

# Robots in Science Fiction

GWU Pre-College Summer  
Robotics

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# Three Laws of Robotics

- A robot may not injure a human being or, through inaction, allow a human being to come to harm.
- A robot must obey any orders given to it by human beings, except where such orders would conflict with the First Law.
- A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.
- Isaac Asimov

# Isaac Asimov

- Wrote about Robots helping humanity
- Big three of Science Fiction (1940s - 1970s)
  - Arthur C. Clarke (2001 A Space Odyssey)
  - Robert A. Heinlein (Friday)
- Before Asimov, robots were almost always monsters

# And now?

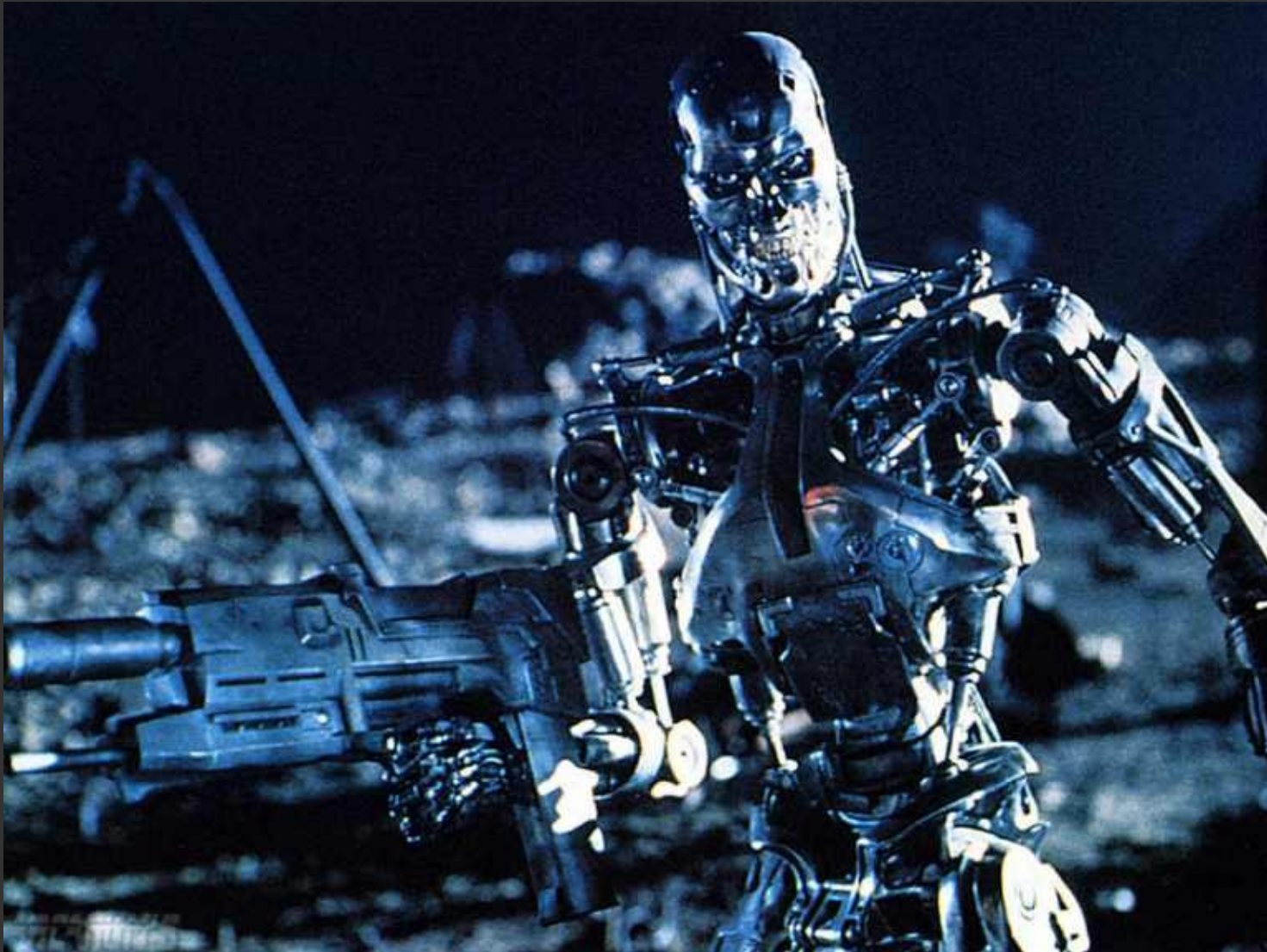
# Plausibility of the Laws

- Asimov never really explained how the laws were implemented
- Could they be?
  - What would you need?



Hemdale Presents A Pacific Western Production of a James Cameron Film  
Arnold Schwarzenegger "The Terminator" Michael Biehn, Linda Hamilton and Paul Winfield  
Make-up Effects By Stan Winston - Director of Photography Adam Greenberg  
Executive Producers John Daly and Derek Gibson - Written by James Cameron with Gale Anne Hurd  
-ORION- Produced by Gale Anne Hurd - Directed by James Cameron

# T-900



# Skynet

- The back-story for the movie is that the US military built an AI system called Skynet
- The military then passed control of the nuclear arsenal to Skynet
- Skynet becomes “self-aware”
- Skynet starts a nuclear war with all humans, and begins methodically wiping humans out
- ... and then time travel is invented



KEANU REEVES LAURENCE FISHBURNE



# The Matrix

- Takes place after a war with the machines (who won)
- Scorched sky... human batteries?

# Plausibility?

- What is this “self-aware” step
- Even if it happened, couldn't we prevent it?
- AI limitations!
- Mechanical limitations as well

# But Enough Movies

- Will robots / computers become smarter than us?

# Moore's Law

- Number of transistors on an inexpensive chip will double every two years.
- Gordon Moore was co-founder of Intel
- Describes the exponential growth that we have seen in processor speed

# Human Intelligence

- Our brains are amazing
- But, how often do they double in “power?”
- No matter how smart we are, an exponentially increasing intelligence will soon surpass us

# What if?

- We made a machine that was slightly more intelligent than a human?
- That machine could in turn design a slightly smarter machine.
- Which could in turn make an even smarter machine!
- There would be an explosion in intelligence... but not for humans.

# The Singularity

- When computers overtake us in intellect
- We will no longer be the highest life form
- Would we be pets?
- Would we be exterminated?
- Would we live in a utopia?
- People believe in this (Ray Kurzweil)