A History of AI

Public Perception
Zaid Harchaoui

Countdown to the Rise of an Artificial Intelligence?
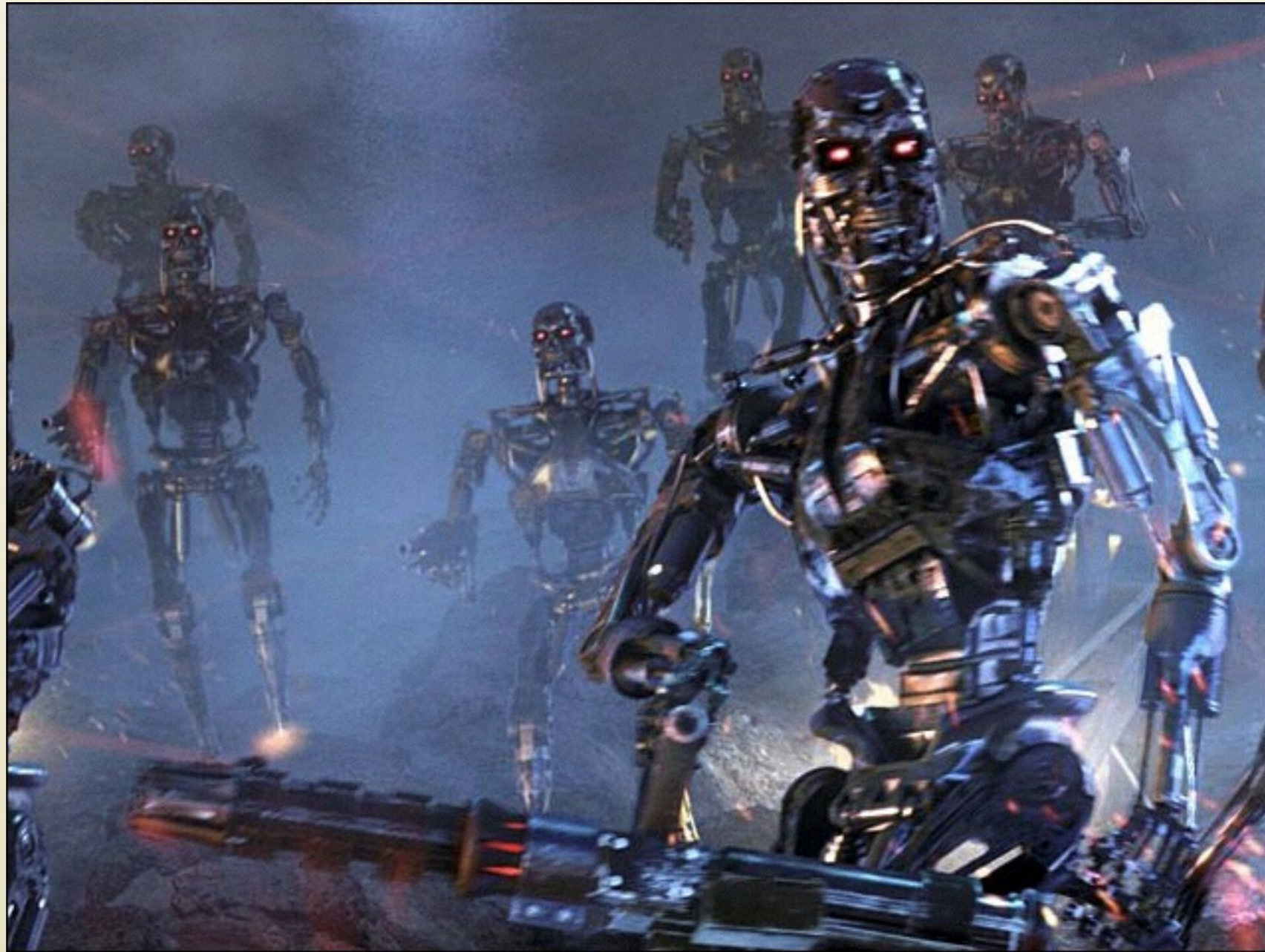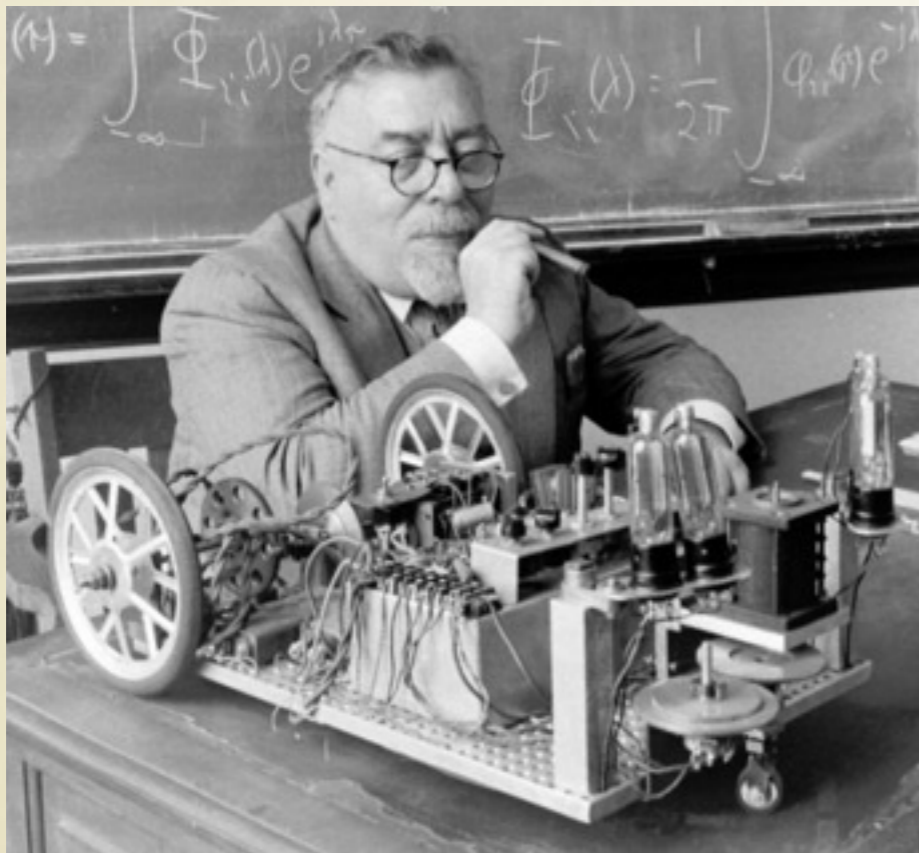
Perception of AI

The Mecha *David* in "A. I. Artificial Intelligence" (Spielberg, 2001)
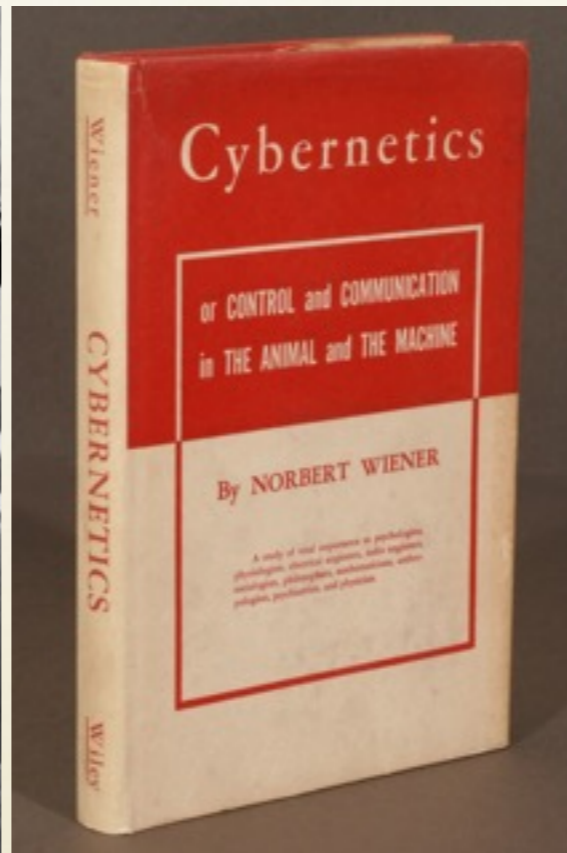
Perception of AI

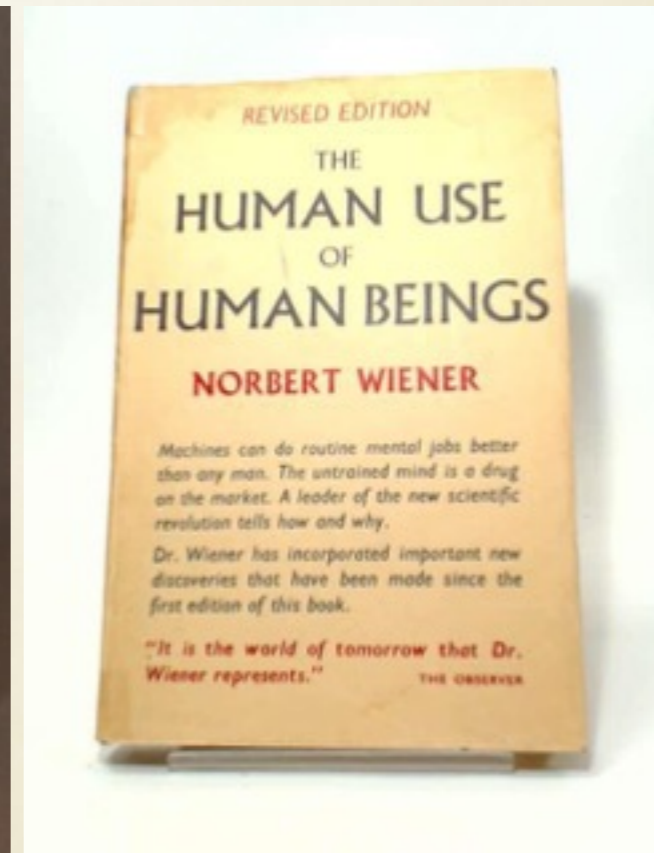Terminators after the rise of Skynet "Terminator III" (Mostow, 2003)

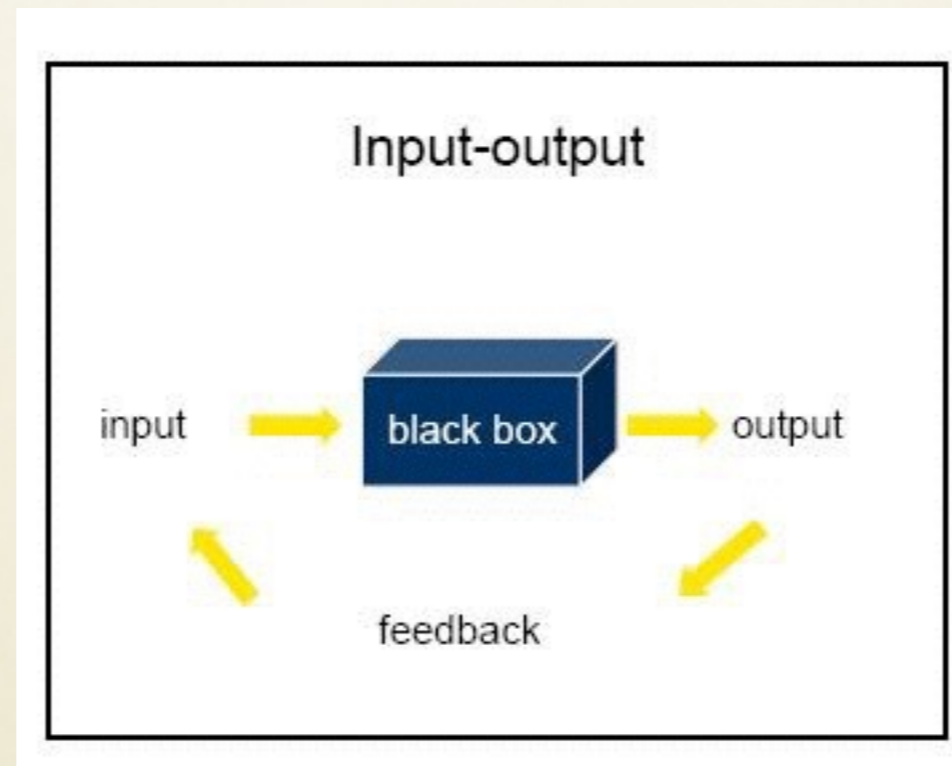# Cybernetics

Norbert Wiener, 1894-1964
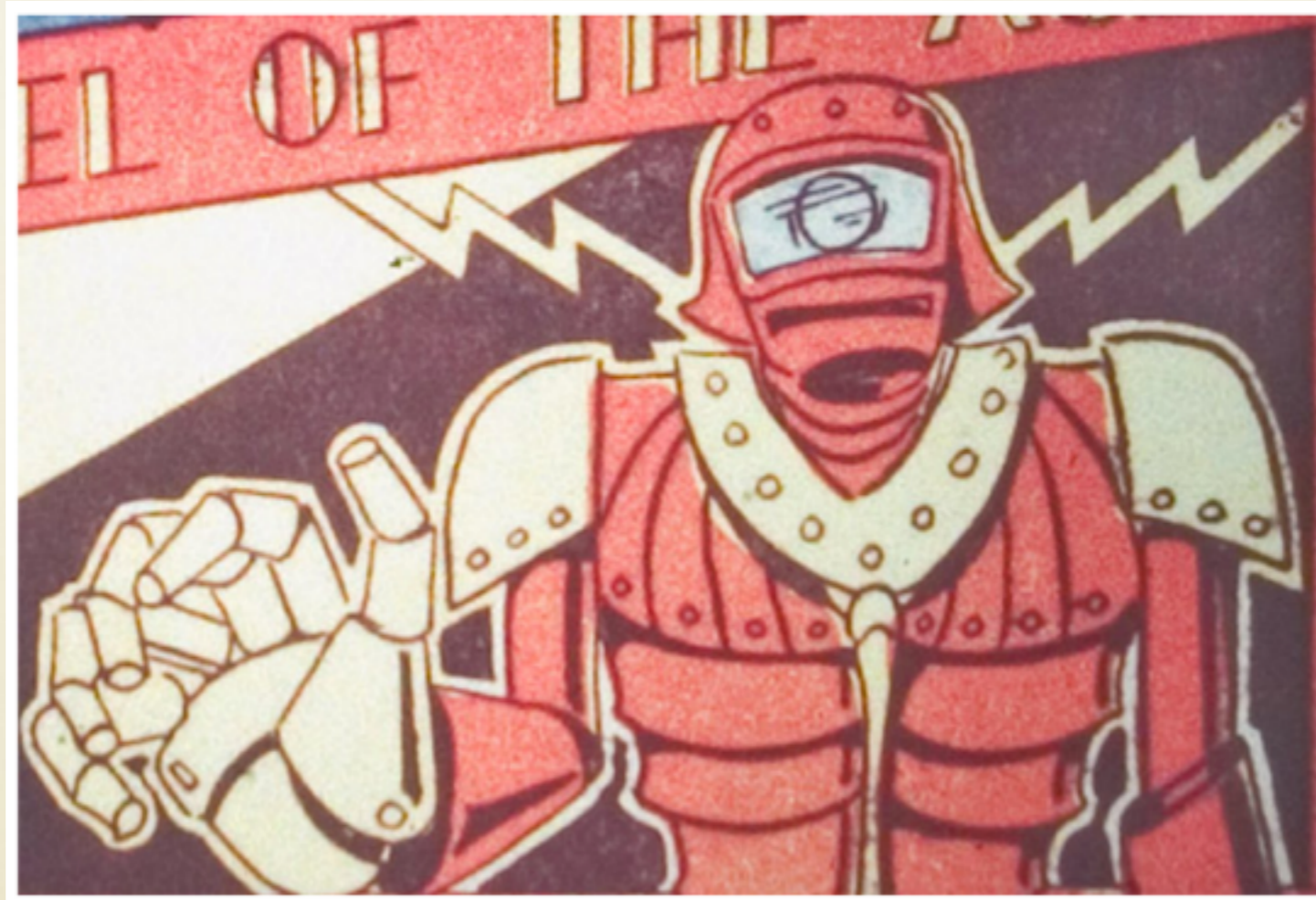
1947

1950

Cybernetics
Non-linear Systems

Machines in Pop Culture, 1940-1950

Electro, crime-fighting robot (Marvel, 1940)

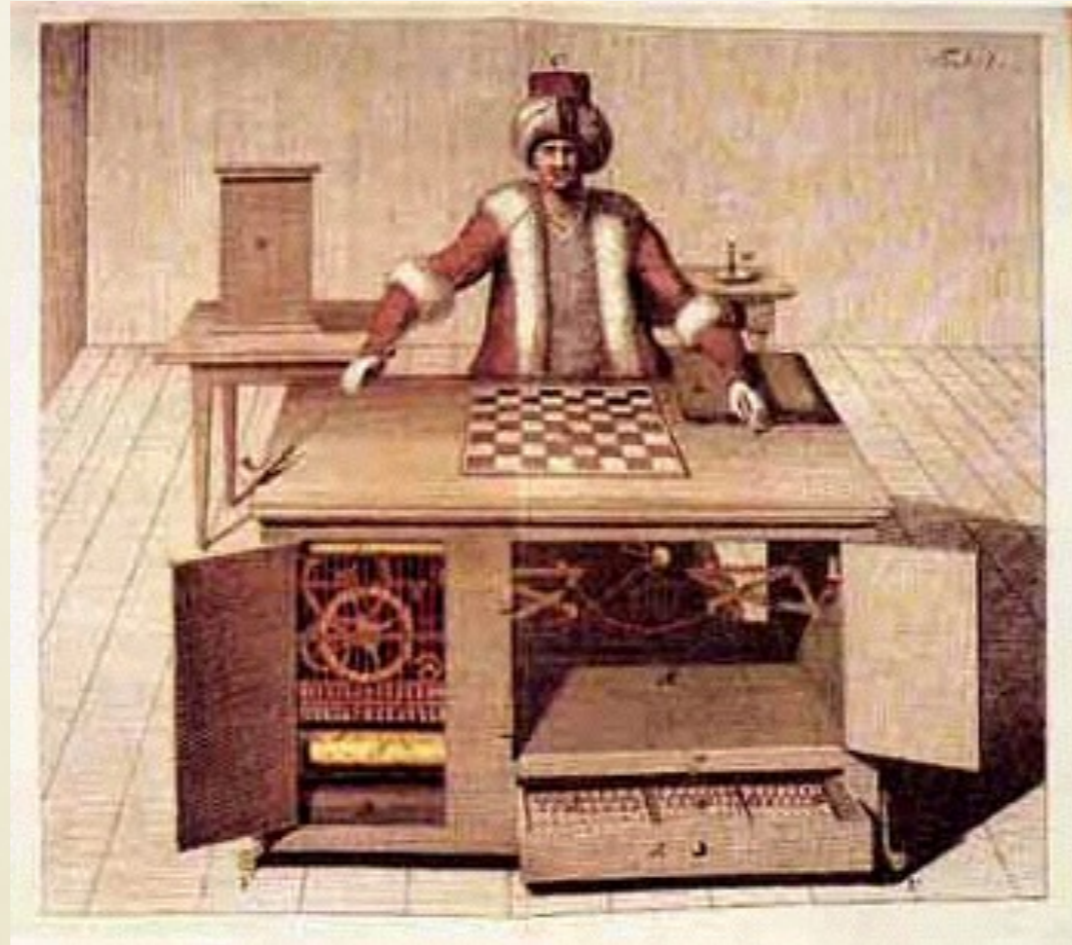# WIENER'S VISION

Wiener's insights

1. problem-solving machines

2. machines making machines

3. acceleration of progress in making machines

WIENER'S VISION

Wiener's insights

1. **problem-solving machines**

2. machines making machines

3. acceleration of progress in making machines

Solving problems with machines

Mechanical Turk chess-playing automaton, circa 1770

Fathers of AI

Dartmouth Summer Research Project on Artificial Intelligence (1956)

The Logic Theorist
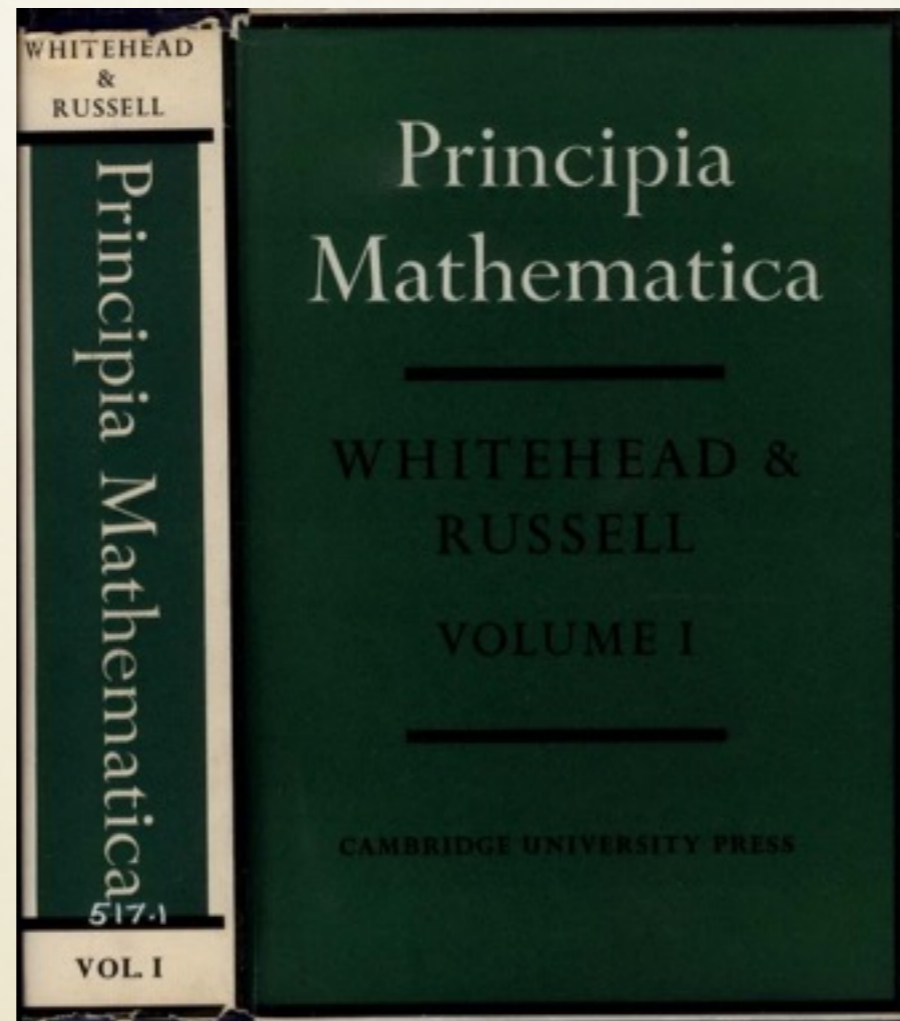
The Logic Theorist

General Problem Solver

**Computer program that solves any problem t
be expressed with well-formed formulas (Ho
Clauses)**

- Towers of Hanoi

- Euclidean Geometry

Solving problems with machines

Stalin vs Truman

Solving problems with machines

David Levy vs Chess 4.6, 1978

Solving problems with machines

Boris chess-player, 1979

Solving problems with machines

Boris chess-player, 1980s

Solving problems with machines

Fantasies

- diplomacy

- generic sequential decision-making

- *machine à gouverner*

Solving problems with machines

Problems

- general problems (1959)

- chess-playing

- automatic translation

- computer vision

WIENER'S VISION

Wiener's insights

1. problem-solving machines

2. **machines making machines**

3. acceleration of progress in making machines

MACHINES MAKING MACHINES
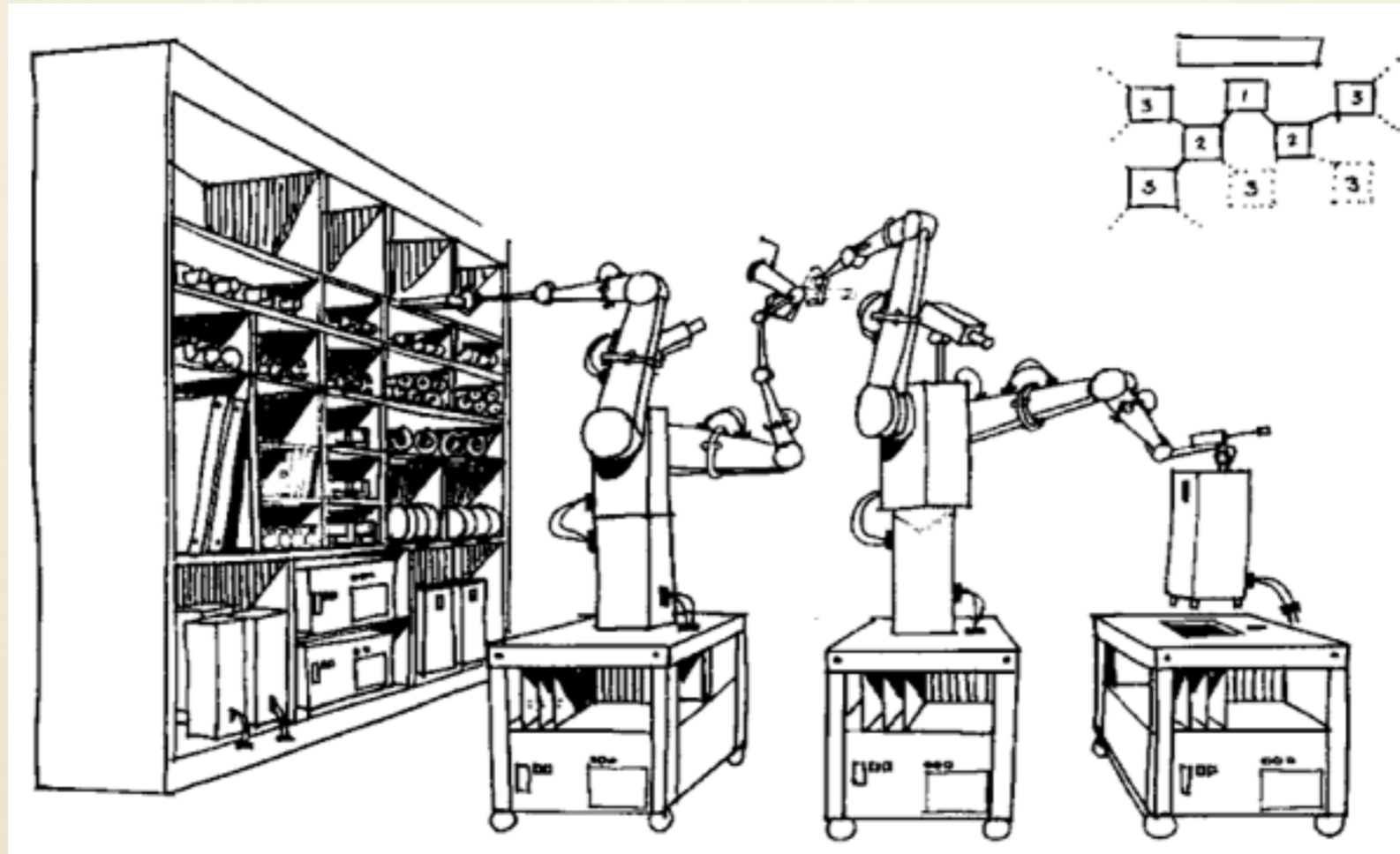
Self-reproducing machines

Self-Improving machines

Self-Improving machines

Jet-Jaguar defeating Gigan
"Godzilla vs Megalon" (Fukuda,1972)

Self-Improving machines

Jet-Jaguar and Godzilla greetings,
"Godzilla vs Megalon" (Fukuda,1972)

Machine Learning
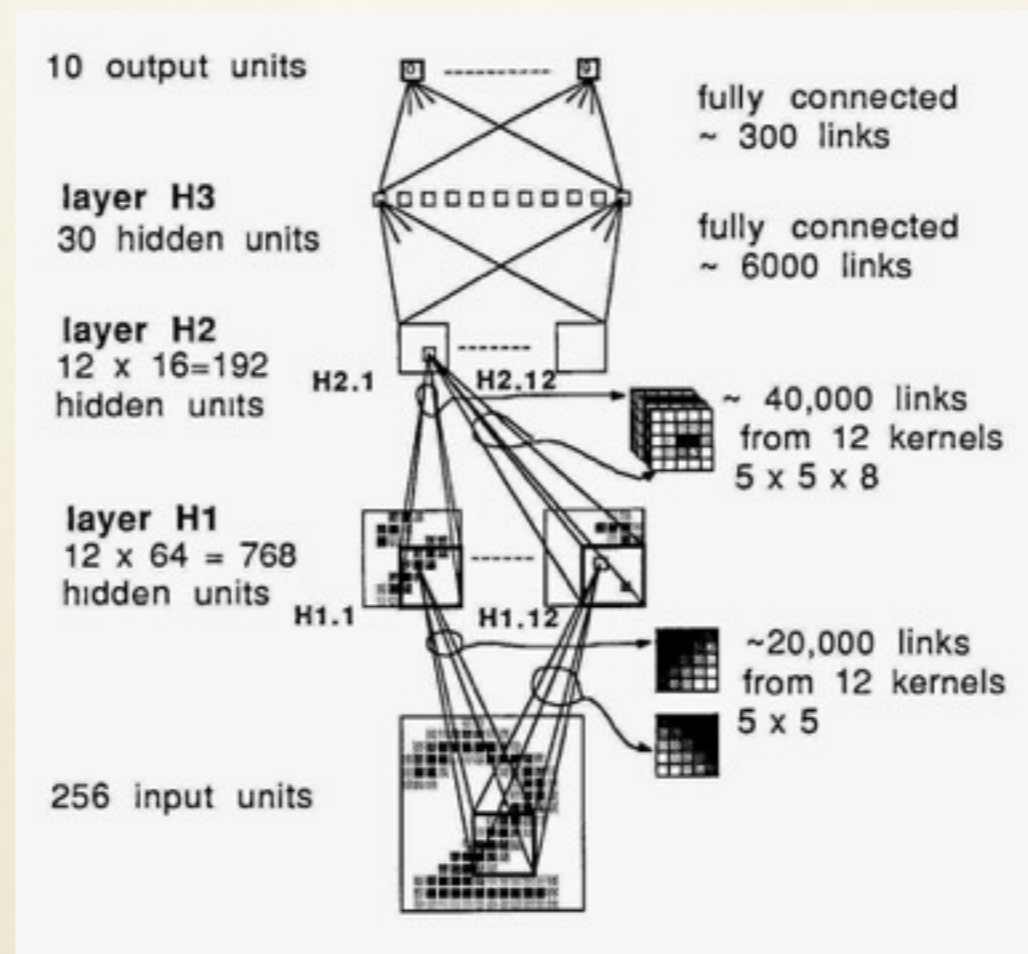
LeNet neural network for digit recognition (LeCun, 1989)

WIENER'S VISION

Wiener's insights

1. problem-solving machines

2. machines making machines

3. **acceleration of progress**

Data
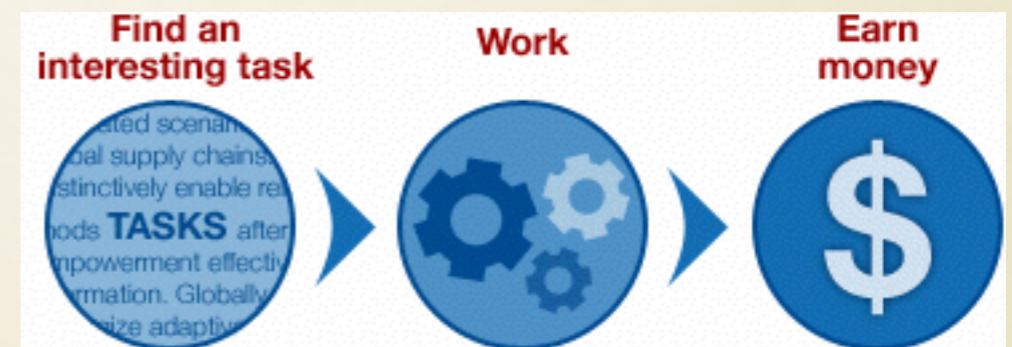
AMT

Collecting data through social computing and crowdsourcing

LARGE DATASETS

Hierarchy of classes:

mammal → placental → carnivore → canine → dog → working dog → husky

vehicle → craft → watercraft → sailing vessel → sailboat → trimaran

Deng, Dong, Socher, Li, Li and Fei-Fei, "Imagenet: a large-scale hierarchical image database", CVPR'09.

Fine-grained subsets: generally more practical problems

Skidder

Streamroller

→ Vehicle: 262 classes, 226K images

ImageNet Image Classification Dataset

Acceleration of Progress

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AI Scientists as Rock-Stars

AI and Yann LeCun in Rolling Stone magazine

Acceleration of Progress

Strategy

- gather the most talented people

- give unprecedented amount of resources

- focus on particular challenging problems

- **anticipate the outcomes of the technology**

Future of AI Symposium

THE
FUTURE
OF AI

NYU SYMPOSIUM
SCIENCE, TECHNOLOGY,
REASON & ETHICS

http://cds.nyu.edu/ai/

Challenges of AI progress

Potential challenges

- Scientific: safety, control

- Economic: jobs, employment

- Societal: personal assistants, education

- Ethical: values and norms for robots