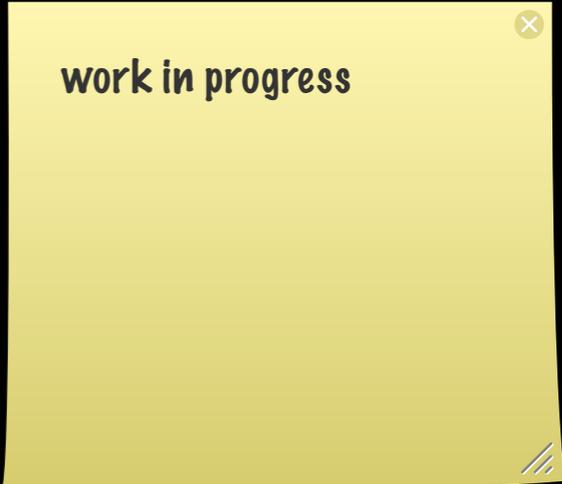


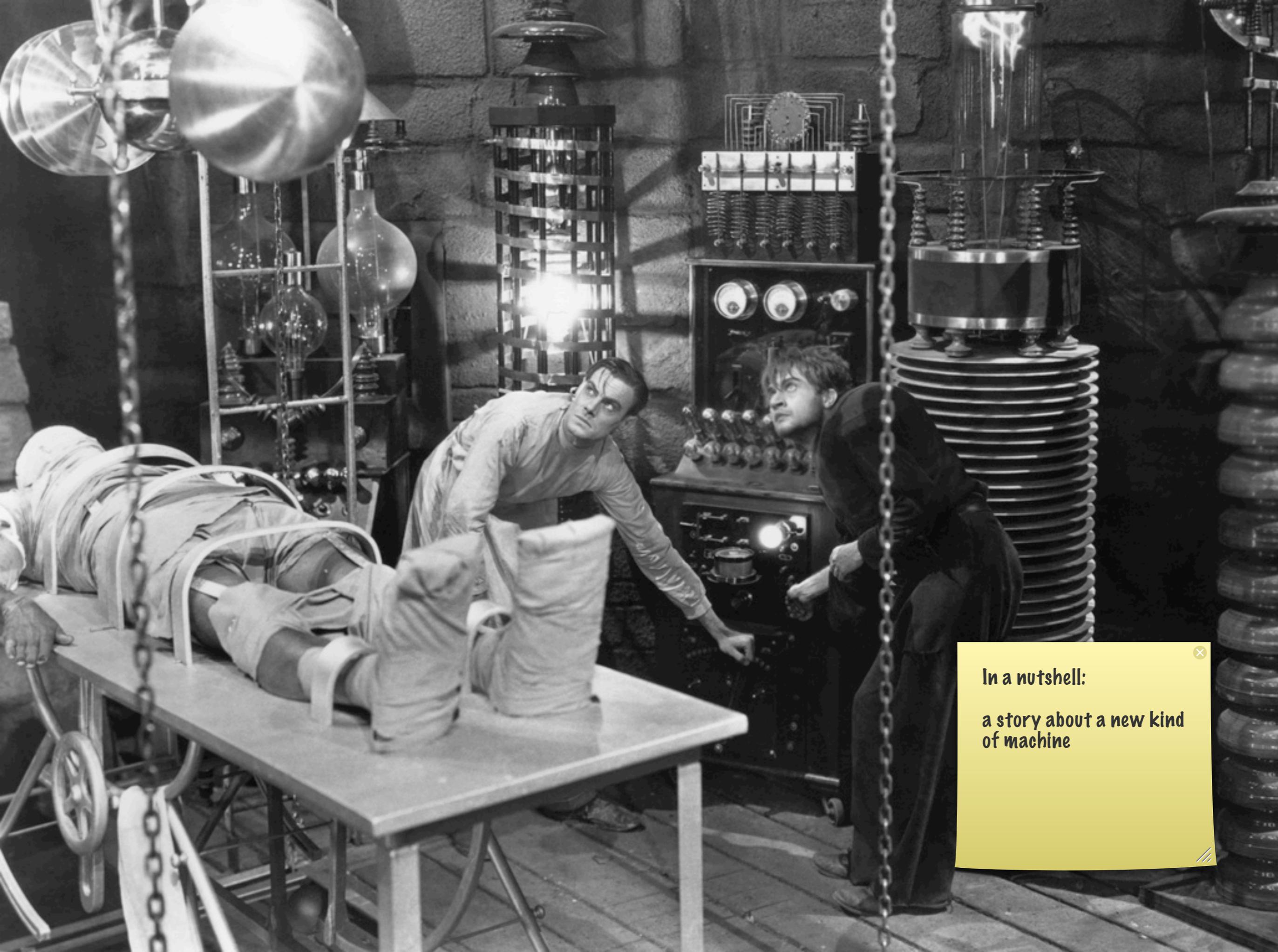
# 26C3 Here be **Electric** Dragons

Preparing for the Emancipation of Machines

*Some Thoughts by  
Lorenz G Lechner*



work in progress



In a nutshell:

a story about a new kind  
of machine

# Background

How does a physicist get  
to talk about robots?

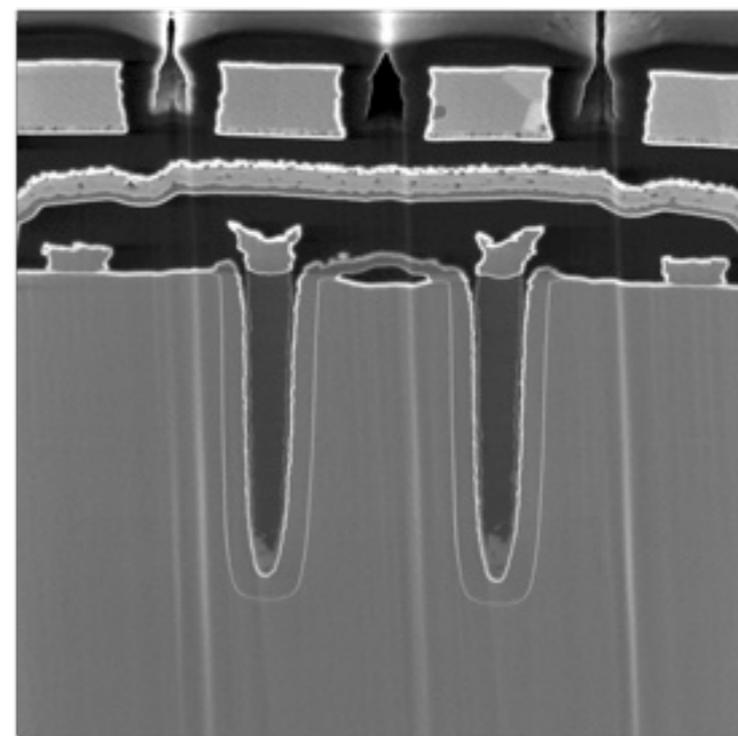
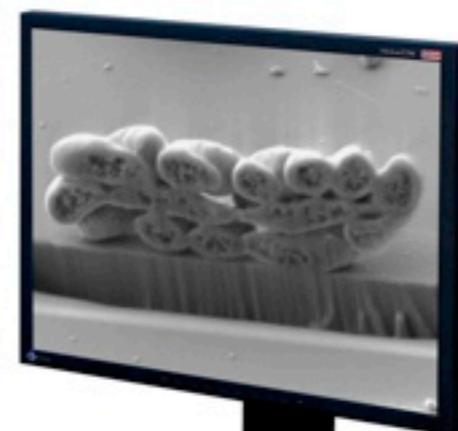
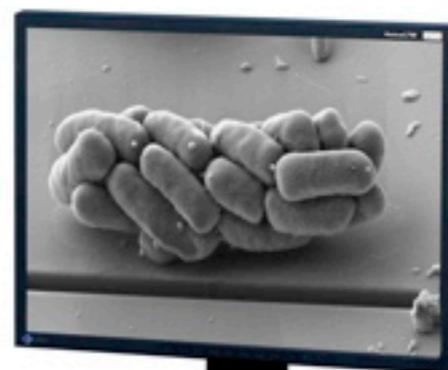
Lucky coincidence and  
great people!

# Nano Archeology

my day job

GEMINI™

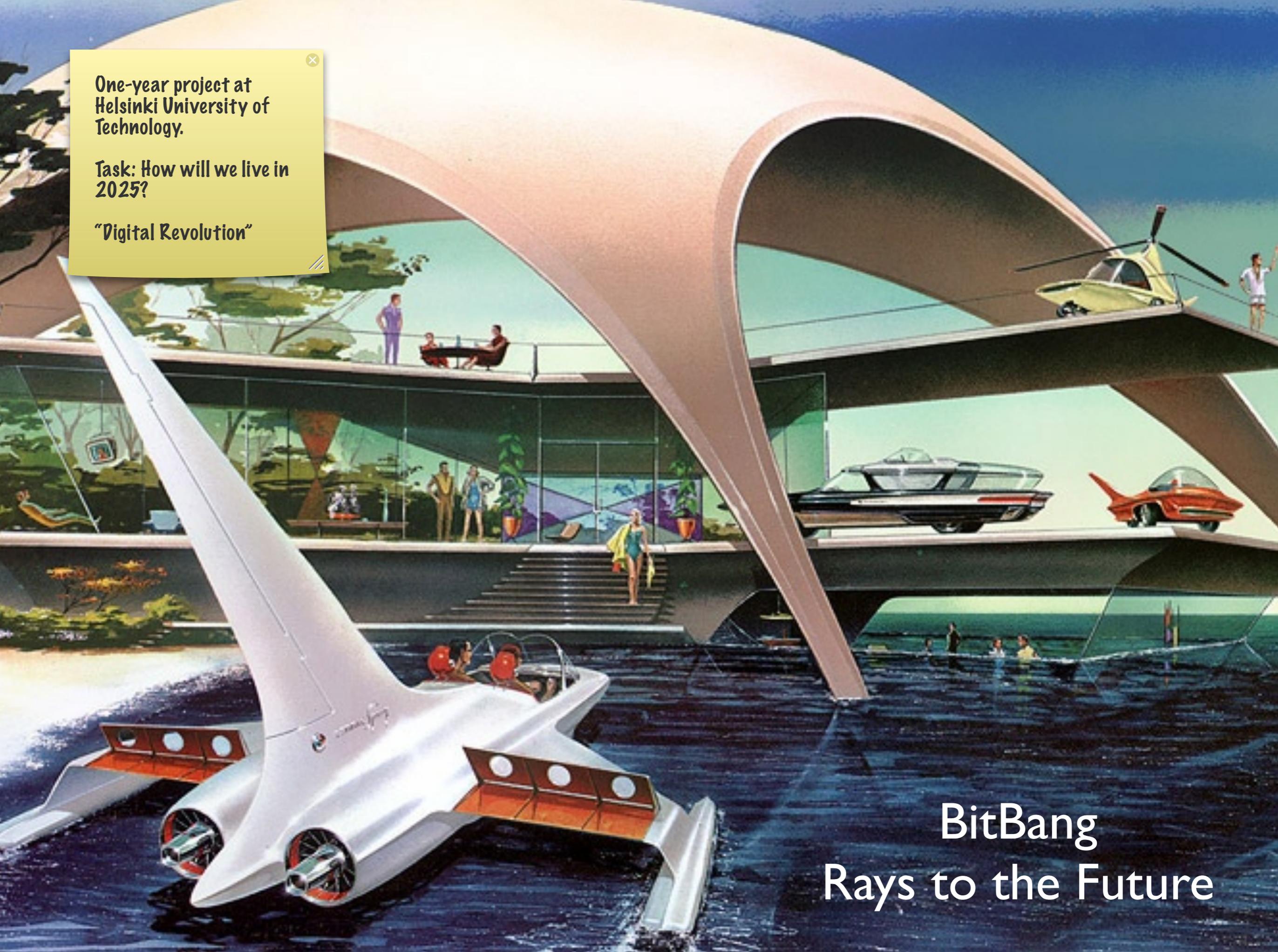
NVision 40



One-year project at  
Helsinki University of  
Technology.

Task: How will we live in  
2025?

"Digital Revolution"



BitBang  
Rays to the Future

my collaborators

# Augmenting Man



Jakke Kulovesi



Vesa Kantola



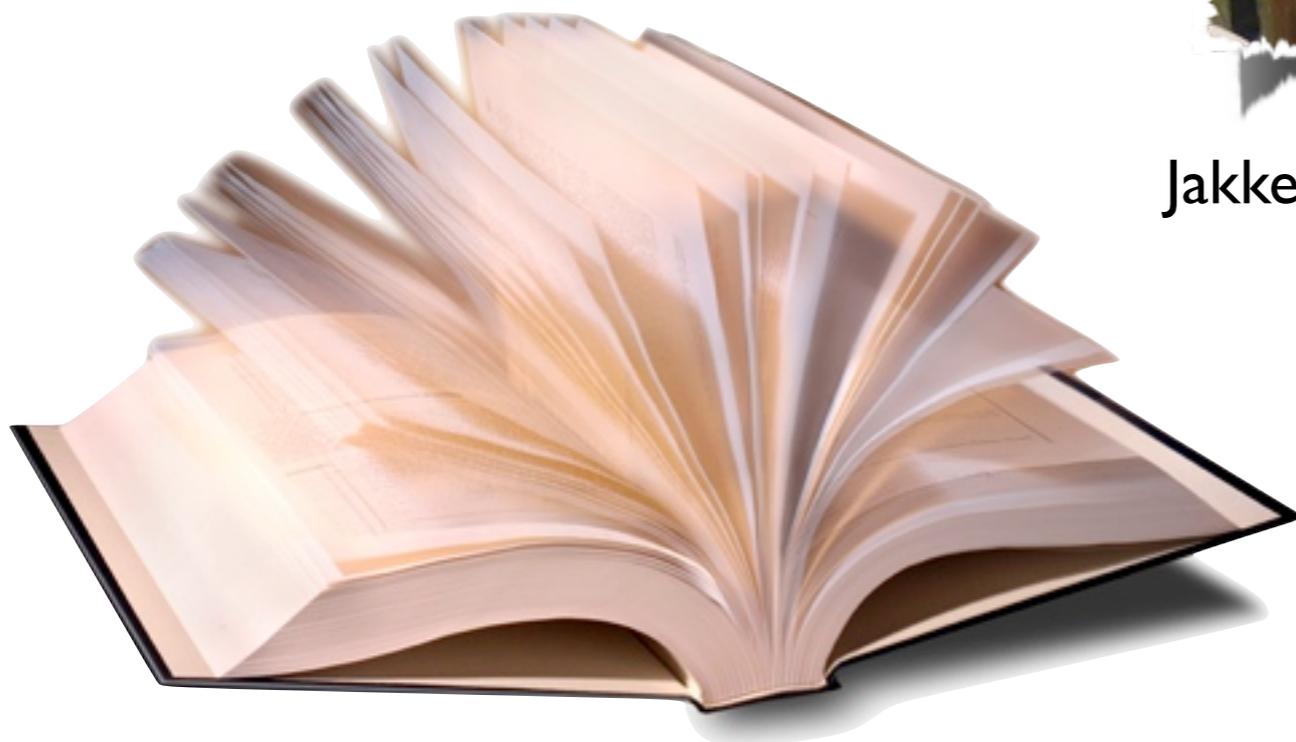
Anniina Huttunen



William Brace



Kari Silvenoinen



## *BitBang - Rays to the Future*

Editors: Yrjö Neuvo, Sami Ylönen

Helsinki University Press

ISBN 978-952-248-078-1

Berkeley, Stanford, HP  
Labs, Sun, Google, IBM,  
etc.

The people in the valley  
are quite awesome

**BUT**

not a self-reflecting  
bunch.



Goal: "Learning about  
the future"

Lesson Learned: "Not a  
place for questions"

Silicon Valley Tour

# Outline

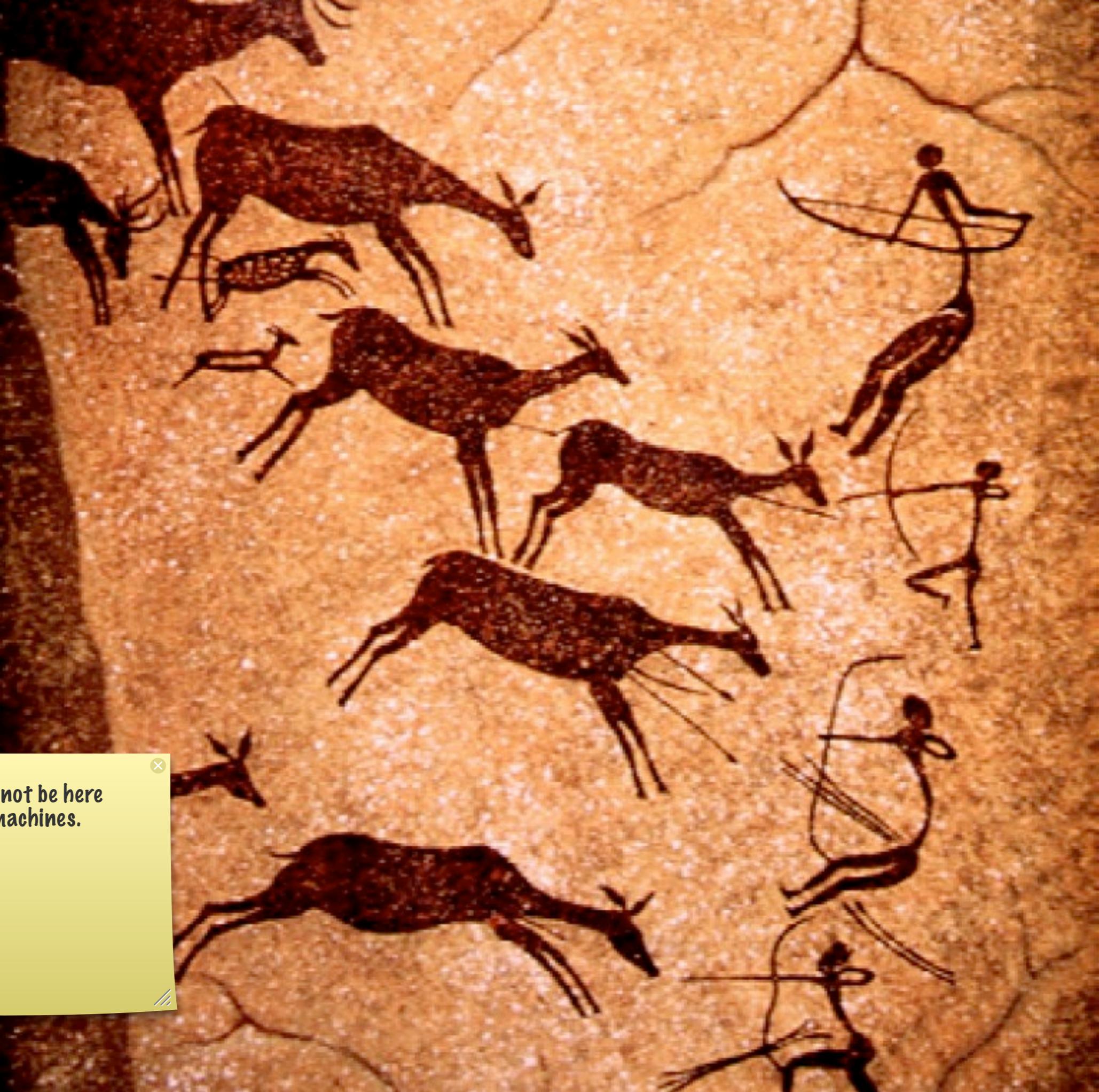
# Outline

- Machine Emancipation
- The Future of Autonomous Machines
- Magnitude of Change
- A New World Order?

# Machine Emancipation

Augmenting Man?

# Cyborgs since the Discovery of Fire

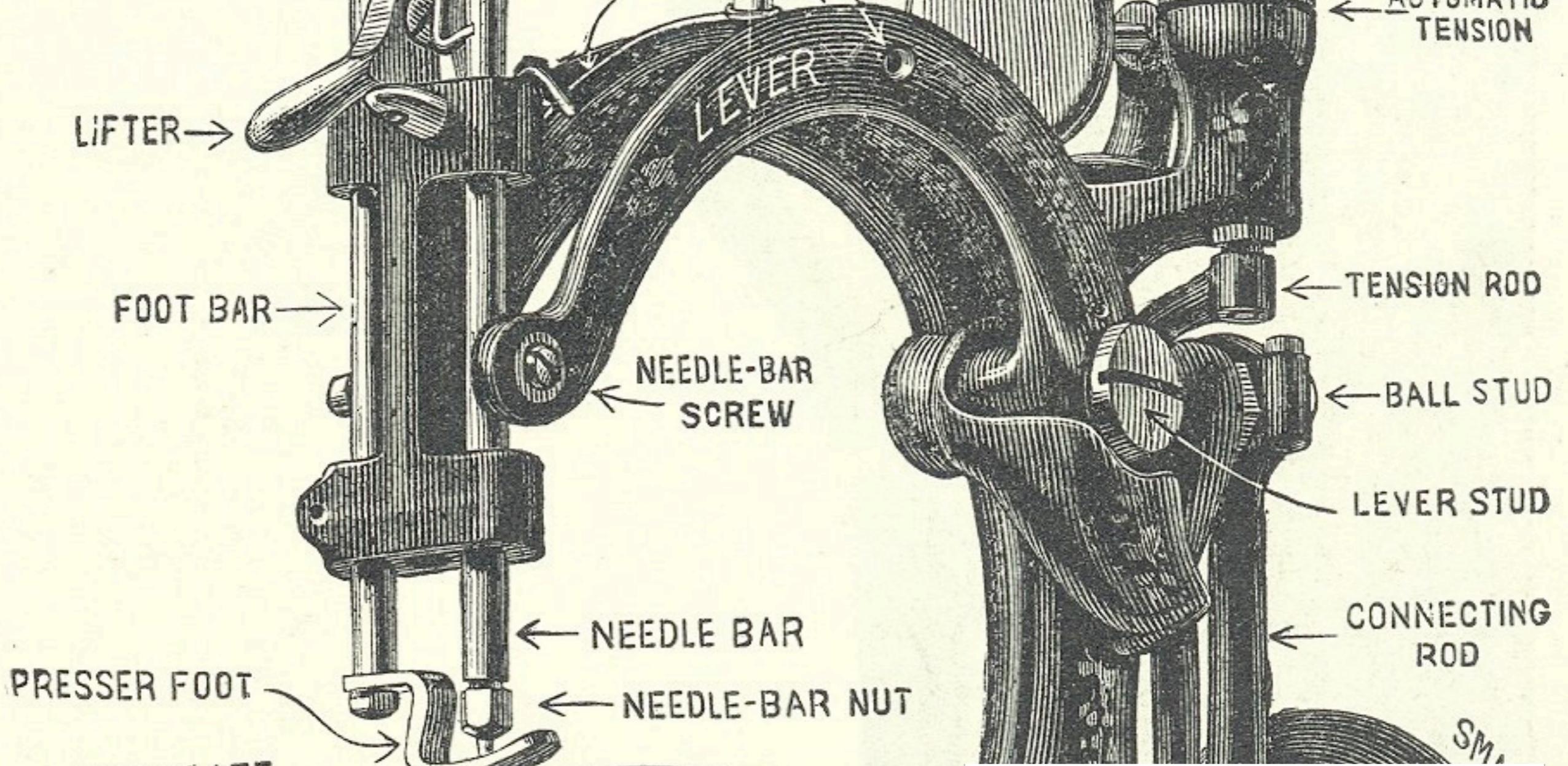


We would not be here  
without machines.

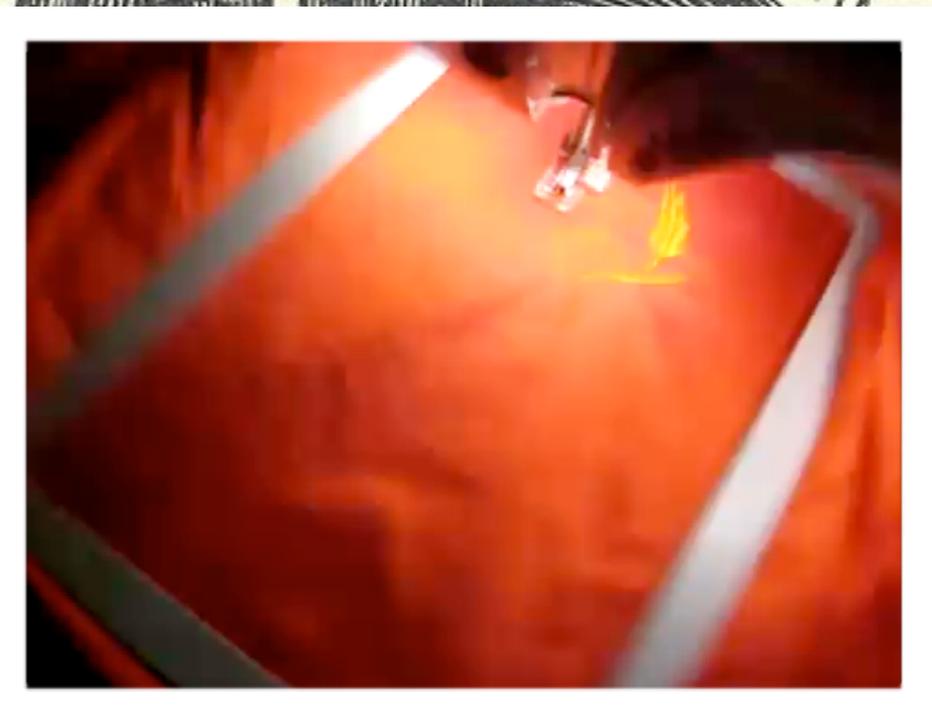
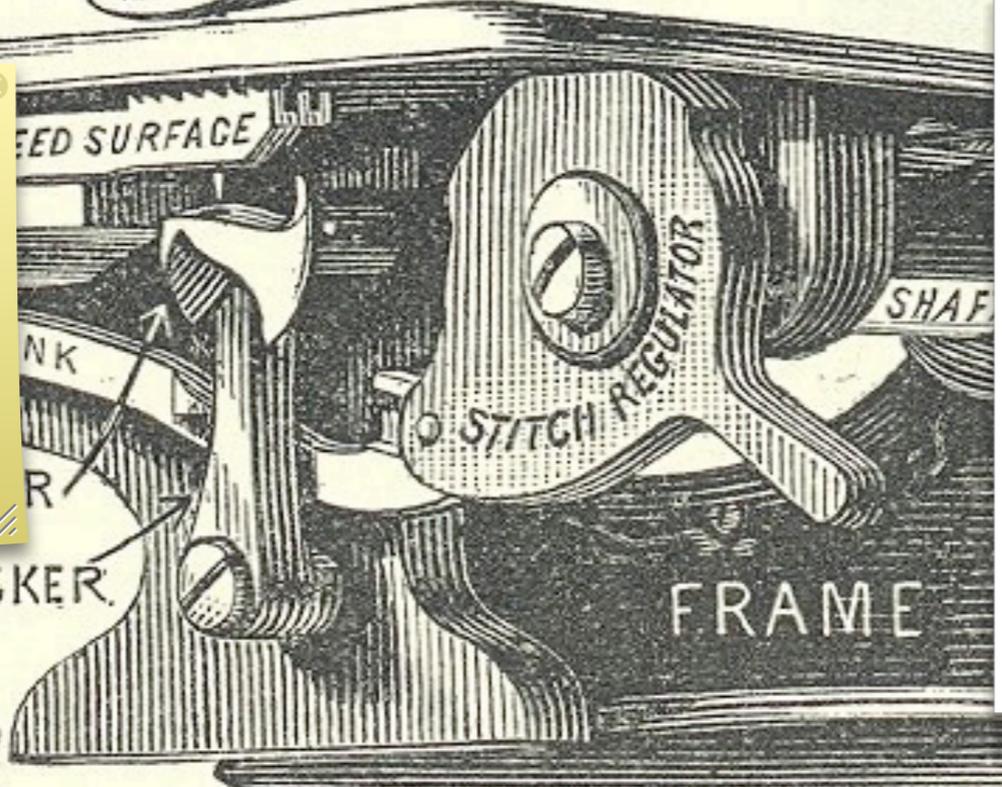
# Old machines



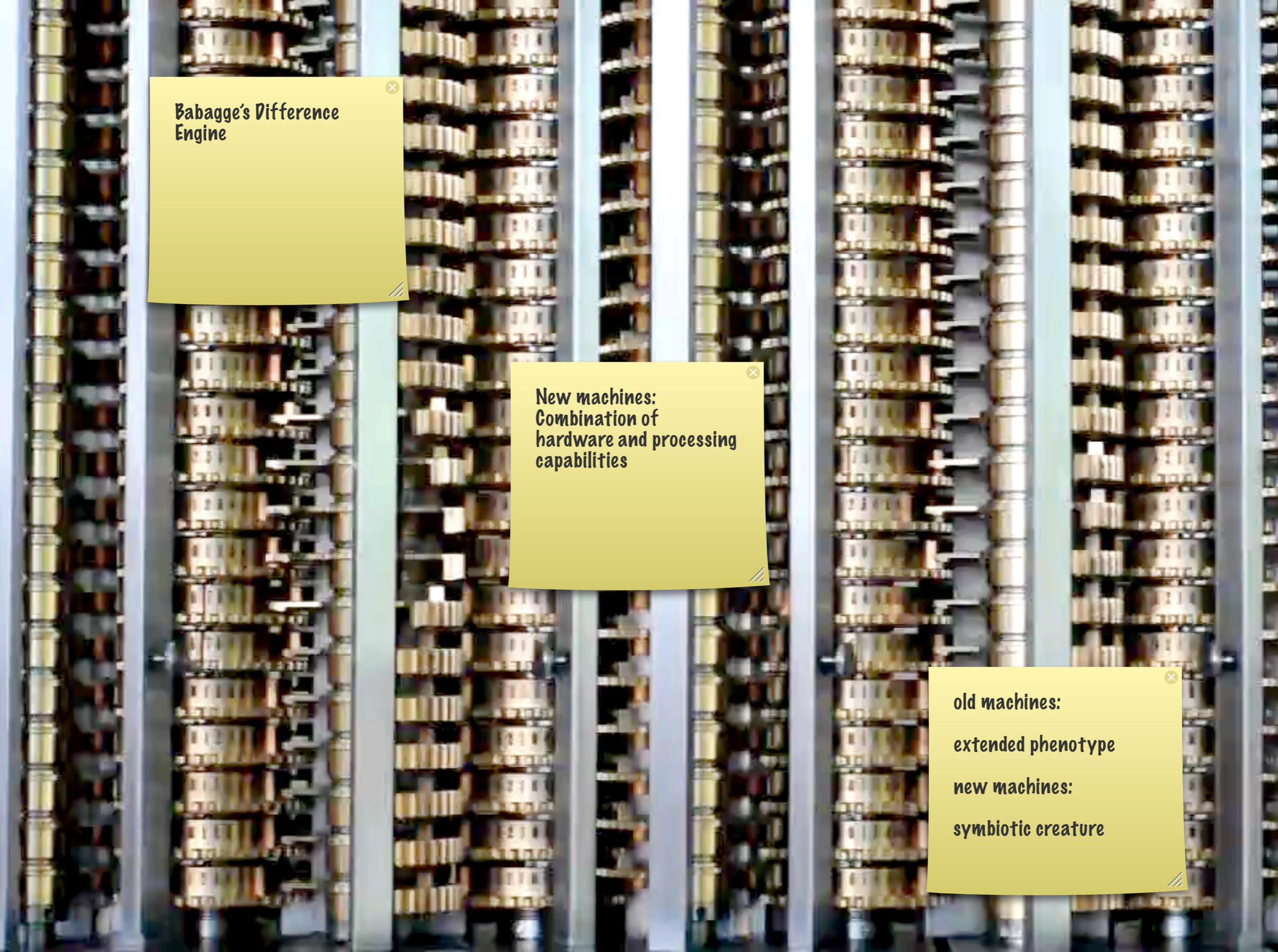
What has changed?



Old Machines are  
 augmenting humans  
 capacities



New Machines



**Babbage's Difference Engine**

**New machines:  
Combination of  
hardware and processing  
capabilities**

**old machines:  
extended phenotype  
new machines:  
symbiotic creature**

A yellow sticky note with a question about future machines. The text on the note is: "How will these new machines look like in 2025?". The note has a small 'x' icon in the top right corner and a small icon in the bottom right corner.

How will these new  
machines look like in  
2025?

# What to Expect?

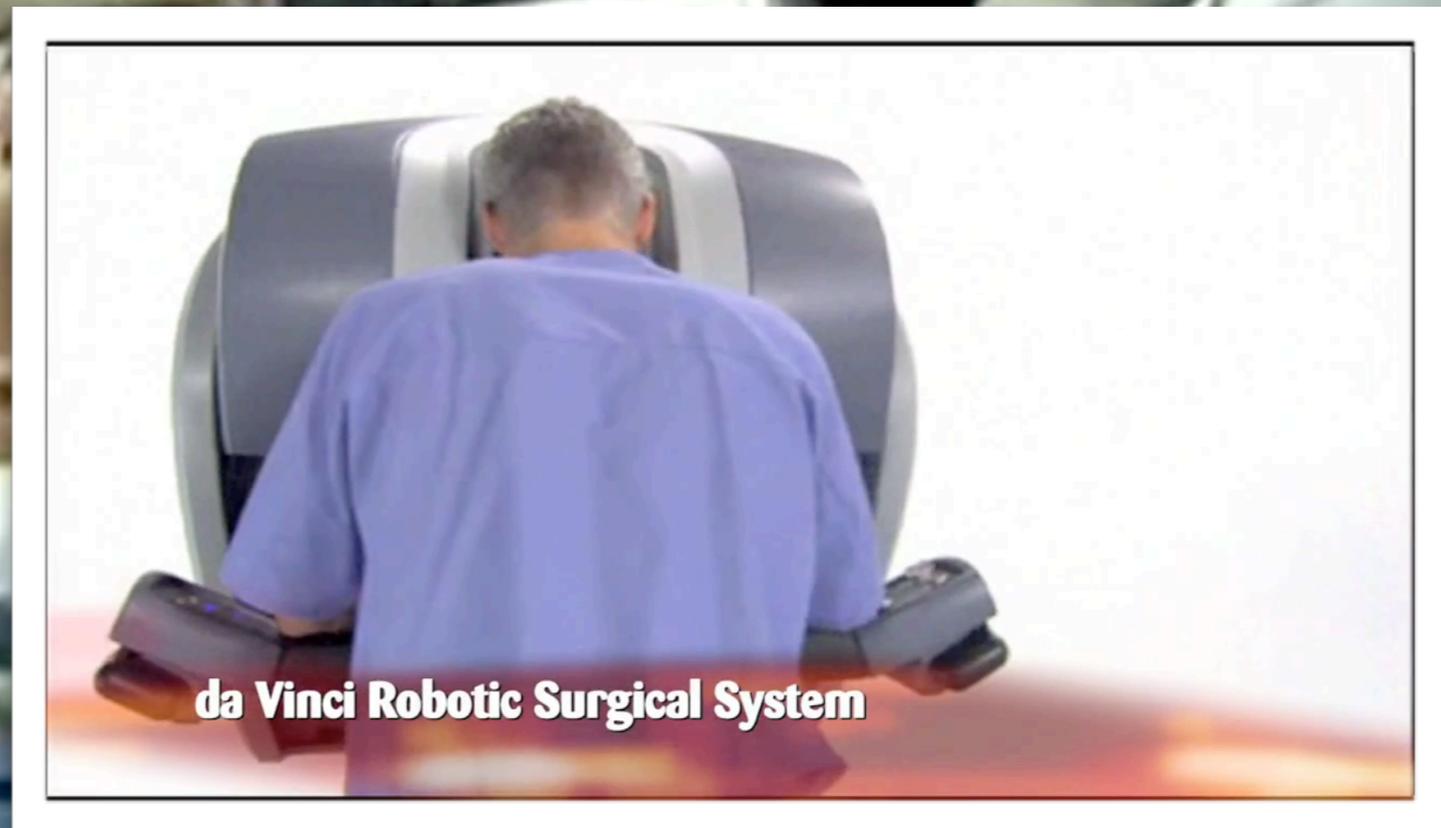
*"The future is already here - it is just  
unevenly distributed."*

William Gibson

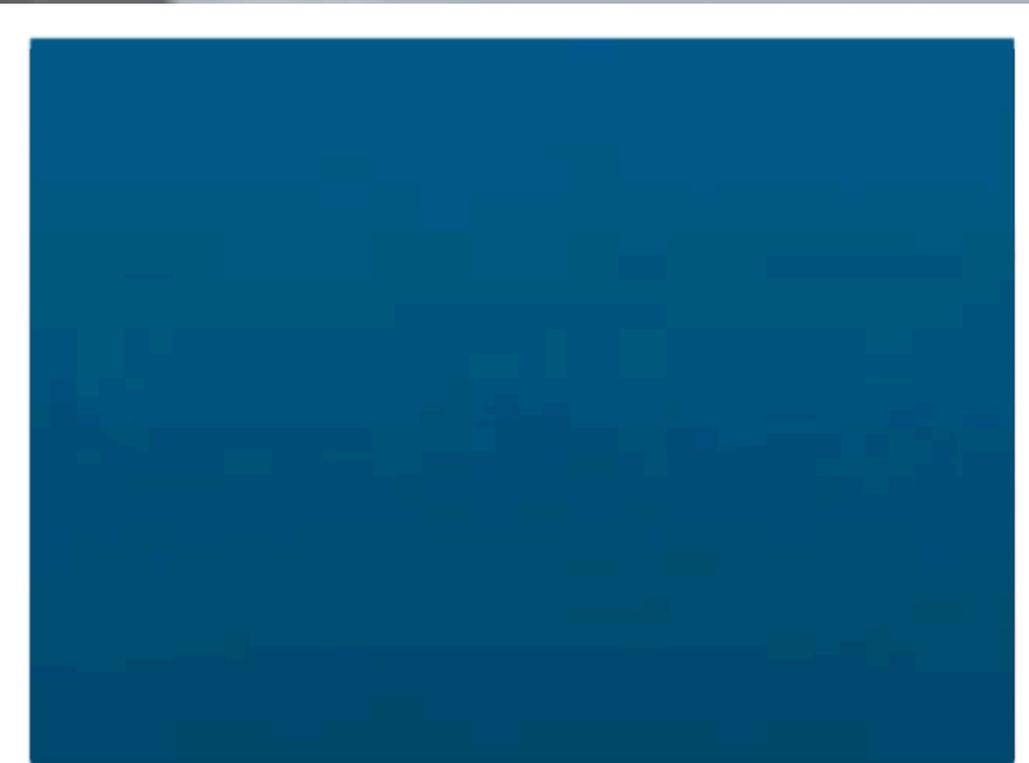
# Household



# Healthcare



# Security

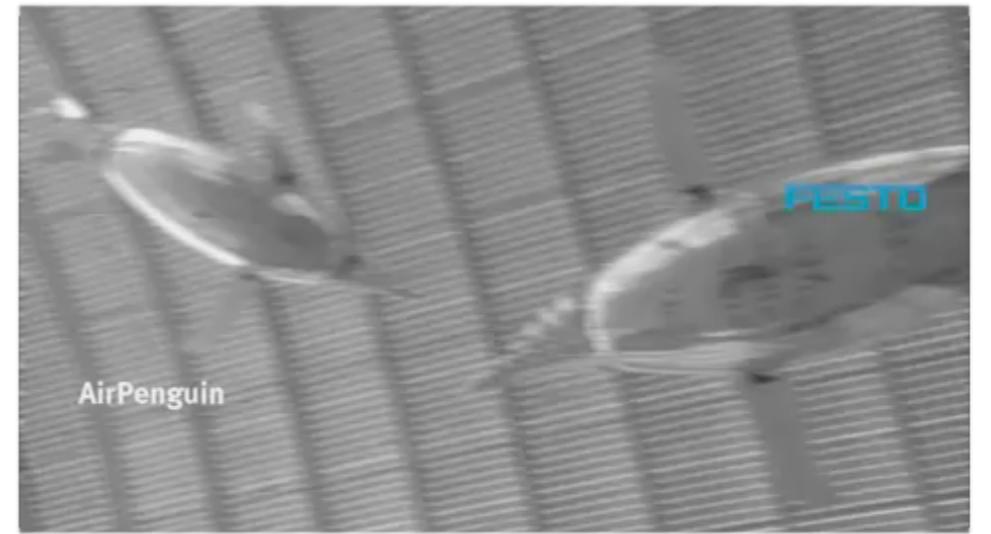


# New Trends



Boston Dy

# Bionics



AirPenguin

FESTO



AquaPenguin

FESTO

Intelligent Machines?

**Primary GPS**

**Secondary GPS**

**Camera System**

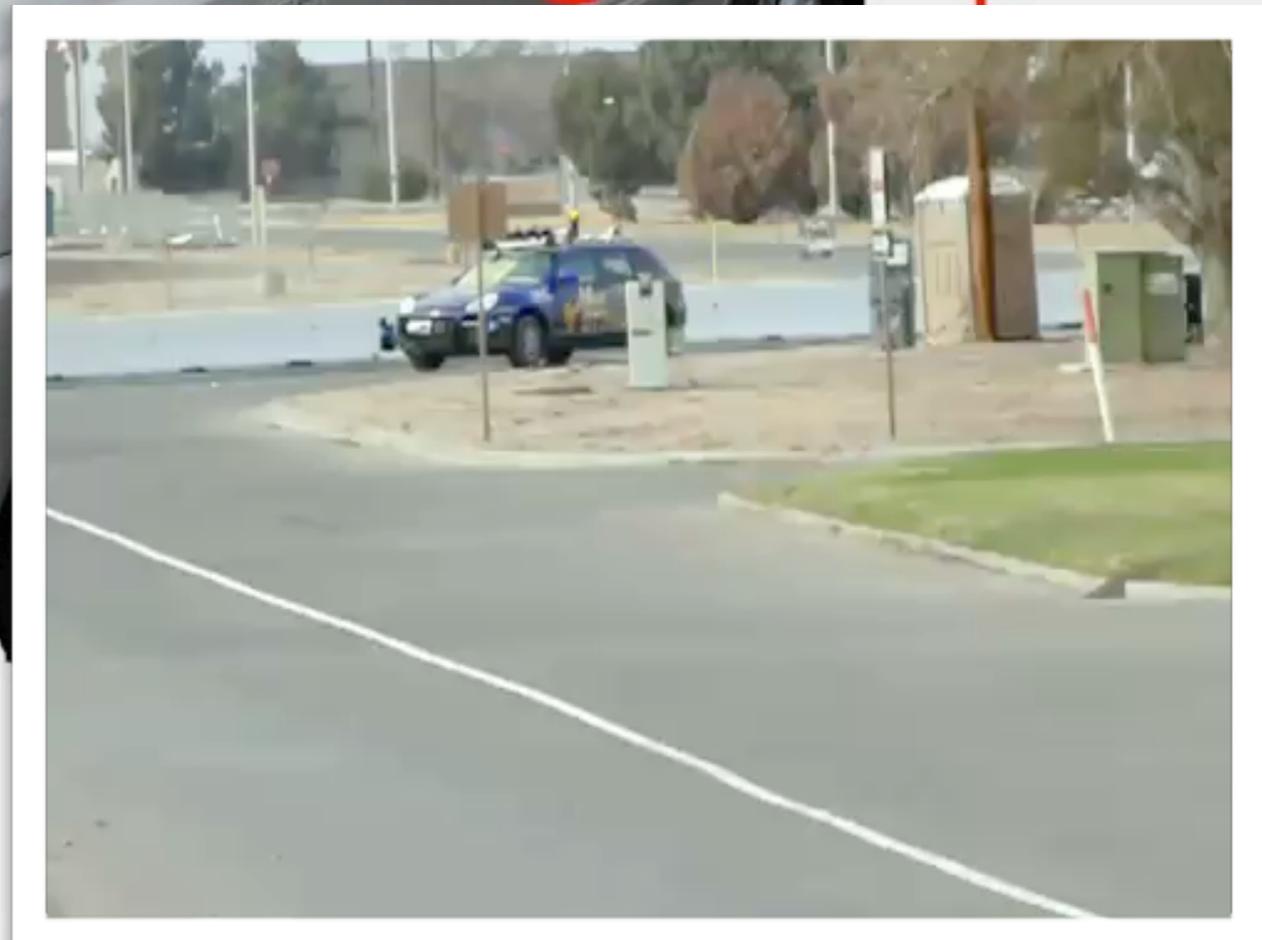
**Mobileye  
Image Processing  
System**

**IMU**

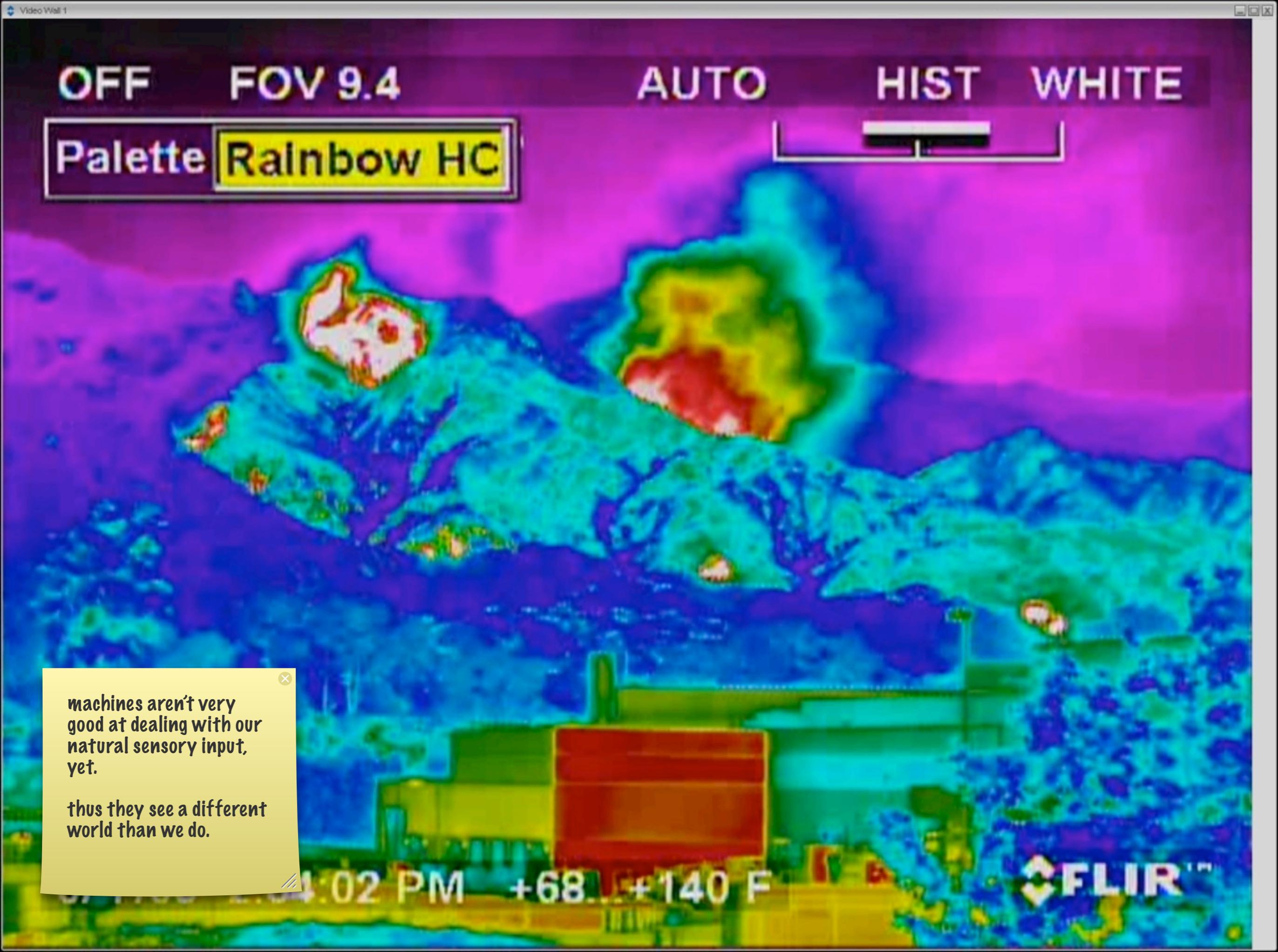


**MACom  
SRS Radar**

As clever as dogs or horses, but why don't we notice?



# Different Senses - Different Worlds



OFF

FOV 9.4

AUTO

HIST

WHITE

Palette

Rainbow HC

machines aren't very good at dealing with our natural sensory input, yet.

thus they see a different world than we do.

4:02 PM +68 +140 F

FLIR

How big are the  
challenges caused by  
these new machines?

# Magnitude

Old machines taking our  
destructive power to the  
extreme

# Doomsday Device

A large, intense nuclear explosion is shown, with a massive, billowing white and yellow mushroom cloud rising into a dark, orange-tinted sky. The base of the cloud is a bright, fiery orange and yellow. In the foreground, the dark silhouettes of trees and a landscape are visible against the bright light of the explosion.

hot topic right now

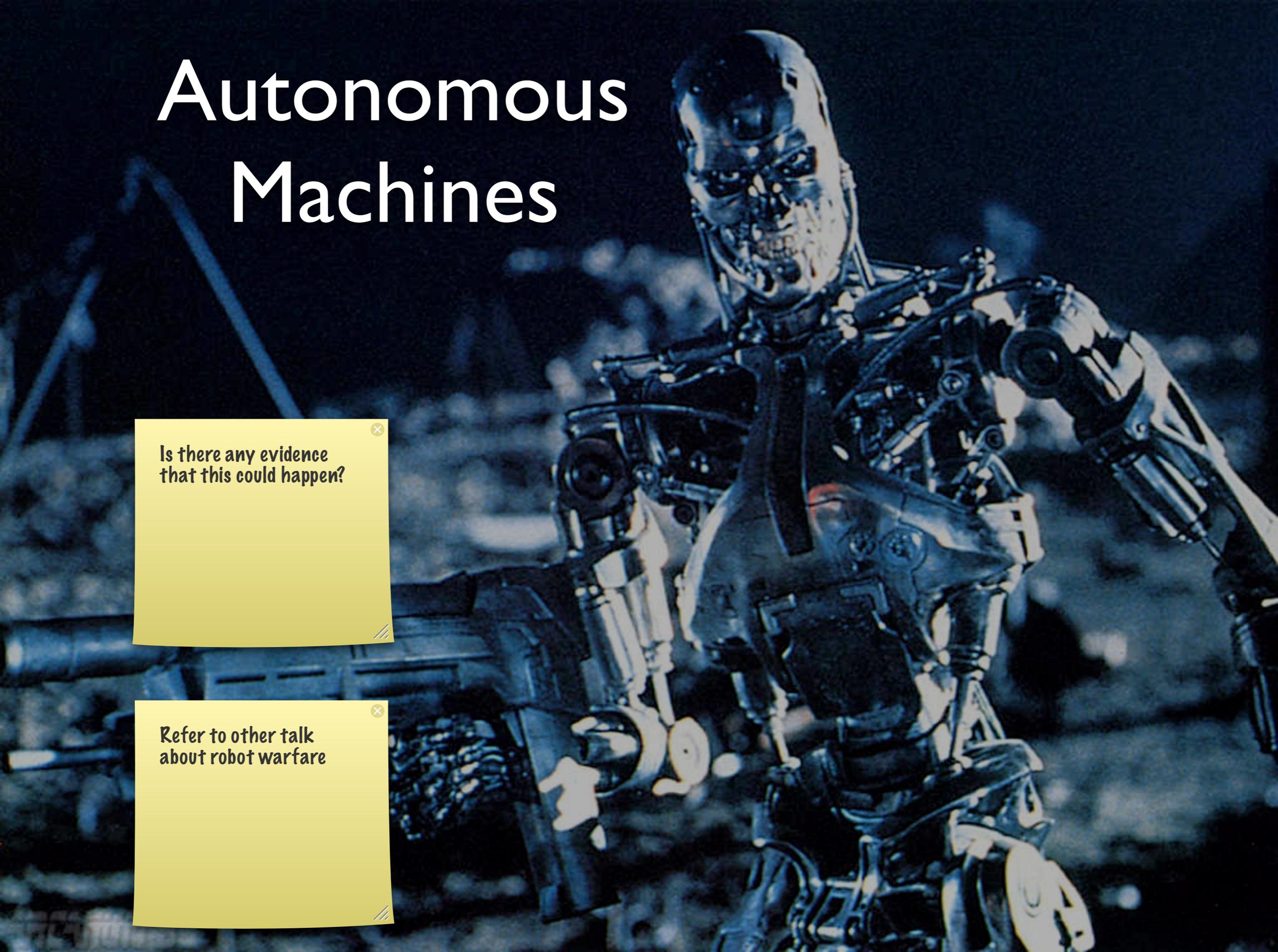
side effect of machines

# Global Warming

A large, sculpted iceberg with a prominent archway and a tall, pointed peak floats in clear, turquoise water. The background shows a rocky shoreline with patches of snow under a clear blue sky.

The next big thing...

# Autonomous Machines



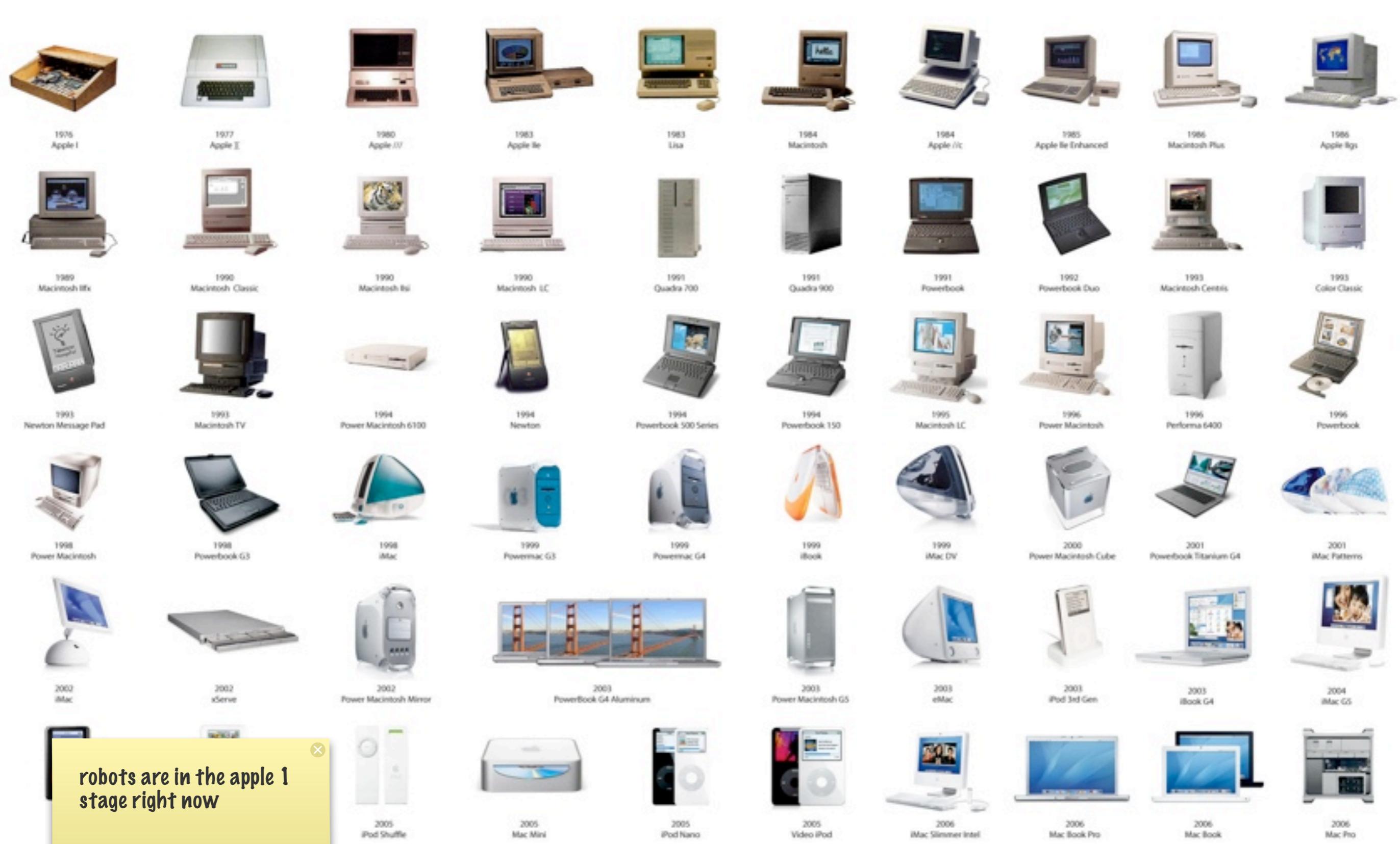
Is there any evidence  
that this could happen?

Refer to other talk  
about robot warfare

“...but won't we rebel?”

will we tolerate a new  
life form?

what will it look like?



robots are in the apple 1 stage right now

It's evolution, stupid!



strong selective pressure

we kill what we don't like  
(or what we like to eat)



does this help us to  
predict the future?

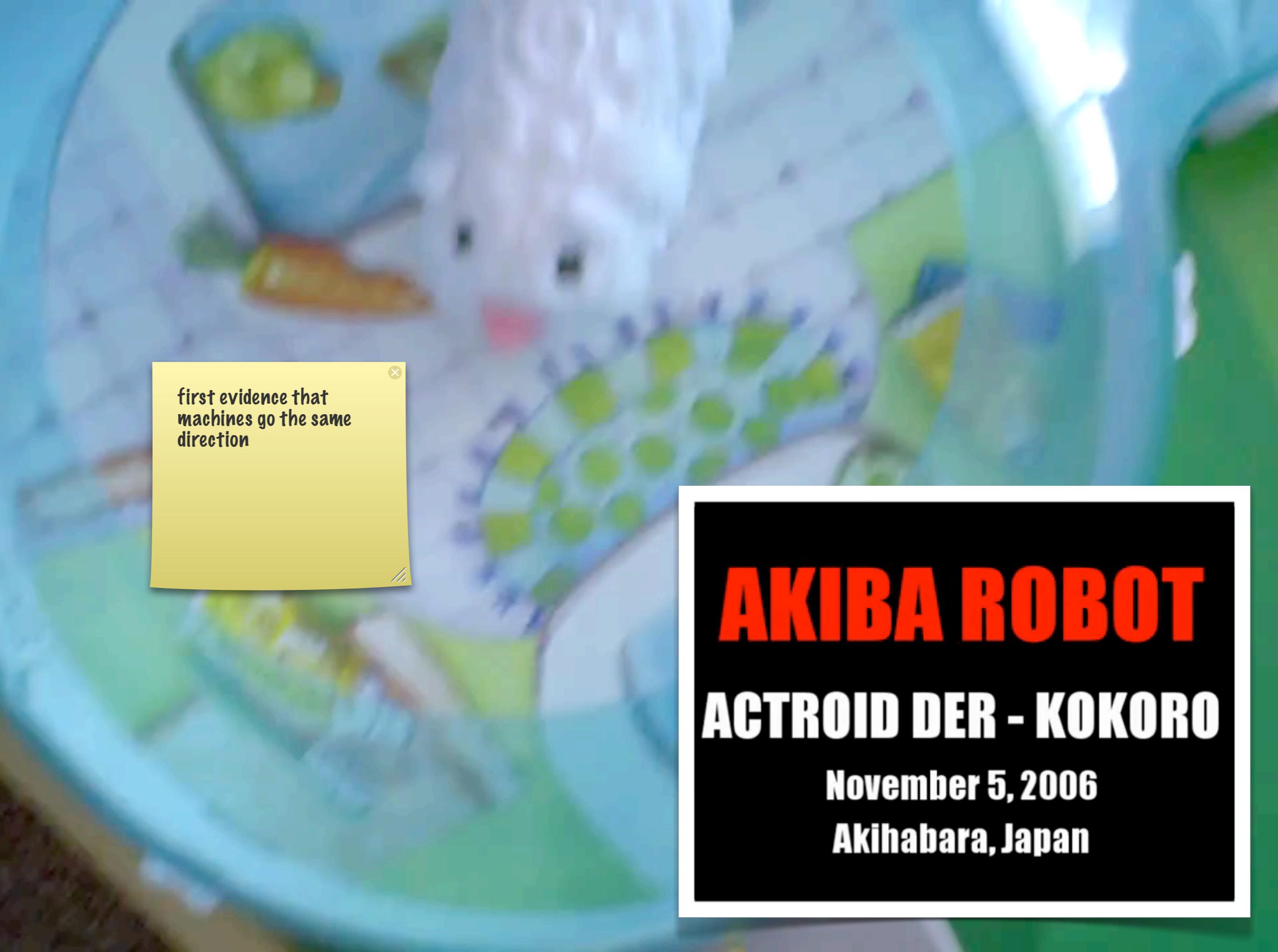
And the winner  
is...

“Americans now spend \$41  
Billion on their pets.”

co-evolution at its best

for robots money not  
technological  
development is the hurdle  
to jump





first evidence that  
machines go the same  
direction

# **AKIBA ROBOT**

## **ACTROID DER - KOKORO**

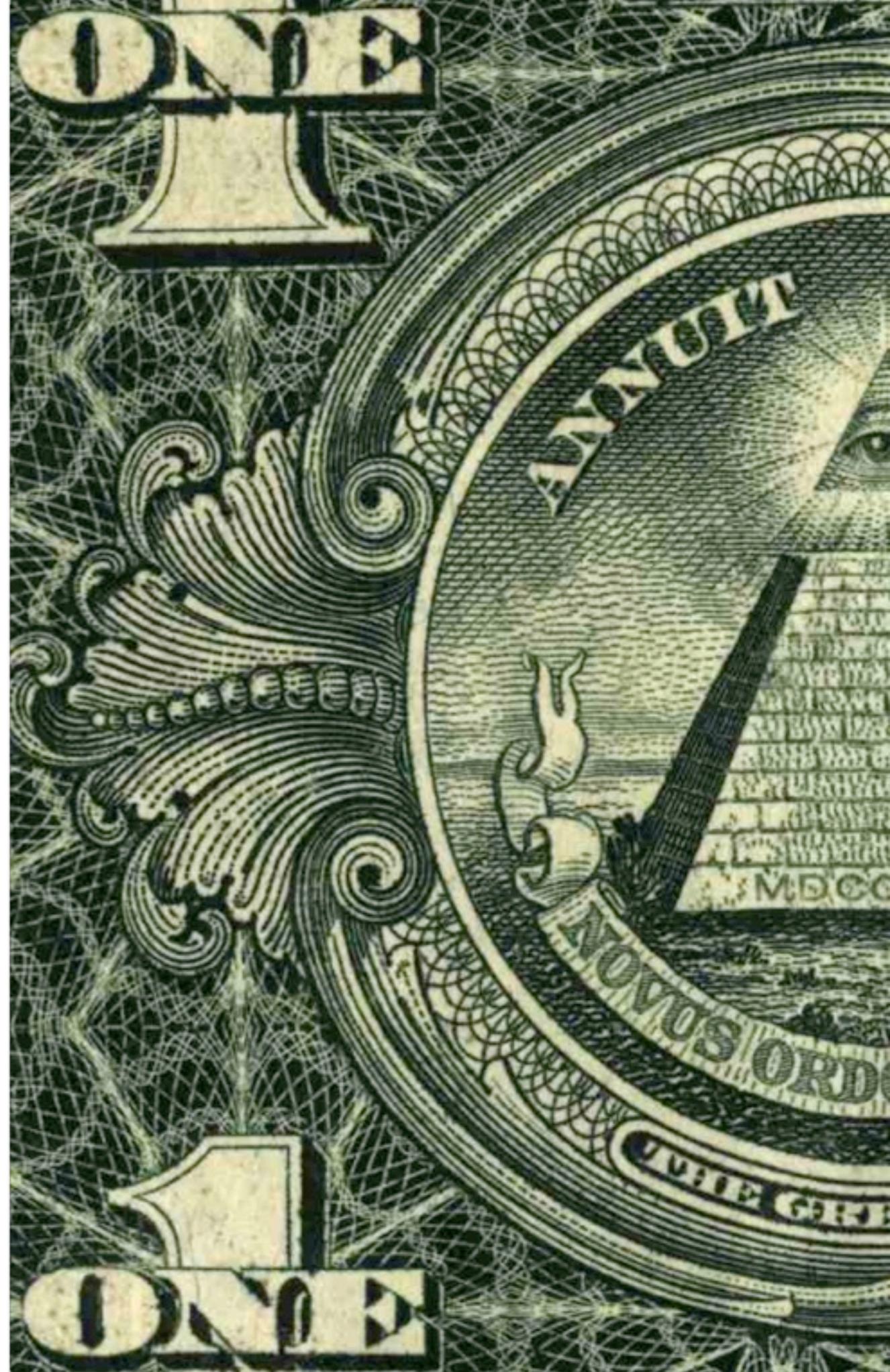
**November 5, 2006**

**Akihabara, Japan**

New World Order?

# 20<sup>th</sup> Century Models

Communism,  
Socialism,  
Capitalism, etc



What is the Essence?

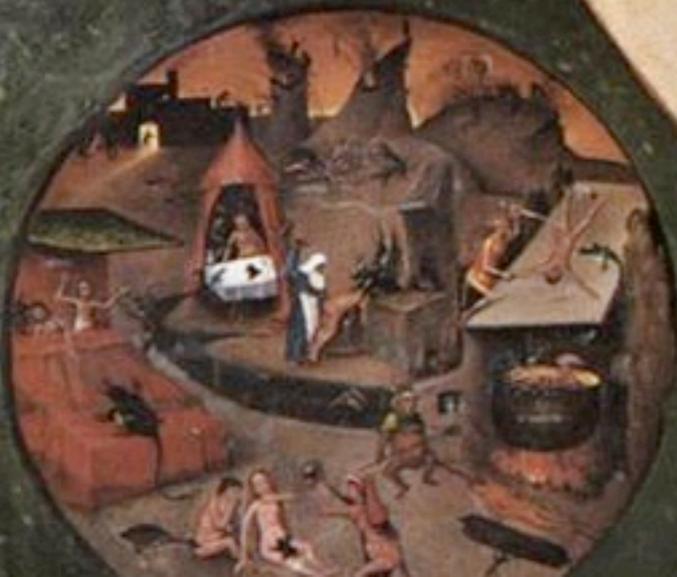


worker/work



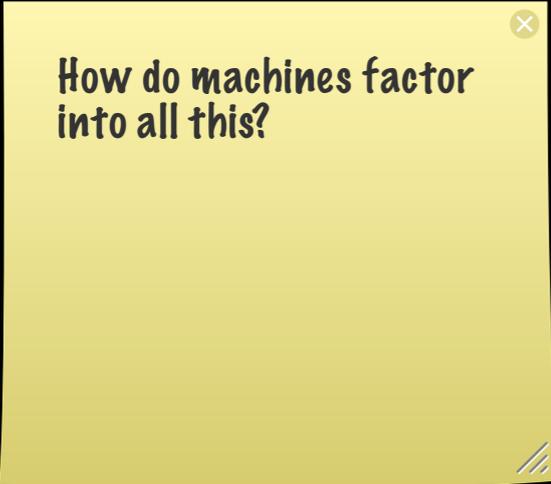
Max Weber: protestant work ethics foundation of capitalism

7 deadly sins: sloth



Et benedicta facies tua ab his: et obiderabo novissimam eorum

# Lorenz' Postulate



How do machines factor  
into all this?

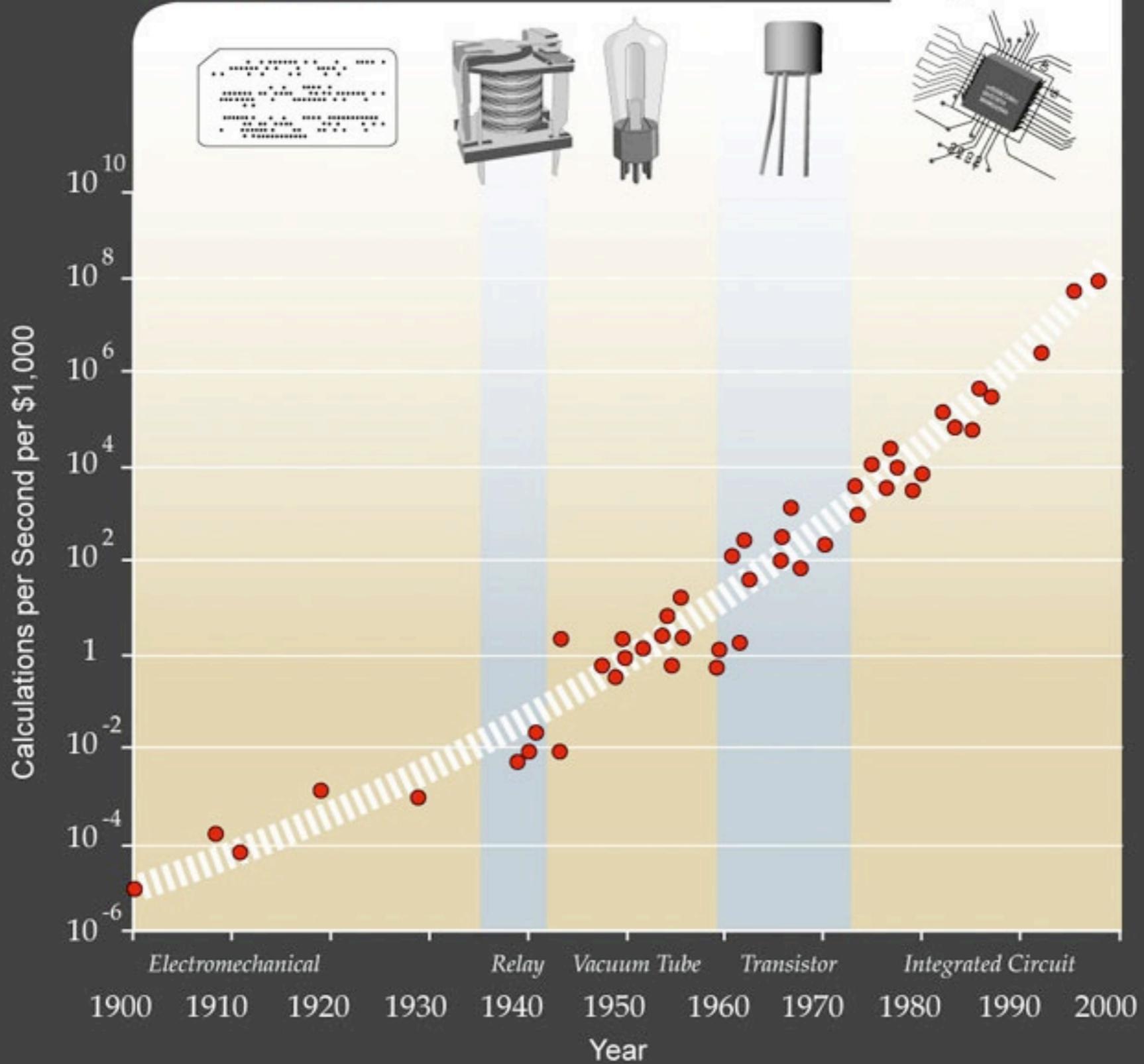
**“There is no  
physical task in  
which a human  
can outperform  
a robot.”**

and...

# Moore's Law

## The Fifth Paradigm

Logarithmic Plot



**results in...**



why isn't it the luddite fallacy?

because we are dealing with a new type of machine

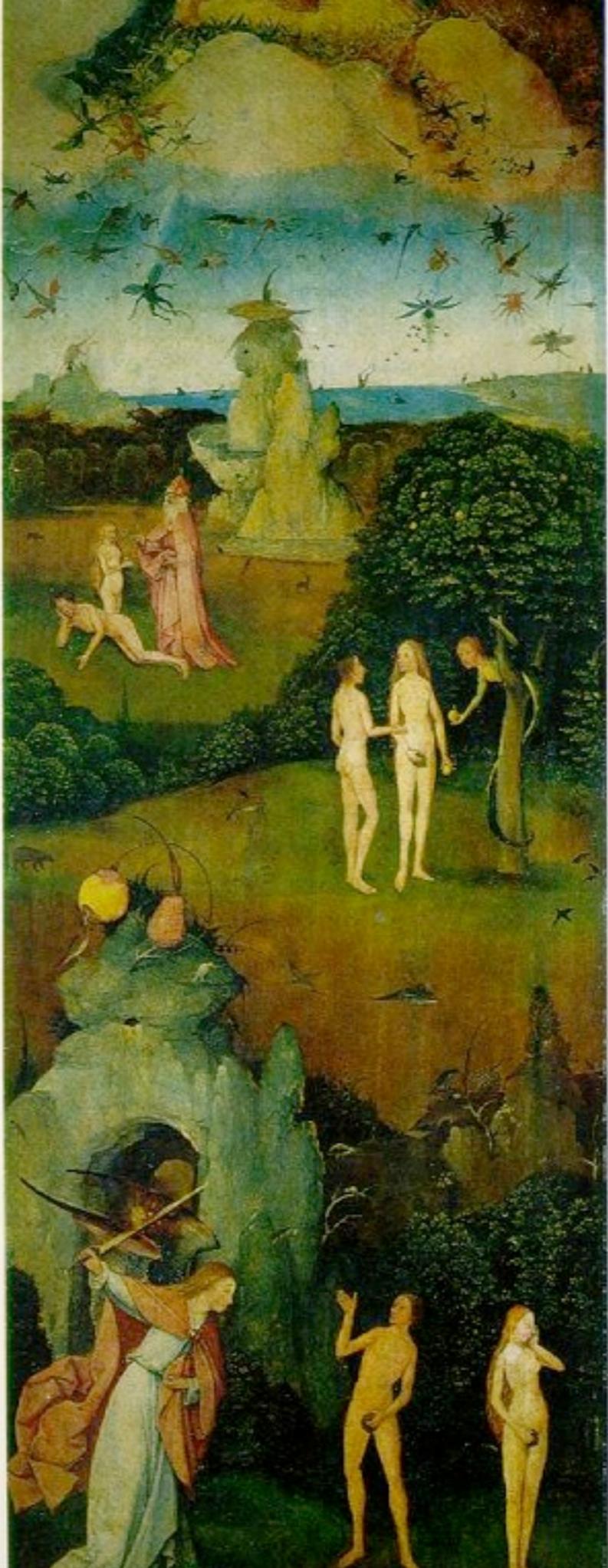
what jobs are remaining for people to do?

Robert Reich: "symbolic analysts"

What can be will be automated!

Friday or Sunday?

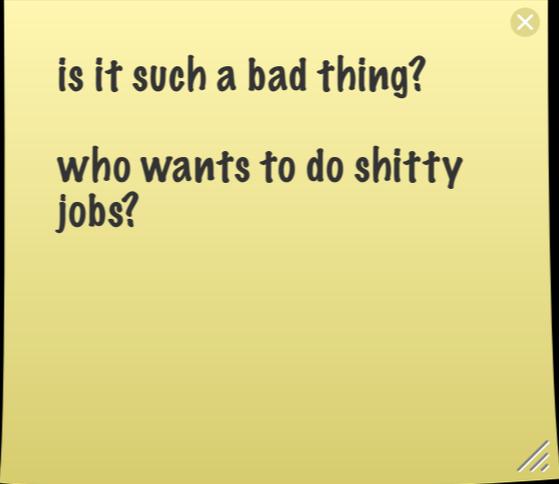
# Heaven



# Hell



# Life without Work



is it such a bad thing?

who wants to do shitty  
jobs?

History

# Feudalism

sunday:  
acedia vs sloth



# Monastery



ora et labora:

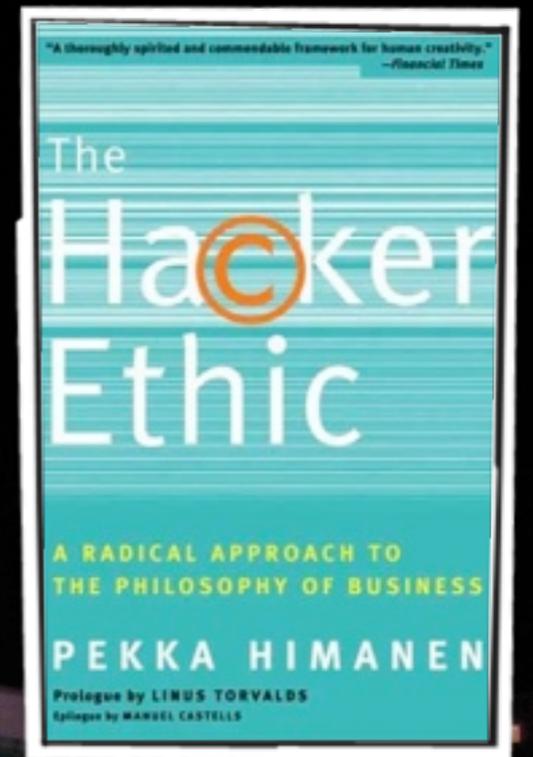
eternal friday? not  
really.

# Modern Alternatives

Do we want to go back to medieval ideals?

new political concepts  
are required.

unconditional basic  
income?



hacker work ethics

sets a positive example  
for a working (sub)  
culture

# Hackerdom

*I, for one, welcome our  
new robot overlords.*

# Contact...

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<http://bitbang.wordpress.com/>

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