

Re-Engineering Humanity

Cambridge
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- When does technology diminish our humanity?
- When and how do humans become programmable?
- Can we detect when this happens?
- How will we evaluate?
- What about being human matters?

Forward – Nicholas Carr

Introduction

- 1. Engineering Humans**
- 2. Cogs in the Machine of Our Own Lives**
- 3. Tools for Engineering Humans**
- 4. Engineering Humans with Contracts**
- 5. On Extending Minds and Mind Control**
- 6. The Path to Smart Techno-Social Environments**
- 7. Techno-Social Engineering of Humans through Smart Environments**
- 8. #RelationshipOptimization**
- 9. Turing Tests and the Line between Humans and Machines**
- 10. Can Humans be Engineered to be Incapable of Thinking?**
- 11. Engineered Determinism and Free Will**
- 12. To What End?**

Conclusion: Reimagining and Building Alternative Futures

Turing Line

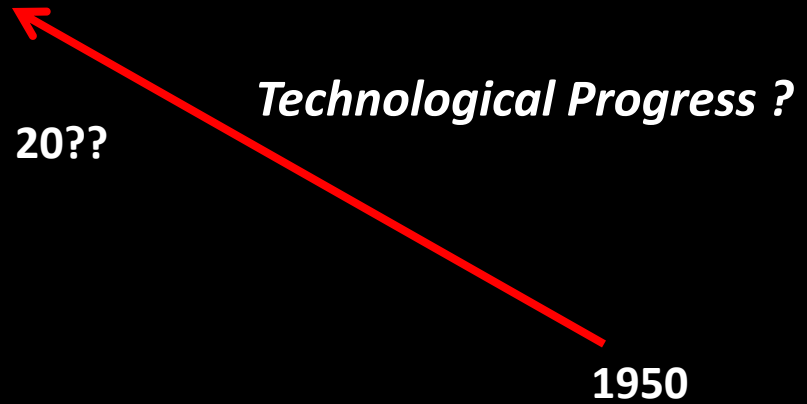
Humans

Machines

Turing Line

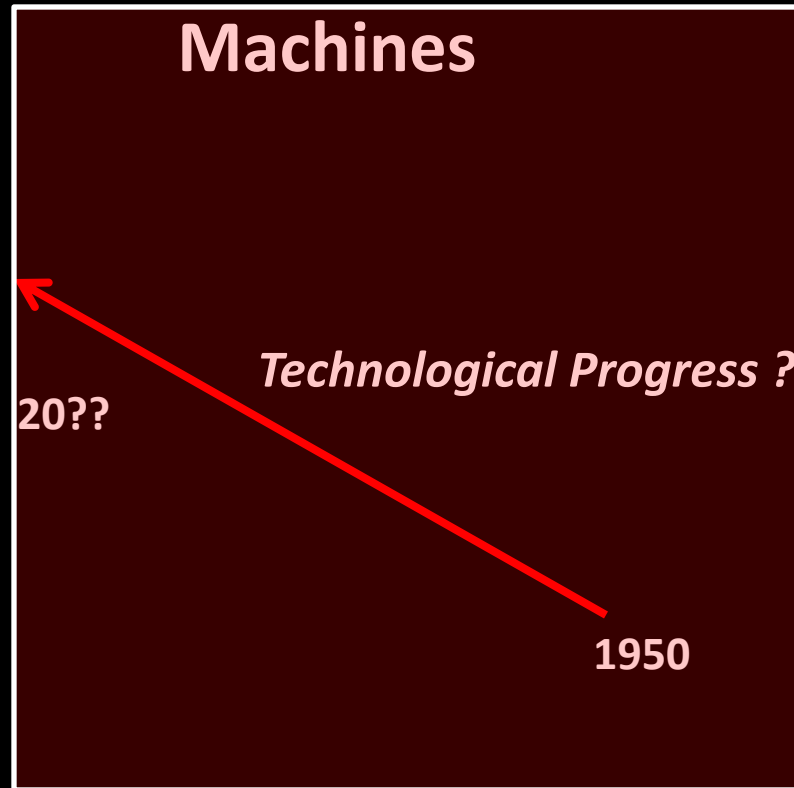
Humans

Machines



Turing Line

Humans



*Environment
(constructed by Turing)*

Turing Line

Humans

Machines

Watson

20??

Technological Progress ?

1950

*Environment
(constructed by Turing)*

Turing Line

as

Finish Line

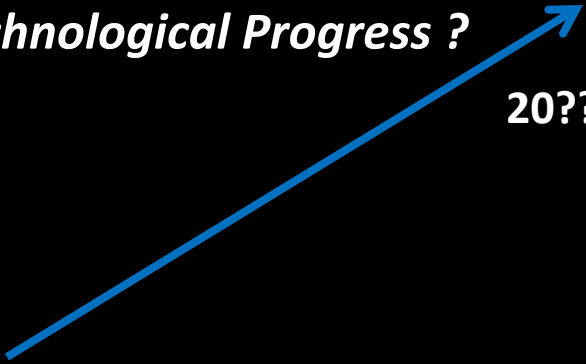
Humans

Machines

Technological Progress ?

20??

1950



Turing Line

Humans

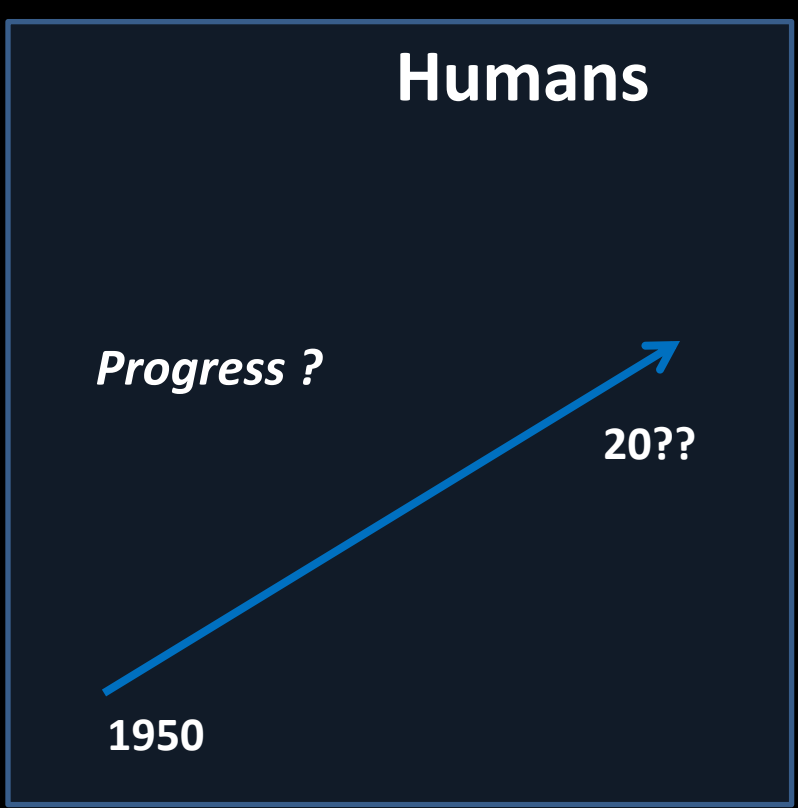
Machines

Progress ?

20??

1950

Environment



Environments

Turing Line

Humans

Technological Progress ?

20??

1950

Watson Environment

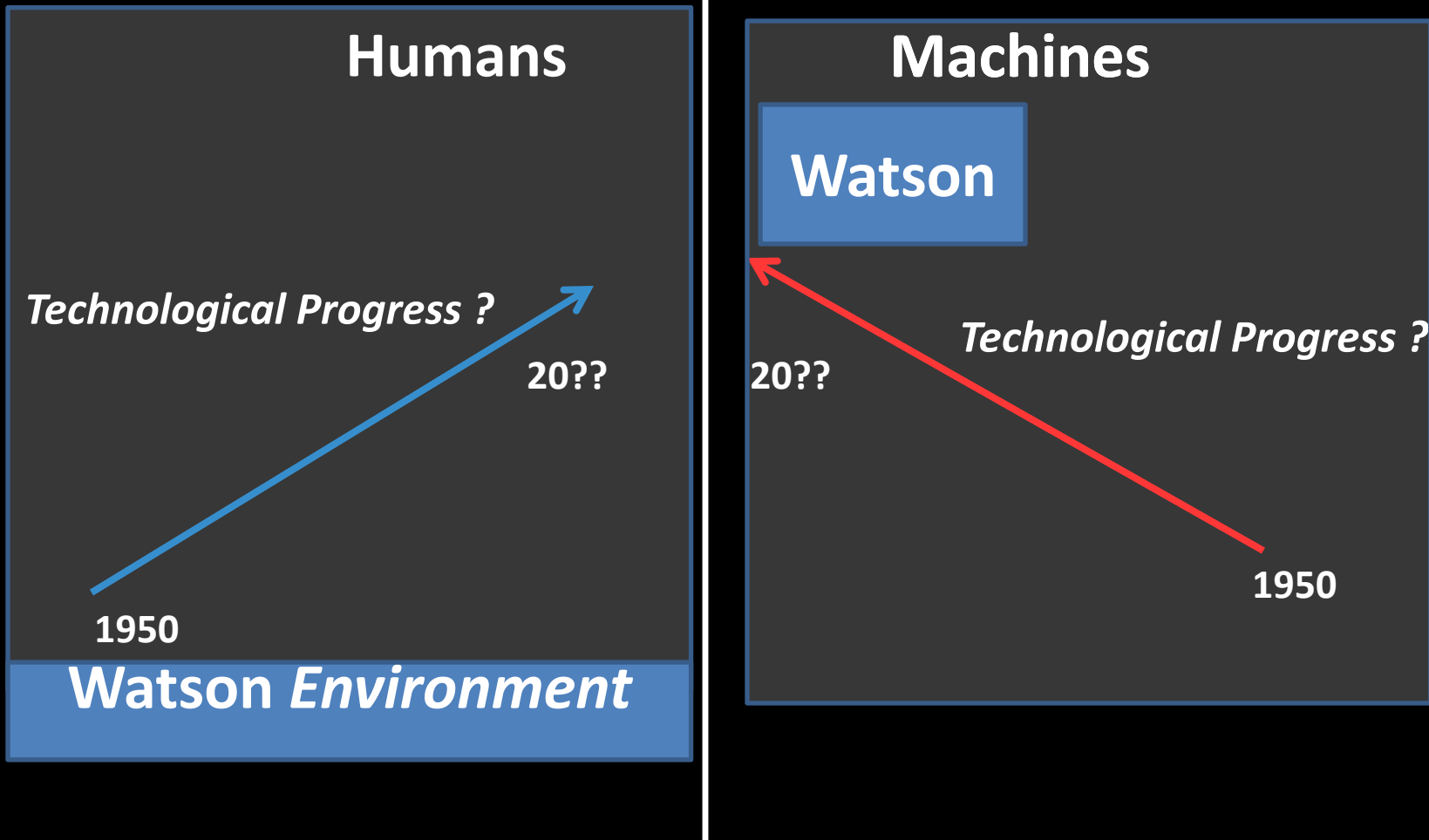
Machines

Watson

Technological Progress ?

20??

1950



Humans

1. Computational Ability

Humans are slow and likely to make mistakes.

2. Random Number Generation

Humans tend to 'spread out' number sequences.

3. Common Sense

Humans have access to collective folk wisdom.

4. Rationality

Humans rely on biases and heuristics that deviate from the expectations of rational choice theory.



Machines

1. Computational Ability

Machines are fast and near-flawless at computations.

2. Random Number Generation

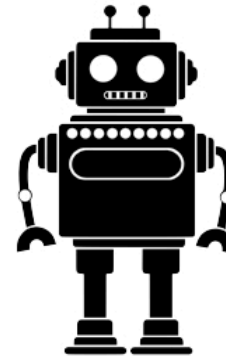
Machines less likely to 'spread out' numbers.

3. Common Sense

Machines lack access to collective folk wisdom.

4. Rationality

Machines more likely to follow the expectations of rational choice theory.



Is the techno-social environment making humans more machine-like?

Image courtesy of John Danaher

Environments

Turing Line

Humans

A Touch Screen to Ease Airport Stress

BUSINESS DAY | A Touch Screen to Ease Airport Stress



Making use of the iPads installed at Minneapolis-St. Paul International Airport.
Tim Cruber for The New York Times

Machines

Hi. I'm a Tablet. I'll Be Your Waiter Tonight.

BUSINESS DAY | Hi, I'm a Tablet. I'll Be Your Waiter Tonight.

By STEPHANIE STROM | JUNE 20, 2014



SLIDE SHOW | 7 Photos
The Computer Will Now Take Your Order


Matt Rainey for The New York Times


Workplace Environments





Smart Home Environments








Smart Home: multimedia everywhere

CEA-LETI, Utrema



Target of the Proof of Concept

Multimedia "Follow-Me"

- Seamless interaction with multimedia devices
- Enhancing multimedia platforms with context-awareness
- Adding value-added services into the existing multimedia platforms

This Proof of Concept relies on :


- Wireless sensor networks with 6LoWPAN and Zigbee sensor boards
- Localisation by heterogeneous sensors using probabilistic data fusion techniques
- Reuse of multimedia functions with a service oriented approach
- Service composition for higher level context-aware applications
- Augmented rich user interfaces

Impact:

- Provide a generic execution service platform for home-based communicating devices
- Enhance user experience related to multimedia with mobility, rich interfaces and rich interaction


Story Line

Donald watches his favorite team's game on TV, he moves to the kitchen to prepare some food, the media stream follows him and it is displayed on the screen in the kitchen.



Technical Achievement

Architecture



Sensor services

Works with various sensors: pressure, vibration, impact, flexion, etc., based on IEEE 802.15.4/2.4Ghz


- getAvaliar
- getThreshold
- getCondition
- getMaximum
- getMin
- getModel
- getManufacturer
- getRSSI
- forceSleep
- ...

Order to monitor with various sensors: pressure, vibration, impact, flexion, etc., based on IEEE 802.15.4/2.4Ghz

Context-aware localization

Using probabilistic fusion from different sources such as:

- Ambient sensors (PIR, CO₂, Sensor, Force, etc)
- Personal devices detection (WiFi)
- Interaction traces




Service execution platform


Exposing heterogeneous ambient devices as unified services for developers

- Multimedia devices handlers
- IWSN support (6LoWPAN, Zigbee)

Multimedia service

- play
- pause
- stop
- getPosition
- getDuration
- getVolume
- setVolume
- ...





www.iot-butler.eu



A world where engineered determinism governs is a world where fully predictable and programmable people perform rather than live their lives.

Such a world would be tragic.

People living there could be described as human and still would qualify as homo sapiens. But they would have a thin normative status as human beings because much of what matters about being human would be lost.

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THANKS!



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