

Big Data Analytics
Re-Shaping Business Models and Society:
Towards a Critical Research and Policy Agenda

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Setting the Stage

- Increasing big data, digitization & IS roll-out
- Changes in almost all forms of human labor associated with data and cognitive processes
- Deeper integration of data in traditional value chain activities
- Consequences on individual, organizational & societal levels

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Big Data 

- No clear agreement on terminology or concepts
- 3Vs : Volume, velocity, variety
- Sources and types:
Familiar sources, Internet of things, internal operations (employees etc, customer/user behavior)

'Nanobytes' and 'Nowcasting'

Many companies, which are *not prepared* for Big Data, will go out of business

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Big Data Shaping Business Models

... or even improving the world ?

Endless examples – almost analog to the 'not so new' ICT debates

Trucks / cars with built-in sensors

Wine chemistry predictions ++

Sports of all sorts and kinds

Locating potholes

Turning A. Pentland's et al.'s 'Red Balloon' Challenge into Business Model

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Big Data Impacts

Management

Business & Society

Research

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Big Data as Management Revolution*

 **HiPPO**
 Highest Paid Person's Opinion
 (today ...: group talk & HiPPO decision)

Big Data
 M2M, Apps, recommending systems, ...
 (≠ people taking long time to rate / analyze)

Changing Decision Making

***Revolution**
 Overturning existing power structure
 (Leaders typically last to understand being most isolated from what's happening)

"Data-driven decision making"
McAfee / Brynjolfsson '12
"Predicting the present"
Choi / Varian '12

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Big Data Impacting Management on Decision Making ...

- On average **better decision making**
(Big Data Value = 0, if no better decisions / actionable results)
- Changing **value of domain knowledge**
➔ To ask right question & decide on 'technique' ???
- Scientific revolution based on **better measurement**
➔ Experiments with real time data "whether prediction meets reality"
(challenge to filter 'noise' versus 'signal' - Hawthorne Effect*)
- Increased complexity, **higher fragility** in decision outcomes:
(e.g. Wall Street algorithms, retail targeting algorithms)
➔ UNINTENDED Consequences ('Dark Side')

* Changing behavior due to observation

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Big Data Impacting Business & Society

Empowering Organizations /
Offering competitive advantage

Efficiency

Price Decrease, Consumer Surplus e.g., 'Winology'

Transparency ⇔ Privacy ⇔ Security

Job Loss > Job Creation ?

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Big Data and Employment

Δ employment share

e.g., Autor / Dorn '09

skill level

Push education

Task

B Sure about left arm?

U Going deeper into role of technology (ex)

T manual

routine non-routine

truck driving household

medical diagnosis legal writing managing others

Boundaries not always obvious !
(e.g., chess, jeopardy, driving, ...)

Machines increasingly completing cognitive tasks:
pattern recognition, complex communication, ...
(e.g., Brynjolfsson, McAfee '14; Pentland '14 - and even Kurzweil '12)

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Discussion

Jobs as basis for well-being?

GDP as criterion for wealth?
(Brynjolfsson, Saunders, '10)

"Work saves a man from three great evils: boredom, vice, and need."
(Voltaire, after: Brynjolfsson / McAfee '14)

Statistics

What else to bring to the party?

Basic scarcity principle still holds...?!

Variety / "free" goods & services / consumer surplus / efficiency gains

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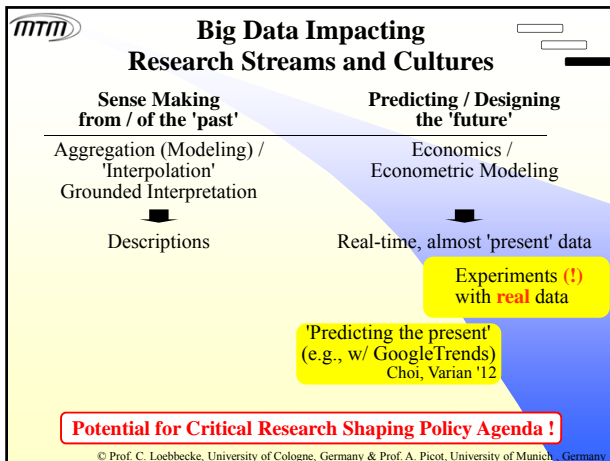
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... Questions, comments, complaints?

Thanks for your attention !

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