

# ICWSM Workshop on Critical Data Science

11 June 2019, Munich, Germany



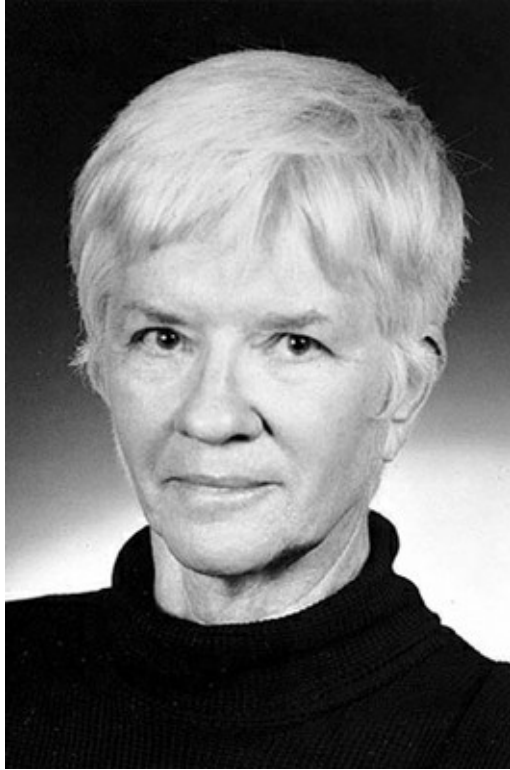
Momin M. Malik (Harvard University)  
Katja Mayer (University of Vienna)  
Hemank Lamba (Carnegie Mellon University)  
Claudia Müller-Birn (Freie Universität Berlin)

# ICWSM Workshop on Critical Data Science

We seek to bring together data scientists and scholars from **computer science** and the **social sciences** to engage one another around **frameworks for responsibly carrying out data science on social phenomena**. By combining cultures of critique with those of practice, we seek to create critical and sustainable ways of interdisciplinary collaboration.

[https://pad.fs.tum.de/p/Critical\\_Data\\_Science\\_ICWSM19](https://pad.fs.tum.de/p/Critical_Data_Science_ICWSM19)

Data is power



“What science becomes in any historical era depends on what we make of it”

– Sandra Harding

# The New York Times Magazine

THE TECH & DESIGN ISSUE



WHAT WILL BECOME OF US

↳ HOW TECHNOLOGY IS  
CHANGING WHAT IT MEANS TO BE HUMAN.

NOVEMBER 18, 2018



Pick 2 cards! (To use now, and as souvenirs)

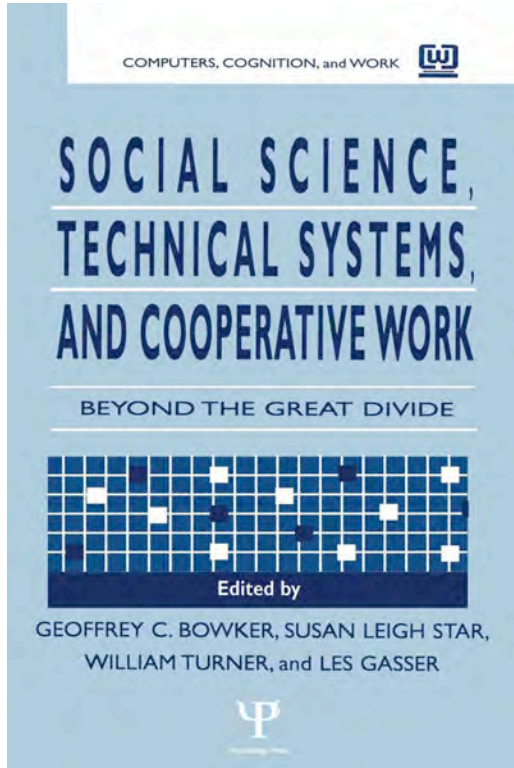




[illegible]



# "Toward a Critical Technical Practice" (1997)



6

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*Toward a Critical Technical Practice:  
Lessons Learned in Trying to  
Reform AI*

Philip E. Agre  
*University of California, San Diego*

# Social science to guide and unstick

“even though I was convinced that [AI] was **misguided and stuck**, it took tremendous effort and good fortune to understand how and why.”

“to move intellectually from AI to the social sciences — that is, to stop thinking the way that AI people think, and to start thinking the way that social scientists think...

# Reading everything technically

"I literally could not read the literatures of nontechnical fields at anything beyond a popular level. **The problem was not exactly that I could not understand the vocabulary, but that I insisted on trying to read everything as a narration of the workings of a mechanism.**"

# *Vertigo*

"I still remember the **vertigo** I felt during this period; I was speaking these strange disciplinary languages, in a wobbly fashion at first, without knowing what they meant — without knowing what *sort* of meaning they had..."

# Introduce yourselves!

- Name
- Institution(s)
- Discipline(s)
- What brings you here?

[https://pad.fs.tum.de/p/Critical\\_Data\\_Science\\_ICWSM19](https://pad.fs.tum.de/p/Critical_Data_Science_ICWSM19)

## **Politics:**

- Who are the insiders, and who are the outsiders for effecting change?

## **Practice:**

- How can we collaborate, with whom, for what tasks?

## **Action:**

- What actions can we take?

# Cards

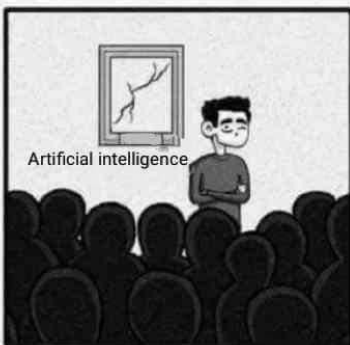
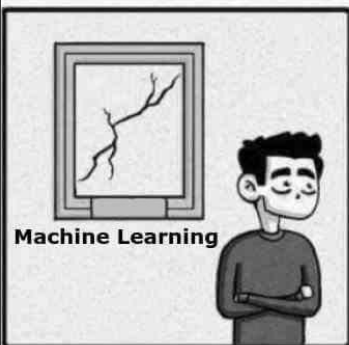
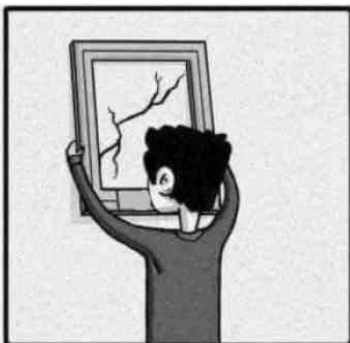
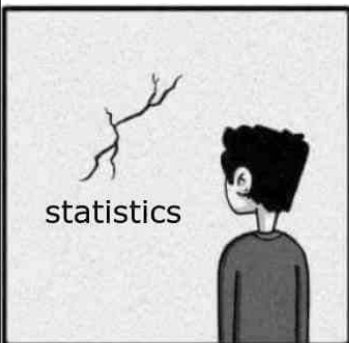




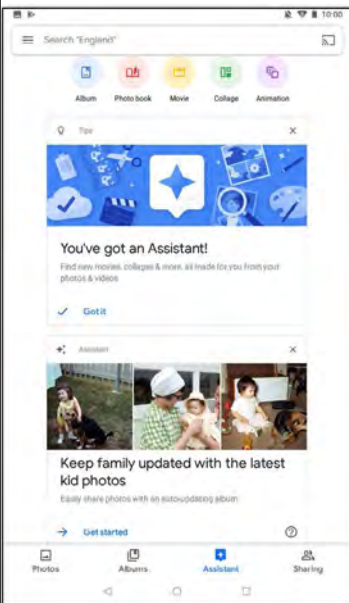
# Workshop on Critical Data Science



ICWSM-2019  
Munich, Germany



Unattributed (original comic by Sandserif, <https://twitter.com/sandseriftweets/status/1010142230776954880>).



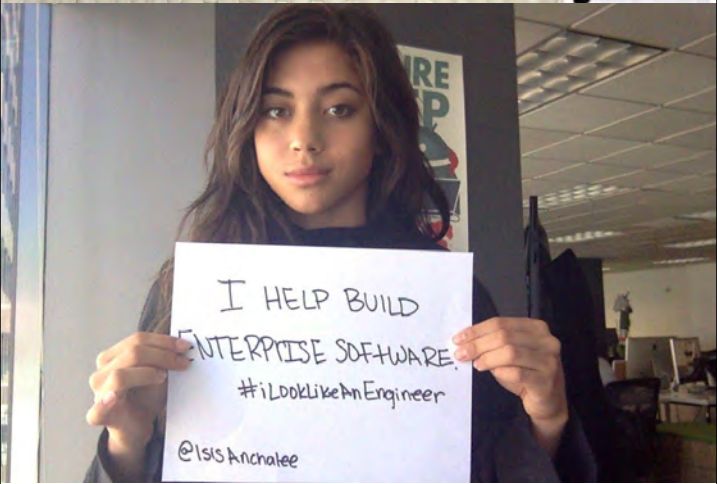
J. D. Biersdorfer, "Tech Tip: Organizing Your Unwieldy Photo Collection Is Easier Than You Think," *The New York Times* (April 10, 2019).



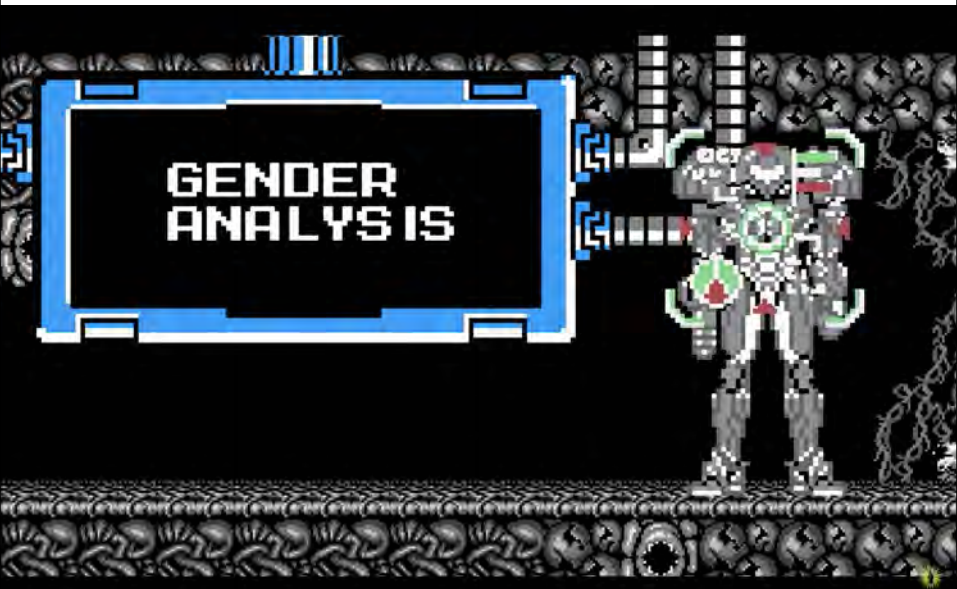
██████████ This is some weird haphazard branding. I think they want to appeal to women, but are probably just appealing to dudes. Perhaps that's the intention all along. But I'm curious people with brains find this quote remotely plausible and if women in particular buy this image of what a female software engineer looks like. Idk. Weird.

Like Reply 1 2 10 10

- ██████████ That does a female software engineer look like? (Like 1 2 10 10)
- ██████████ Responding to ██████████ this is what a female software engineer looks like (Like 10 10)
- ██████████ It's worth noting that Isis is just a female software engineer (Like 10 10)
- ██████████ The actuality is a full stack software engineer aspiring to be that authentic. (Like 1 2 10 10)
- ██████████ write a reply (10 10)
- ██████████ I think the quote reflects her more than the others but to be honest neither believe me that much. I don't find it unappealing? (Like Reply 1 2 10 10)
- ██████████ It's a bit of a kind of what I like the most - get to work on... Yes, actually. (Like Reply 1 2 10 10)
- ██████████ It's a bit hyperbolic, but I'd say something similar about my teammates. (Like Reply 1 2 10 10)
- ██████████ I think the intention is to attract more women than it would have been a better to choose a female with a specific, heavily ironic rather than a silly one. (Like Reply 1 2 10 10)
- ██████████ write a comment (10 10)



Isis Anchalee, "You May Have Seen My Face on BART," August 1, 2015. <https://medium.com/the-coffeelicious/you-may-have-seen-my-face-on-bart-8b9561003e0f>



Eugene Wolters, "Is Gender REAL? - 8-Bit Philosophy", June 27, 2015. <https://youtu.be/gkilQ87UUj8>.

# Data Science For Social Good

Summer Fellowship

Responsibility at IBM >

## Science for Social Good

Applying AI, cloud and deep science toward new societal challenges.



AI for  
Social Good

HAII Human-Centered Artificial Intelligence  
Stanford University

Data for  
Good  
Exchange  
2018  
Bloomberg

UNIVERSITY of WASHINGTON  
eScience Institute  
DATA SCIENCE FOR SOCIAL GOOD

MCKINSEY GLOBAL INSTITUTE

## NOTES FROM THE AI FRONTIER APPLYING AI FOR SOCIAL GOOD



AI for Good  
Global Summit

An ITU experience



UPTAKE

## Machine Learning for Social Good

Carnegie Mellon University  
School of Computer Science

Ai4GOOD.ca

Responsible Computer Science Challenge  
With Great Code Comes Great Responsibility

ResponsibleCS.org #ResponsibleCS

a partnership of

ON ORIGIN NETWORK mozilla SCHODT FUTURES Craig Newmark Philanthropies



AI FOR GOOD  
FOUNDATION



"David, that's way too much."



"The tooth fairy gave me 20 BUCKS!"



"We're gonna be RICH!!!"





In the continuing inquiry into the uses and misuses of computer technology, CPP is presenting the following article by Ruth Beinart, a member of Metropolitan Council on Housing, an independent NYC organization struggling for tenants' rights. CPP itself will present a paper on computers and housing at the NJCC. Comments are welcome.

## COMPUTERS SERVE THE LANDLORDS

Computers are the latest weapon in the continuing war waged by landlords against tenants in the City of New York. The machines were brought into the battle by amendments to the Rent Control Law passed last summer. These amendments first imposed a series of rent increases -- up to 15% -- in August, 1970. The next round of increases -- 7.5% yearly -- will begin in January, 1972, after the computers do their dirty work.

The new increases will be based on computerized Base Rents, which will be calculated for every one of the 1.3 million rent-controlled apartments in the city, using information supplied by the landlords on: total building rent roll, taxes, operating and maintenance expenses and a vacancy and collection loss factor. The landlord will be guaranteed a minimum profit of 8.5% on the equalized assessed valuation (approx. market value) of the building, not on his actual investment

On the above example, the tenant will pay a 7.5% increase per year starting from the current of \$150/month until the Base Rent of \$240/month is reached. However a re-evaluation of the Base Rent will occur every two years, in all likelihood raising the Base Rent. Thus, it is possible, even probable, that the tenant will pay a 7.5% increase per year for the duration of tenancy. Furthermore, the rent of a vacated apartment jumps to the Base Rent for a new tenant. Using the above case, if the landlord can harass the tenant out of the apartment, the rent for a new tenant will be \$240. It really amounts to vacancy decontrol, something the landlords have wanted for a long time.

There are supposed to be provisions in the law to make the landlords spend the rent increases on increased maintenance, but the provisions are weak, and

# ANTI-OPPRESSIVE DESIGN

from theory to praxis

JILL DIAMOND  
SASSAFRAS

THE TECHNOLOGY  
WE MAKE

~AND~ THE  
ENVIRONMENT  
IT'S IN.



INTERVENTIONIST  
"SOCIAL GOOD"  
(NOT CHANGE IS SUBJECTIVE)

ACTION RESEARCH

"IN THE WILD"

"PRAGMATIC"



WORKER-OWNED  
COOPERATIVES

TO REPLACE HIERARCHIES  
WHICH DISADVANTAGE  
WOMEN, POC, LGBTQ



DOMESTIC VIOLENCE



NOT JUST VOICE, EMOTION, PHYSICAL, SEXUAL  
NOW ALSO DIGITAL

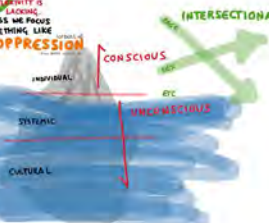


WAY OF EXCLUDING  
WOMEN FROM  
PUBLIC SPACE.

NEW VECTOR TO RESPOND

HOLLABACK  
RECLAIMS SPACE

ENDING OPPRESSION  
(REFLECTIVITY IS LACKING, UNLESS WE FOCUS ON SOMETHING LIKE)



# DATA SCIENTIST MUST-HAVE SKILLS

## MATH & STATISTICS

- Machine Learning
- Statistical Modeling
- Exploratory Analysis
- Clustering
- Regression Analysis

## DOMAIN KNOWLEDGE & SOFT SKILLS

- Inclination towards business operations
- Keen on working with data
- Problem solver
- Strategic, proactive, and cooperative
- Interested in hacking



## PROGRAMMING & DATABASE

- Computer Science Fundamentals
- Database Management System
- Data Visualization
- Python
- Big Data

## COMMUNICATION & VISUALIZATION

- Storytelling skills
- Convert data-based insights into decisions
- Collaborative with Sr. Management
- Knowledge of tools like Tableau
- Visual art design

In other publications I have pursued this theme with respect to the meaning and implications for design of three basic concepts in AI: the notions of knowledge (ch. 3), information (Forsythe, Buchanan, Osheroff, and Miller 1992), and evaluation (Forsythe and Buchanan 1991).<sup>6</sup> All of these concepts are interpreted more formally and narrowly in AI than they are in, say, anthropology. The different assumptions about the nature of knowledge held by AI specialists and anthropologists are illustrated by their different reactions to the CYC project mentioned above. To many researchers in AI, this project makes obvious sense. Since they tend to see knowledge as "out there" and as universal in nature, building a generalized commonsense knowledge base seems to them a challenging but meaningful and worthwhile goal. In contrast, anthropologists typically react to this idea as absurd; given the anthropological view of commonsense (and other) knowledge as *cultural* and therefore local in nature (Geertz 1983: ch. 4), the notion of universally applicable common sense is an oxymoron. Thus, if we regard academic disciplines as "intellectual villages," as Geertz suggests (Geertz 1983: 157), the villagers of AI and cultural anthropology see the world in distinctly different ways.



Joy Buolamwini, "The Coded Gaze: Unmasking Algorithmic Bias", November 6, 2016.  
<https://youtu.be/162VzSzzoPs>

## OUR CLASSIFIERS



High IQ



Academic Researcher



Professional Poker  
Player



Terrorist

Utilizing advanced machine learning techniques we developed and continue to evolve an array of classifiers. These classifiers represent a certain persona, with a unique personality type, a collection of personality traits or behaviors. Our algorithms can score an individual according to their fit to these classifiers.



- US genocide in South East Asia, particularly corporate involvement. (Honeywell is the prime manufacturer of anti-personnel fragmentation bombs.)
- Repression at home, specifically the use of computer based information systems as a means of social control. (Military Intelligence keeps data banks on civilians--including all of us.)
- Corporate racism (IBM plans to expand its South African market while the rate of unemployment among Third World people in the US continues to increase.)
- The present misuse vs. the constructive potential of computer technology (as applied to health, education, welfare, housing, ecology, and urban planning).
- The role of automation on the rising level of unemployment.

# INTERRUPT

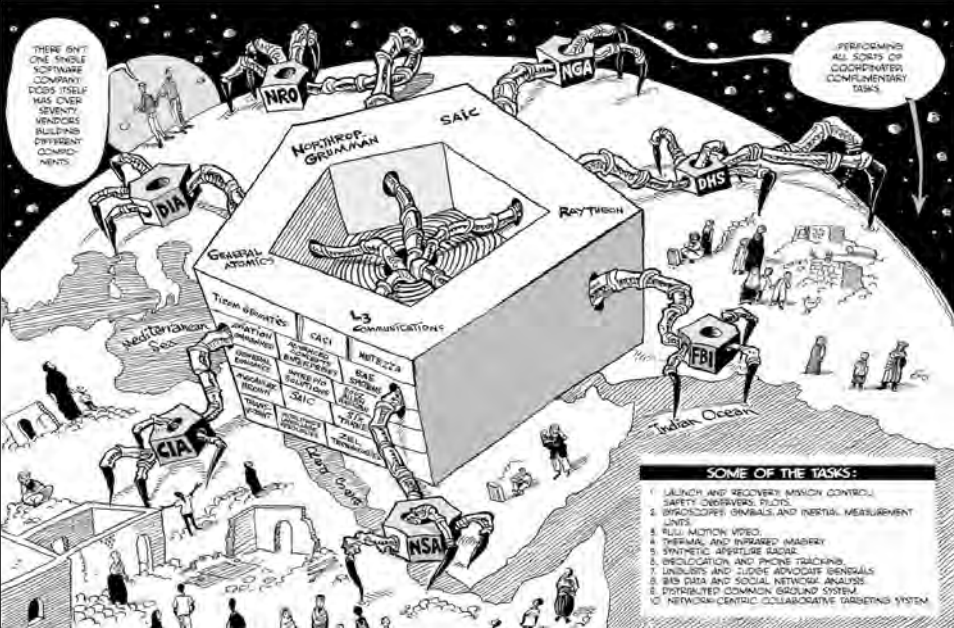
february, 1971

14

newsletter of  
computer people for peace

Computer People for Peace  
The Dolphin Center  
137 West 14th Street  
New York, N.Y. 10011





Pratap Chatterjee and Khalil, *Verax: The True History of Whistleblowers, Drone Warfare, and Mass Surveillance*, A Graphic Novel (Metropolitan Books, 2017).






20th Century Fox, *Point Break*, 2001.



**BBC News**

May 25 at 3:54 AM

 Like Page

A smart traffic camera decided he was "driving while holding a phone". 🙄

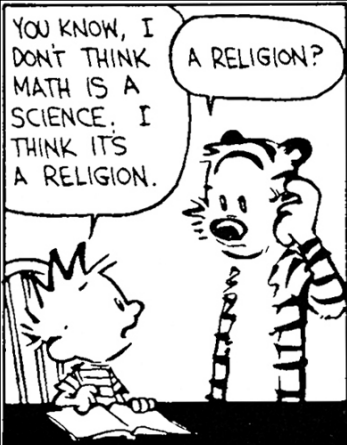


**BBC NEWS**

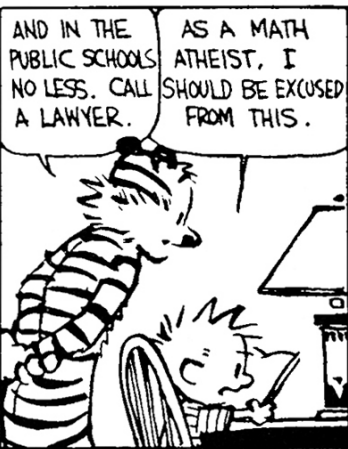
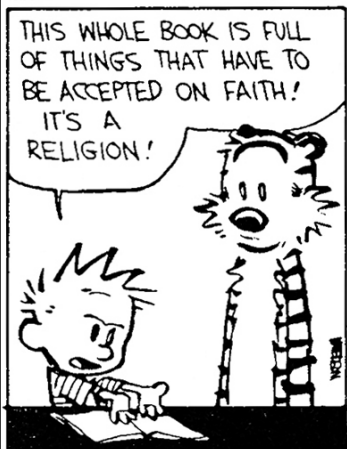


BBC.COM

**Driver gets ticket for scratching his face**



YEAH. ALL THESE EQUATIONS ARE LIKE MIRACLES. YOU TAKE TWO NUMBERS AND WHEN YOU ADD THEM, THEY MAGICALLY BECOME ONE *NEW* NUMBER! NO ONE CAN SAY HOW IT HAPPENS. YOU EITHER BELIEVE IT OR YOU DON'T.



ONCE UPON A TIME, THERE WAS A VILLAGE AND A TOWER.



IT WAS SUCH A PRETTY TOWER. SOME PEOPLE DECIDED TO MAKE IT TALLER AND TALLER AND TALLER.



THEN, ONE DAY THERE WAS A GREAT STORM, AND THE TOWER PEOPLE GREW VERY WORRIED.



EVERYONE HELP  
OR THE TOWER  
WILL TOPPLE!

THE PEOPLE OF THE VILLAGE DIDN'T WANT TO HELP.



YOU SHOULDN'T HAVE  
MADE THE TOWER  
SO BIG!

BUT THERE WAS A PROBLEM.



THE TOWER  
IS SO BIG, IF IT  
FALLS, IT WILL  
DESTROY THE  
VILLAGE.

SO THE PEOPLE GATHERED PARTS OF THEIR HOUSES AND REINFORCED THE TOWER.



AND WHEN THE WIND DIED DOWN, THEY MADE IT TWICE AS TALL.



AND THEY  
LIVED HAPPILY  
EVER AFTER.



**Baron Schwartz** ✓

@xaprb

Follow

When you're fundraising, it's AI  
When you're hiring, it's ML  
When you're implementing, it's linear  
regression  
When you're debugging, it's printf()

12:52 AM - 15 Nov 2017

**5,545** Retweets **12,654** Likes



90



5,5K



13K



# Aside: Description can seem like accusation

“Without the idea that ideologies and social structures can be reproduced through a myriad of unconscious mechanisms such as linguistic forms and bodily habits, **all critical analysis may seem like accusations of conscious malfeasance.**”

“Even sociological descriptions that seem perfectly neutral to their authors can **seem like personal insults to their subjects** if they presuppose forms of social order that exist below the level of conscious strategy and choice.”