

Are robots accepted in the same way in Japan and in Europe?



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My points:

- Religious and philosophical differences have influenced the development of anthropomorphic machines in Europe and Japan
- This different cultural background affects (even if unconsciously) the perception and acceptance of robotics in Europe and Japan
- Technology and globalization are filling these gaps: examples of robotics research projects in Europe and in Japan

Judeo-Christian religious roots in Western Countries

1. Creating human-like machines is a **daring act towards God**, as God created the Humankind in his shape (Homo Imago Dei= Man Image of God)
Then God said, "Let us make humankind in our image, according to our likeness; and let them have dominion over the fish in the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth, and over every creeping thing that creeps upon the earth". So God created humankind in his image, in the image of God he created him; as male and female he created him.
 Gen 1,26-27

2. Human-like machines are seen as evil/dangerous to humans. Being not God's creatures, they do not have a **soul** and have not been instilled the sense of **goodness**



Distinguishing features of Japanese religious awareness

- Low awareness
- Coexistence of
 - Shintoism (e.g. rites of wedding and children celebration days)
 - Buddhism (e.g. death-related ceremonies)
 - Confucianism (e.g. social relations)
- Coexistence is harmonic
- Coexistence is a key factor in many other aspects of Japanese culture and lifestyle, e.g. in food, clothing, housing, theatre, etc.

S. Aida, M. Hasegawa, T.Ueda, "Robots in Japan", *Journal of Robotic Systems*, 3(1), 105-131, 1986

An example of the philosophical basis of Japan culture

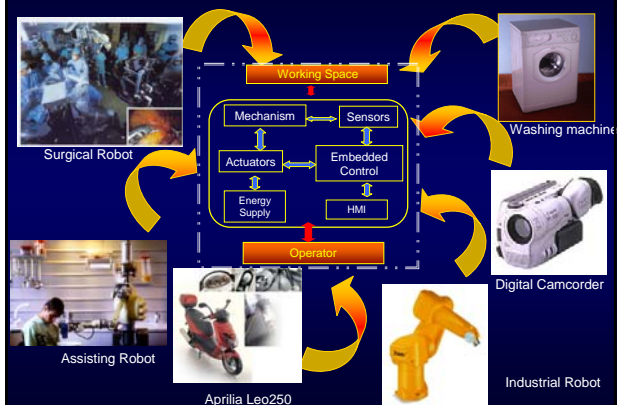
The stone bridge of Rengeji Temple in Kyoto

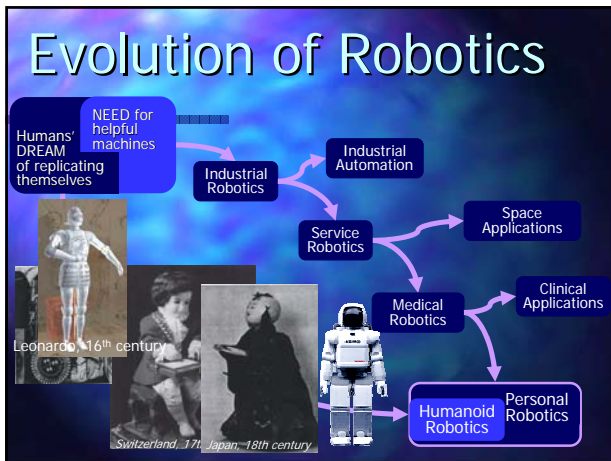


"At first glance, a stone in the center appears to provide support, but a closer look reveals a small **gap**. Allegedly, the bridge was designed this way to provide the illusion of flexibility or softness in the otherwise rigid structure – much as a wood bridge might flex when walked upon to touch and thus be supported.
 To the Japanese, this bridge exemplifies Japan's cultural attitude towards technology – **the need for adaptation, a soft interface, and a harmonious world**"

S. Aida, M. Hasegawa, T.Ueda, "Robots in Japan", *Journal of Robotic Systems*, 3(1), 105-131, 1986

Mechatronics: the Modern Paradigm of Machine Design





Popular myths in Europe:

- "goodness" is associated to being human
- robots are a threat for Humankind

Pinocchio becomes a human boy when he becomes "good"

Frankenstein: a monster with human body but no soul

A robot from the 1921 play **"R.U.R."**: Robots are used as workers but they rebel to humans

Superheroes: Humans with superpowers

Popular myths in Japan: "good" robots in the help of humankind

ASTRO BOY

Astro Boy / Atom Man: a "good" robot boy

A space robot protecting the Humankind against aliens

Doraemon

Doraemon: a boy's cat robot, friend and helper

Robotics in Japan today: wide acceptance and high expectations for a new market

Robotics for Personal Assistance

Fixed Workstations

Devar/Prova

Master-Raid

TOU

Wheelchair Mounted Manipulators and Intelligent Wheelchairs

TIDE-Orni

Sprint Immediate

Mobile Robots Systems

URIMAD Project

TIDE-MOVAID

CaroDBot

Modular Distributed Systems

INAIL-RT

The experience of the MOVAID project

At project starting (1994)

Can you imagine a robotic assistant?

Yes 10%

No 42%

Don't know 48%

(Italian) industrial designers designing a personal robot

Existing components

First drawing

Designers' mock-up

Final prototype

Evaluation of the MOVAID prototype

Before MOVAID

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No 42%

Don't know 48%

User Trials

64 users involved in user trials and demonstrations in 3 European countries

Evaluation of the MOVAID prototype

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User Trials

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After MOVAID

Would you have a robotic assistant?

Yes 43%

No 21%

Don't know 36%

Italy, France and Switzerland, 1997

Preliminary tests on the acceptability of Humanoid Robots as personal assistants by elderly people in Italy

43 users
age (average): 67

Would you like to have a humanoid robot as personal assistant?

37%: NO
63%: YES

Italy, 2004

Introducing Humanoids in the Society of Humans

The Japanese Way

Pet/Toy Robots

The European Way

Furniture & Appliances Design & Ergonomics

Evolution to highly performant complex, 'adult' robot systems

Integration of Smart Appliances, Thinking Things and Technical Aids

Personal Robots

Humanoids

Dario et al. 1999

