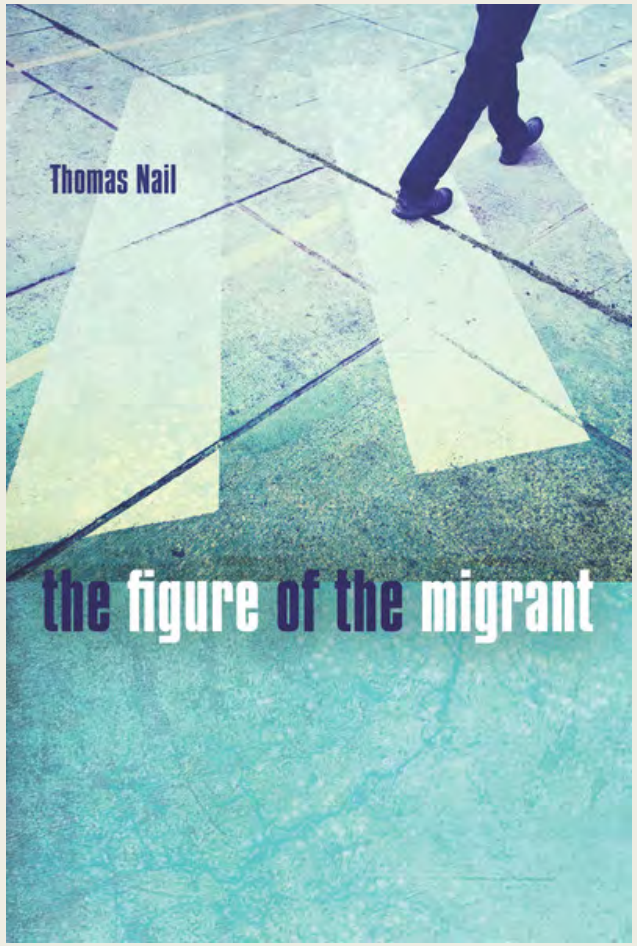
- *Le Flaneur*
- In banal space
- Mobility as a way of life?

Thomas Nail: *mobility* as default

- Migration is not the exception
- *Sedentary life is what must be explained*
- Kinopolitics (on states & migration)

- Hildebrandt on borders:
  - *Networked*
  - *Mobile*
  - *Polymorph*

https://www.utrechtlawreview.org/articles/abstract/10.18352/ulr.380/

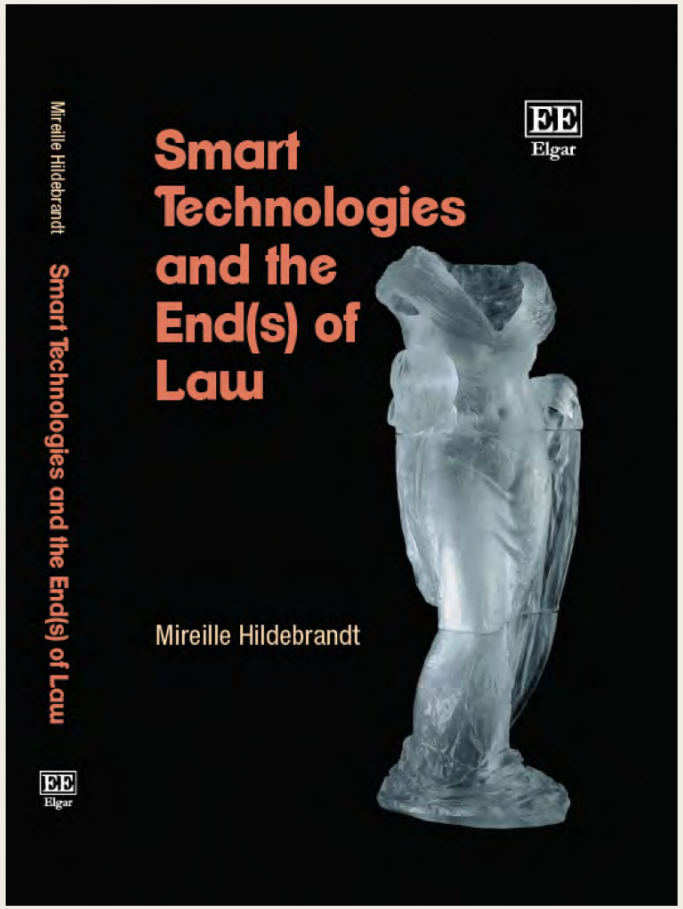


What's so smart about 'smart'?

- Smart as in high tech?
- Smart as in data-driven agency?
- Smart as in interacting with data driven agents
- Instead of using them, being used by them

Hildebrandt: concept of 'data driven agency'

- *Agent* defined re *environment*
- Agent:
  - *Perception to anticipate action*
    - (neuroscience, robotics)
  - *Action based on perceived impact of prior action*
    - (cybernetics: feedback)
  - *Agents are adaptive and autonomous*
    - (Varela & Maturana: autopoiesis)



Sidewalk Labs and Waterfront

- Competition to develop the Eastern Waterfront of lakeside Toronto
  - *Pollution*
- Sidewalk submits a 200 page proposal in stunning detail for a new type of place
  - *Modular dynamic buildings, underground garbage collection,*
  - *Building a city 'from the internet up'*
  - *Affordable? and entrepreneurial!*
  - *Experimentation on and with inhabitants: Sensorville?*
- Public-private collaboration

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Sidewalk Labs and Waterfront

Sugar Beach

Current attempts

Molly Sauter in The Atlantic

An artist's rendering of Sidewalk Labs' vision for a "radical mixed-use" neighborhood, "always in flux"

Sidewalk Labs / Ian Bogost / The Atlantic

MOLLY SAUTER | FEB 13, 2018 | TECHNOLOGY

The Quayside site and the surrounding area. Downtown Toronto is to the upper left. (Open Street Maps / Ian Bogost / The Atlantic)


LAKESIDE

To facilitate those interactions, a public-engagement plan offers many ways Torontonians can engage. They include live-streamed talks, public roundtables, Sidewalk Toronto "pop-up stations," a "design jam" with architects and planners, and a two-day CivicLabs workshop on "issues like mobility, housing, and inclusion." Interested citizens can also send their children to a free "Sidewalk Toronto Summer Kids Camp."

Stratumseind 2.0

- A quantified street in the city of Eindhoven (Philips city)
- Stratumseind: the longest ‘pub’ street of the Netherlands over 50 pubs, café’s discotheques and restaurants

Albert Meijer and Marcel Thaens, ‘Quantified Street: Smart Governance of Urban Safety’, Information Polity 23, no. 1 (1 January 2018): 29–41, https://doi.org/10.3233/IP-170422.

Stratumseind 2.0 an onliƒe example

1. Collection of data (e.g. the level of noise, temperature, number of incidents, occupancy, rate of parking places, number of visitors and the origin of visitors)
2. Platform for scientific research (e.g. Influence of light on violence (de-escalate project)
3. Creating an environment that boosts innovation (e.g. testing products, concepts, and ideas in real life practices)
   - Basecamp, Engine block

Stratumseind 2.0 an onlife example

- A quantified street in the city of Eindhoven (Philips city)
  - *safer and cleaner + testground*
  - *noise detection,*
  - *cameras, twitter analyses, data analysis*
  - *cybernetics, crowd-management, surveillance*
  - *Living Lab, Urban laboratory*

- the use of technologies to measure everything
  - with the aim of intervening more effectively

Stratumseind 2.0 an onlife example

A. Meijer and M. Thaens / Quantified street: Smart governance of urban safety

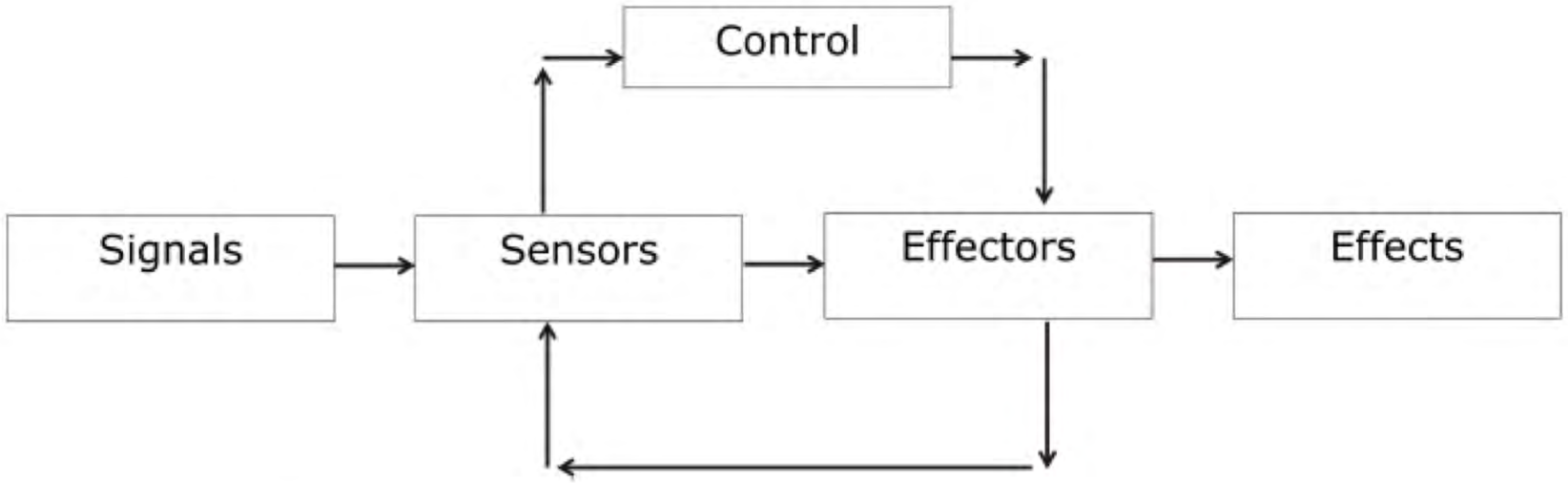

Fig. 1. Cybernetic perspective on smart safety governance.

Stratumseind 2.0 an onliƒe example

Sensors:

- Cameras at the 5 entrances (images not stored, used to count people)
- Wireless noise detectors at same 5 positions (3D images of the noise)
- Light sensors planned at 2 or 3 positions.
- Readers for detecting macaddresses at same 5 positions (whole space covered)
- Social media crawler detects tweets and posts, does sentiment analysis
- Weekly digital survey, to compare (ground truth?)
- Location data mobile phones are purchased from Vodaphone (aggregated, anonymized)
- Police incident reporting on location of incidents
- Municipal Cleaning Department provides data on waste
- Breweries provide data on beer consumption

Stratumseind 2.0 an onliƒe example

Effectors:

- Twenty-eight lamps to influence the behavior of visitors through color
- ‘Smartnose’ would develop an application to test influence of smell (LLS did not want to pay for the development (not yet further developed)
- Gaming might be used to distract people from troubled sites (not yet developed)
- Police intervention in response to sensor information that is gathered (hardly developed)

Stratumseind 2.0 an onliƒe example

Controls:

- Eindhoven Technological University, the Fontys University and the Police Academy are exploring the development of tools for big data analysis
- Open Remote developed a dashboard to bring all the information together in an accessible format
- A mobile phone app has been developed that presents key information in an accessible manner
- Not clear yet whether and how the data is actually used by which parties (so far not much)

Dutch strategy Smart Cities

1. Safe and standardized digital infrastructure
2. Public-private collaboration with room for experimentation
3. New comprehensive models of government, together with inhabitants
4. Education and employability
5. Regional collaboration, cities functioning as a network

What's new?

1. the onlife: new cityscapes (landscape, cityscape, escape)
2. Julie Mehretu – new scapes (glocalities)
3. the palimpsest of the smart city
4. new animisms: living with algorithms
5. agonistic machine learning and local democracy

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the onlife

smart cityscapes & *overcomplete* datafication:

- **food safety:** imagine checking restaurant reviews for food-borne illnesses
- **social security:** imagine cross checking municipal databases for those in need of support
- **policing:** crime mapping based on sensor data, prediction of violence, theft, suicide, child abuse
- **education:** predictive analytics based on iterant testing plus social media plus sensing data
- **housing:** policy on rent, ownership, distribution per neighbourhood
- **energy usage in public space:** ambient intelligence
- **crowd management in public space:** routing in case of catastrophe, public events
- **shopping centres**: walled gardens, behavioural adverting, location targeting

the onlife

- *merging, assembling, interacting of online & offline:*
  - *think airport security, CCTV, smart advertising, cars, energy grid, policing*
  - *IoT, cyberphysical infrastructures, robotics, think clouds (public, private)*

- *the distinction online/offline is becoming increasingly artificial*

- *from landscape to cityscape to no escape?*
  - *the persistent buzz of data flows, analytics and automated decisions*
  - *whoever steps outside (?) is captured in a haze of datafication*
  - *the promise of hyperefficiency, instant effectiveness, self-executing governance*

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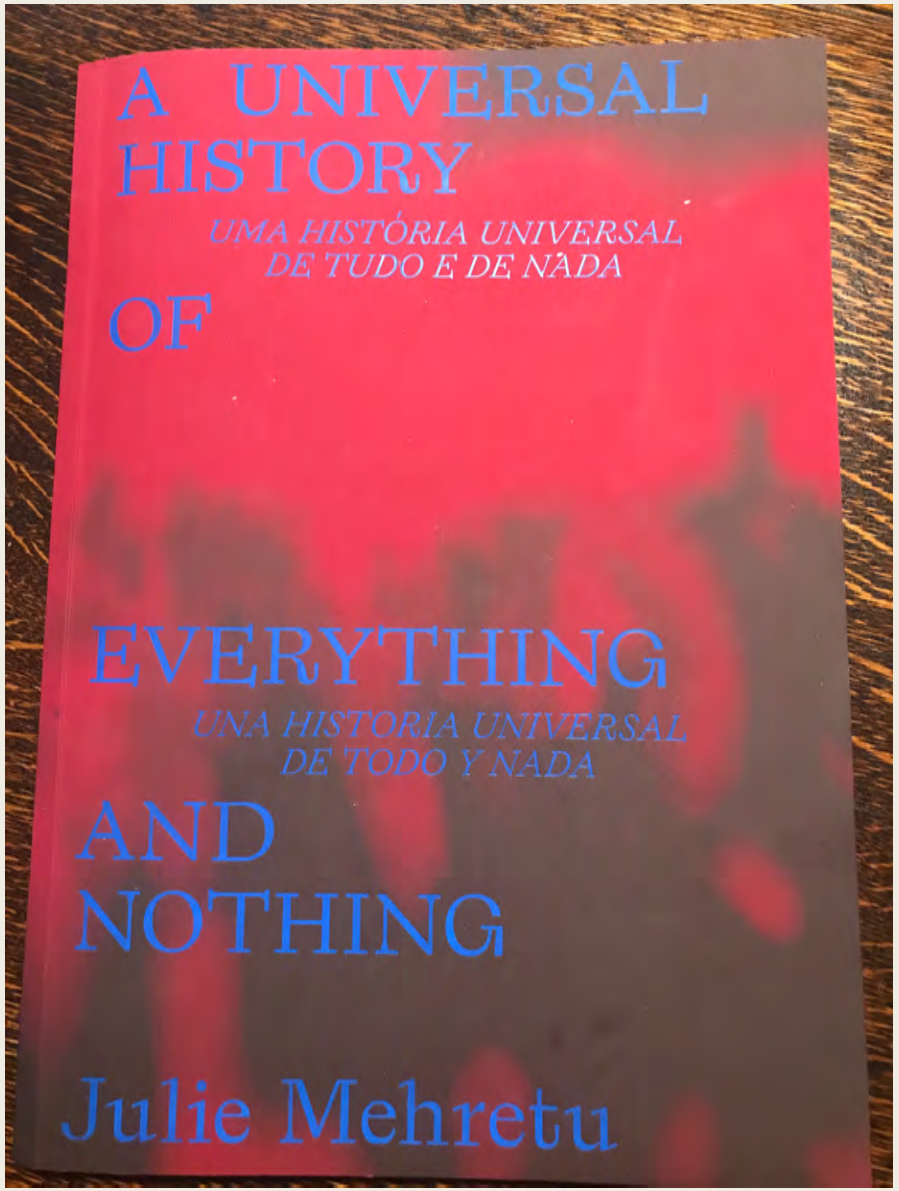
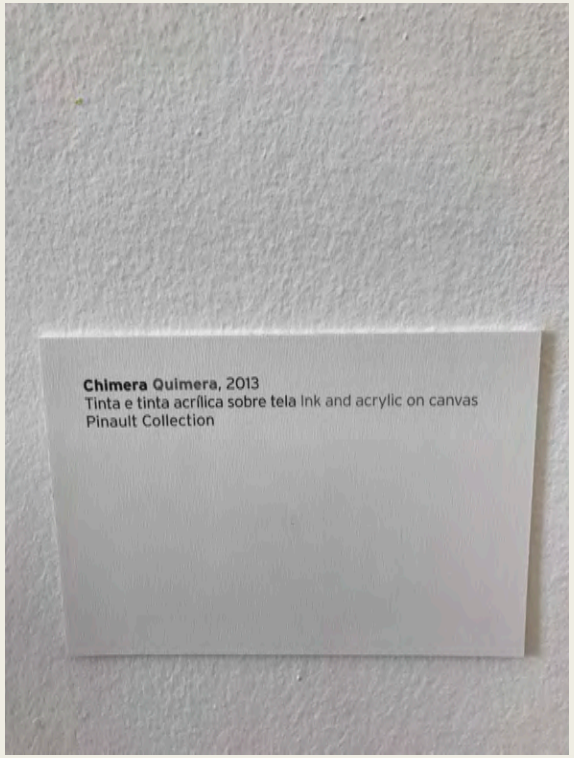
Julie Mehretu

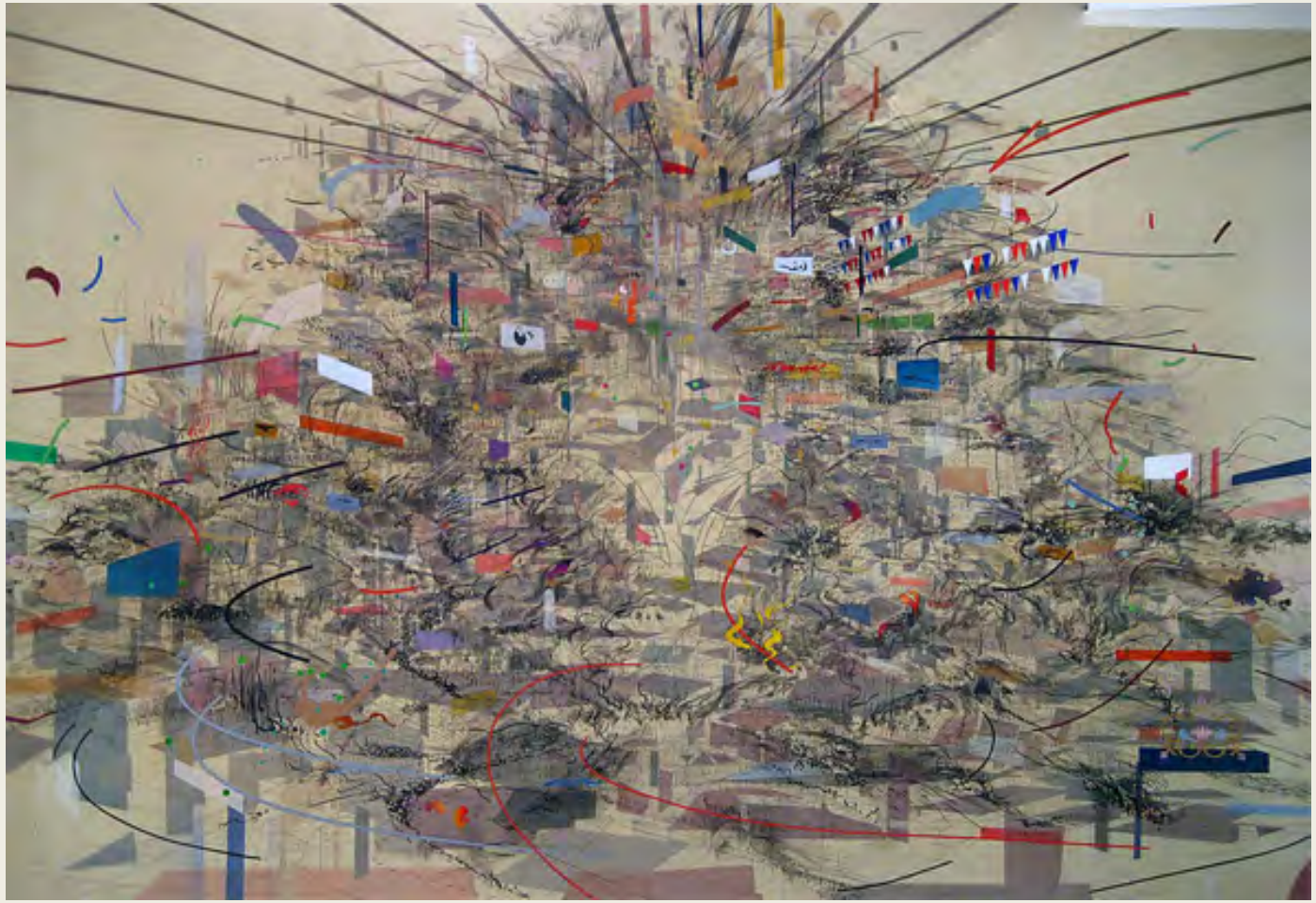
- born in Ethiopia and raised in Michigan
- MacArthur Foundation “genius” award at of 34
- 2009 commission for Goldman Sachs ‘Mural’ on global trade and communications
- USD 4.6 million auction record

‘handwrought depictions of loose data shifting through cyberspace’ (Cotter, NYT 2000)

‘velocity and fragmentation of contemporary life’ (Sheets, NYT 2017)




Chimera Quimera, 2013
Tinta e tinta acrílica sobre tela Ink and acrylic on canvas
Pinault Collection



Julie Mehretu: Empirical Construction, Istanbul. 2004

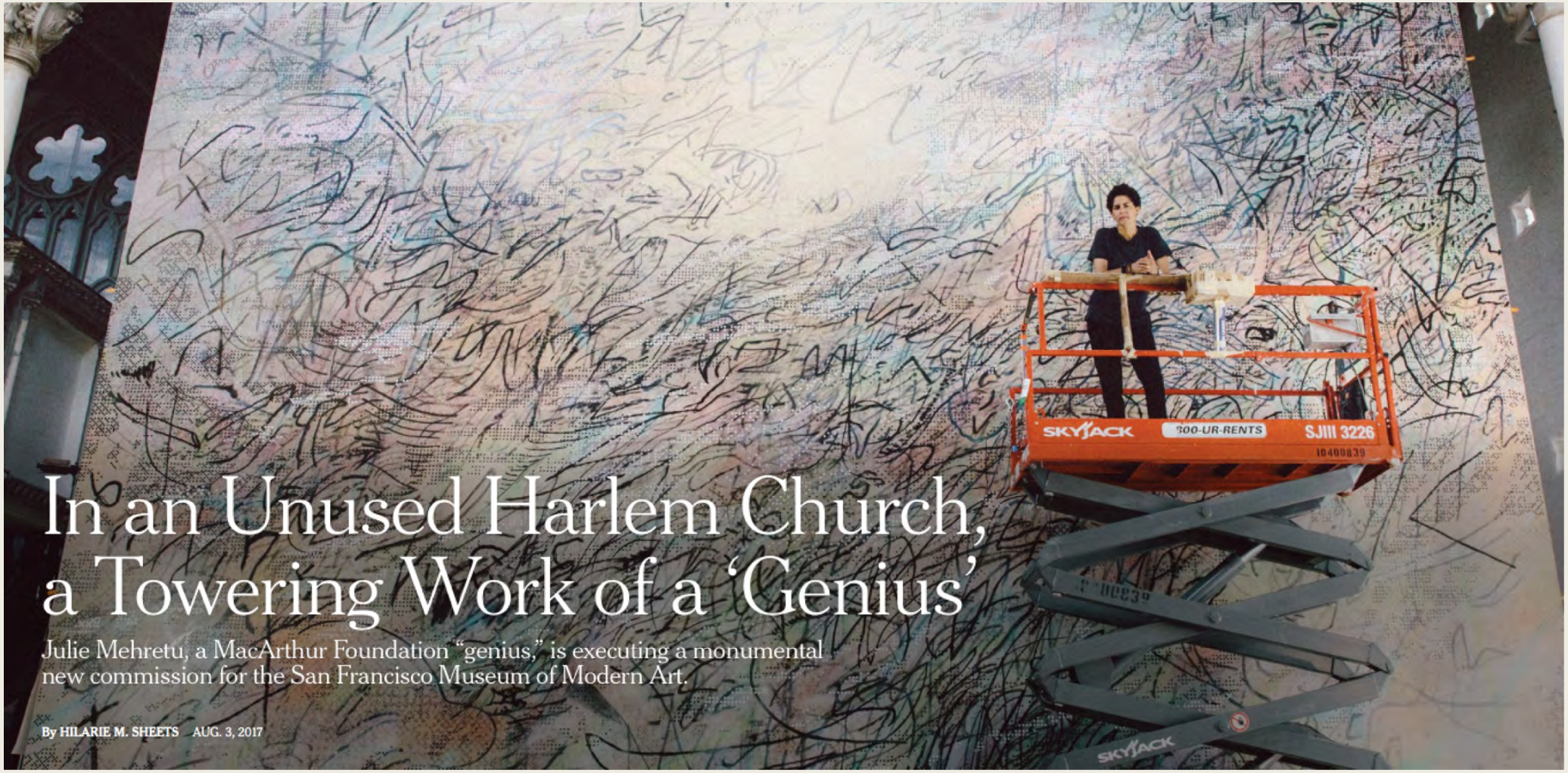
- https://art21.org/watch/extended-play/julie-mehretu-politicized-landscapes-short/

- *stretched canvas* is primed
- the *first visual layers* involving drawing, painted areas, sprayed acrylic
- applied, sanded, and re-applied to create a *hard, transparent substratum*
- subsequent *deposits of projected images, drawn lines, and individual marks*

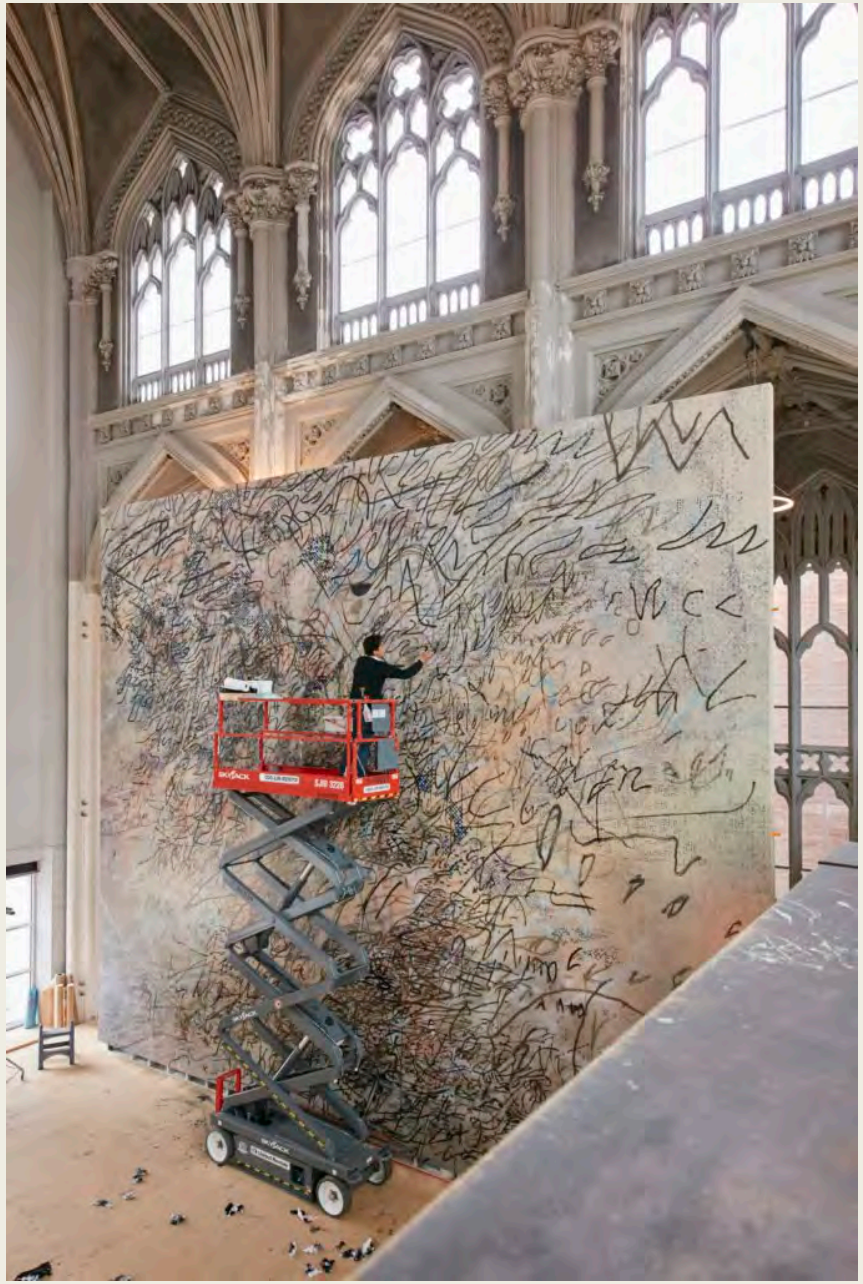
- digital downloading and compositional tools, graphite, sumi ink, acrylic paint, Rapidograph pens, pencils, brushes, and spray paint are *all part of the arsenal*

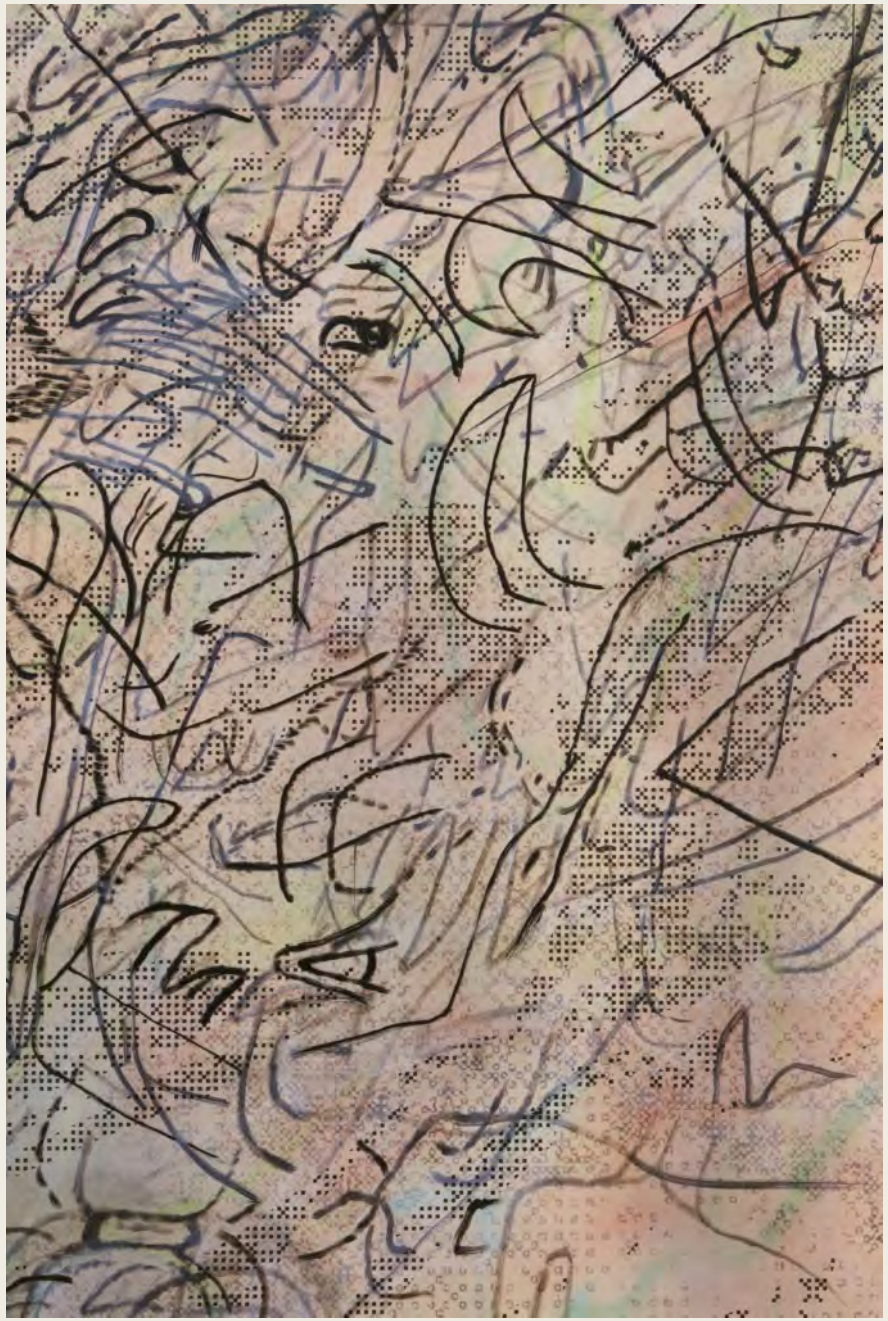
- the preparation of surfaces and first levels of visual information, involving *underpainting, masking, and tracing from projected images*, are applied by studio assistants

- *all of the intuitive mark making is done by Mehretu*
- *the composition is defined by Mehretu*
- as are the *adjustments and shifts* that she directs throughout the gradual buildup of the work
- to the final field of *gestural marks* that she applies to populate her sedimented field

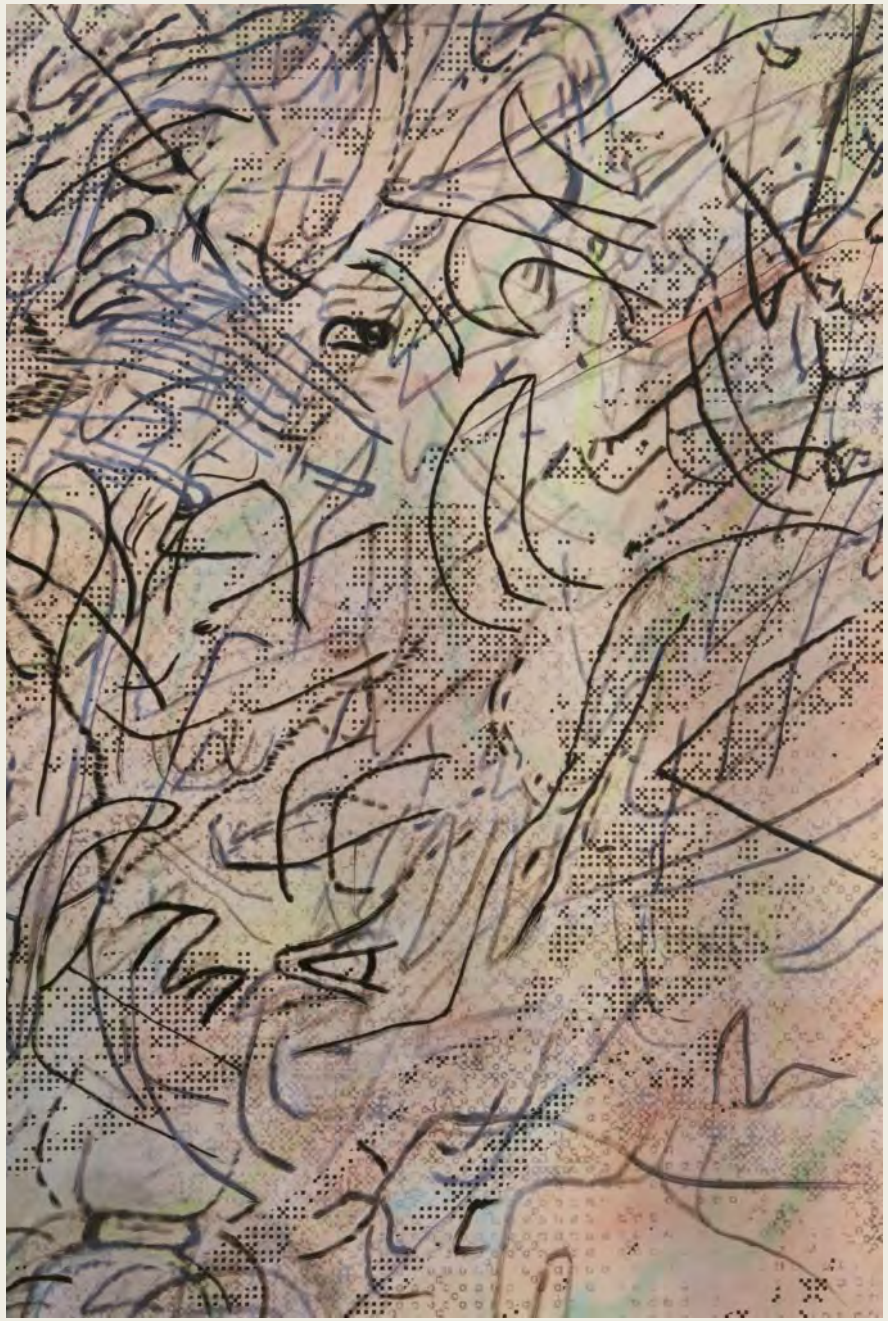


- commissioned by SFMOMA





- architectures
- maps and charts
- metereological perspectives
- simulteneity of events in time and place
- intersecting flows of trade, geopolitics, people
- gestural abstraction



- Constant's Babylon

1. rationalist construction
2. intuitive marking

- inscription
- overwriting

a. erasing history
b. excavation

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a new layered city space

- geography, history, bricks and bones
- institutional layers: municipality, schools, housing, events, policing …
- individuals interacting with and within space, others, building, institutions
- the *new* inbetween: artificial agents, adaptive and rigid algorithmic space
  - *artificial intelligence (autonomous systems)*
  - *distributed ledger technologies (self-executing code)*

the new inbetween

- big data and predictive analytics:
  - *networks: nearest neighbours can be anywhere*
  - *artificial neural nets are multi-layered and high dimensional*
  - *what is a hypothesis space?*

the new inbetween

1. Algorithms: IFTTT, ML (e.g. reinforcement learning, backpropagation)
   - *IFTTT: who determines the content of DLTs, how does self-execution fit with contestability?*
   - *ML: which domain experts train the algorithms?*
   - *ML: what hypotheses space has been developed?*
   - *ML: what algorithms have been chosen (in view of speed, fit, generalization?)*

2. ML & data: training set, validation set, test set
   - *which data sets have been selected (low hanging fruit?)*

3. ML & trade-offs:
   - *speed or accuracy, availability of the data or utility, cost of the data or relevance, curation of input or fast output, desirability or correctness of output, completeness of modelling or generalizability, predictive accuracy or interpretability*

a new inbetween

Van der Lei: *first law of informatics =*

1. data shall be used only for the *purpose* for which they were collected

collateral second law:

2. if no *purpose* was defined, they should not be used

the new inbetween

- data obesitas breeds pattern obesitas
- algorithms will always detect patterns

- is the data relevant?
- does the algorithm do what you think it does?
- how does the pattern-in-the-data relate to the real world?

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new animisms: living with algorithms

- back to Julie Mehretu:
  - *new scapes, no escapes?*
  - *rationality, layered mixtures, gestural abstraction, intuitive markings*
  - *from the level of scale to individual intervention back to scale*

- web sience Tim Berners Lee:
  1. when does the *microscopic interaction* between two people on the Web scale to produce a new macroscopic phenomenon?
  2. what 'creative magic' is required to identify *new microscopic designs* that could have positive macroscopic effects?

new animisms: living with algorithms

1. from using technologies to achieve effectiveness and efficiency
2. to being used by agential layers that reconfigure their environment (us) to learn
3. to interacting with proliferating artificial agents

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5. Agonistic local democracy

- Modulation of Tim Berners Lee:
  1. when does the *microscopic interaction* between two people in the smart cityscape scale to produce a new macroscopic phenomenon?
  2. what 'creative magic' is required to identify *new microscopic designs* in smart cities that could have positive macroscopic effects?

1. how to involve the citizens, the people? how to design for individuals?
2. how to pay keen attention to the distribution of the positive effects?
3. what role can/should municipalities and the VNG play here?
4. what role for private enterprise?

5. Agonistic local democracy

- private-public collaboration:
  - *who holds what data, for what purpose, on what ground?*
  - *what transparency should be provided on data and algorithms?*
  - *access to prior research design, code, datasets, evaluation metrics?*

  - *which contracts have been concluded, based on what tenders?*
  - *which requirements have been developed concerning privacy, bias, autonomy?*
  - *what NDAs have been agreed, on what grounds?*

  - *agonistic debates on decisional powers of the algorithms*
    - not about the maths, about the purpose and the roadmaps
    - aware how maths decides the answers

On unpredictability as an effect of prediction:

- M Hildebrandt, ‘New Animism in Policing: Re-Animating the Rule of Law?’, in *The SAGE Handbook of Global Policing*, ed. Ben Bradford et al. (S.I.: SAGE Publications Ltd, 2016), 406–28.

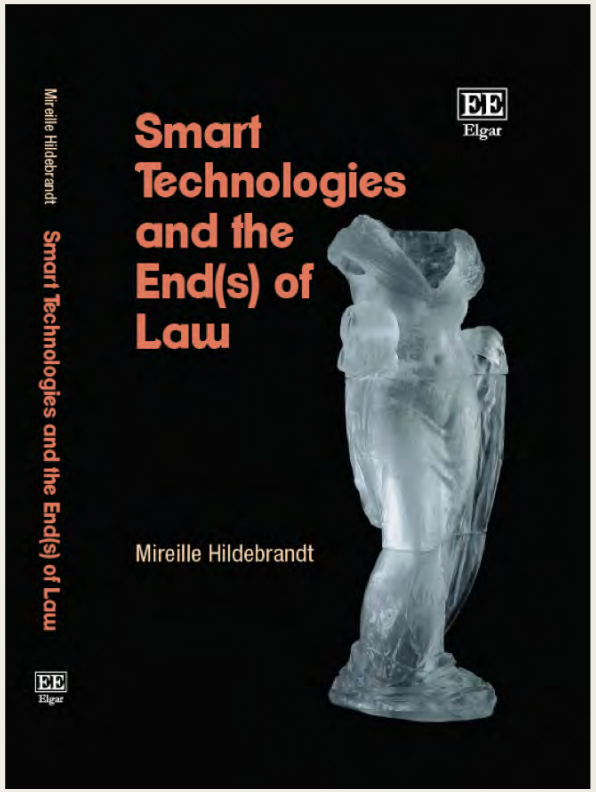
On novel interaction between humans & machines:

Mireille Hildebrandt,

Smart Technologies and the End(s) of Law.

Novel Entanglements of Law and Technology

(Cheltenham: Edward Elgar, 2015)




THE END IS NEAR
THE END
Roy Delgado