

Chapter 1. Dreams and Dreamers

The Quest for Artificial Intelligence, Nilsson, N. J., 2009.

Lecture Notes on Artificial Intelligence, Spring 2012

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Contents

Persuit of Human-like machines

Historical facts on persuit of Human-like machines

R.U.R (Rossum's Universal Robots)

Origin of the word 'Robot'

“Three Laws of Robotics“ by Isaac Asimov

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Overview of Chapter 1

- Pursuit of Human-like machines
 - Dreams of machines with human abilities – historical fun facts
- R.U.R. (Rossum's Universal Robots)
 - Origin of the word 'Robot'
- “Three Laws of Robotics” by Isaac Asimov
 - Science fiction *'I, Robot'*

Persuit of Human-like machines

■ Iliad of Homer

- Self-propelled chairs called “tripods”
- Golden “attendants” constructed by Hephaistos

■ Greek myth by Ovid

- Ivory statue of a beautiful maiden, Galates, which Venus brings to life

■ Aristotle (384-322 BCE)

- Automation: “impossible fantasy”

■ Ramon Llull (circa 1235-1316)

- Ars Magna(Great Art): Debating tool for winning Muslims to the Christian faith through logic and reason



Figure 1.1: Ramon Llull (up) and his *Ars Magna* (bottom)

Persuit of Human-like machines

- Leonardo Da Vindi
 - Humanoid robot in the form of a medieval Knight (1495)
- Talmud
 - “golems”: artificial creature
- Thomas Hobbes (1588-1679)
 - *Leviathan*: “artificial animal”
- Jacques de Vaucanson (1709-1782)
 - Robot Duck



Figure 1.2: Model of a robot knight based on drawings by Leonardo da Vinchi.



Figure 1.3: Frederic Vidoni's ANAS, inspired by Vaucanson's duck.

R.U.R. (Rossum's Universal Robots)

- A play published by Karel Capek (pronounced CHAH pek)
- Credited with coining the word “robot”, which in Czech means “forced labor” or “drudgery”



Figure 1.4: A scene from a New York production of *R.U.R.*

“Three Laws of Robotics” by Isaac Asimov

■ First Law

- A robot may not injure a human being, or through inaction, allow a human being to come to harm.

■ Second Law

- A robot must obey the orders given it by human beings except where such orders would conflict with the First Law.

■ Third Law

- A robot must protect its own existence as long as such protection does not conflict with the First or Second Law.

■ Zeroth Law

- A robot may not injure humanity, or, through inaction, allow humanity to come to harm.