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Legal regulation of autonomous systems and social acceptance in Japan

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Societal and legal status issues

- What is the difference between the status of a person and the status of a machine in social interaction?
- What happens if we move robots from the structured environment of industrial production into social interaction?
- Which kind of security and liability issues concern new generation robots (NGRs)
- Do we observe differences in the way European and Japanese societies deal with these issues?

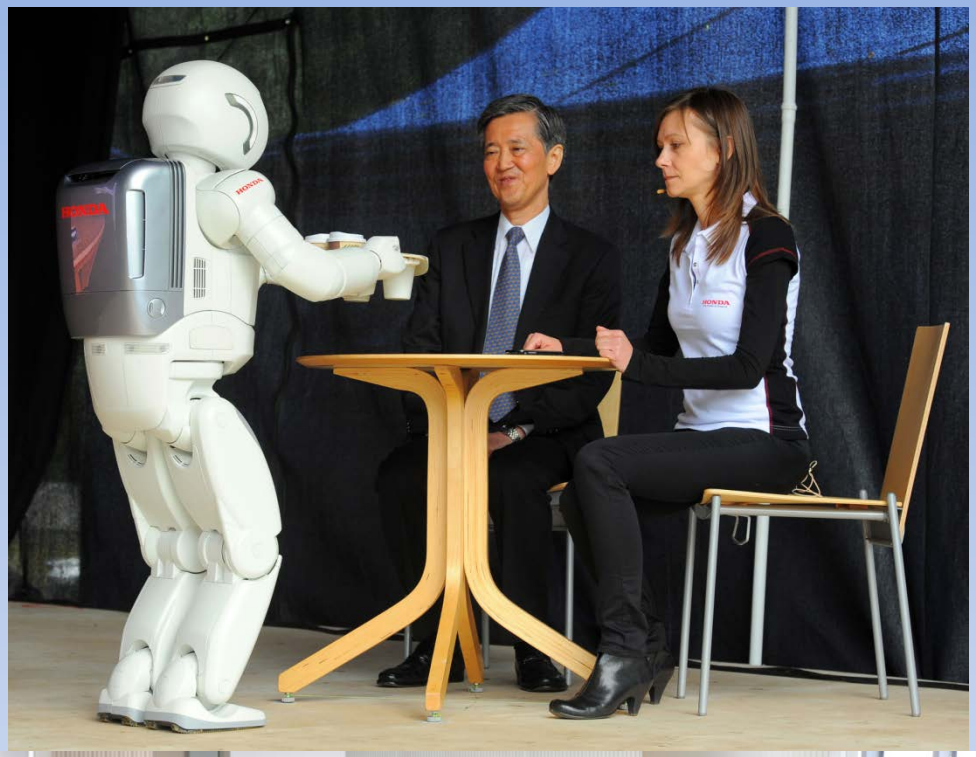
Robotics in Japan

With *Yaskawa Electric Corporation* and *Kawasaki Heavy Industries* Japan is **global market leader** in industrial robotics

Under the government of prime minister Junichiro Koizumi (2001-2006) an ambitious **robotics research agenda** is established

2003: authorization of '*robotto tokku*' (mobility robot special districts) for **open space experimentation**

2005: the peak of the development.
Honda's **Asimo** as the symbol of Japanese robotics potential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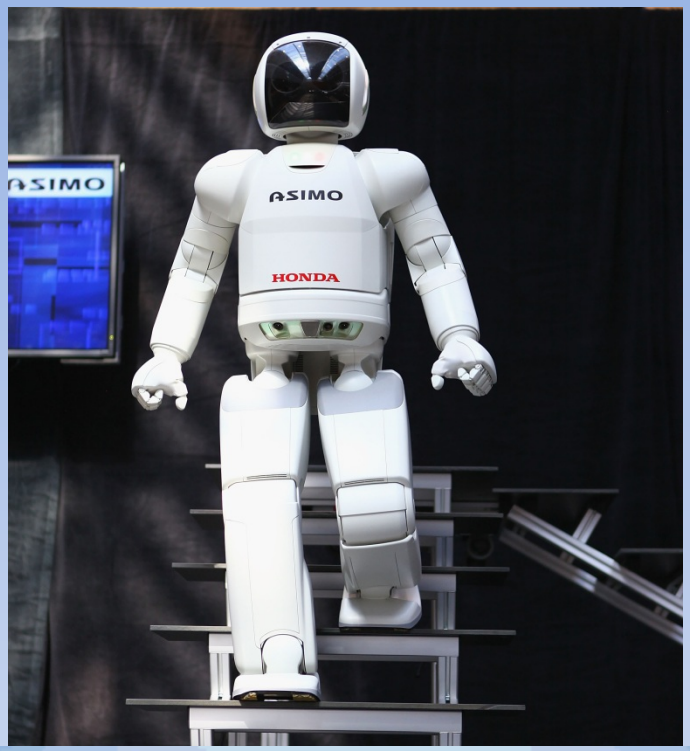
ASIMO
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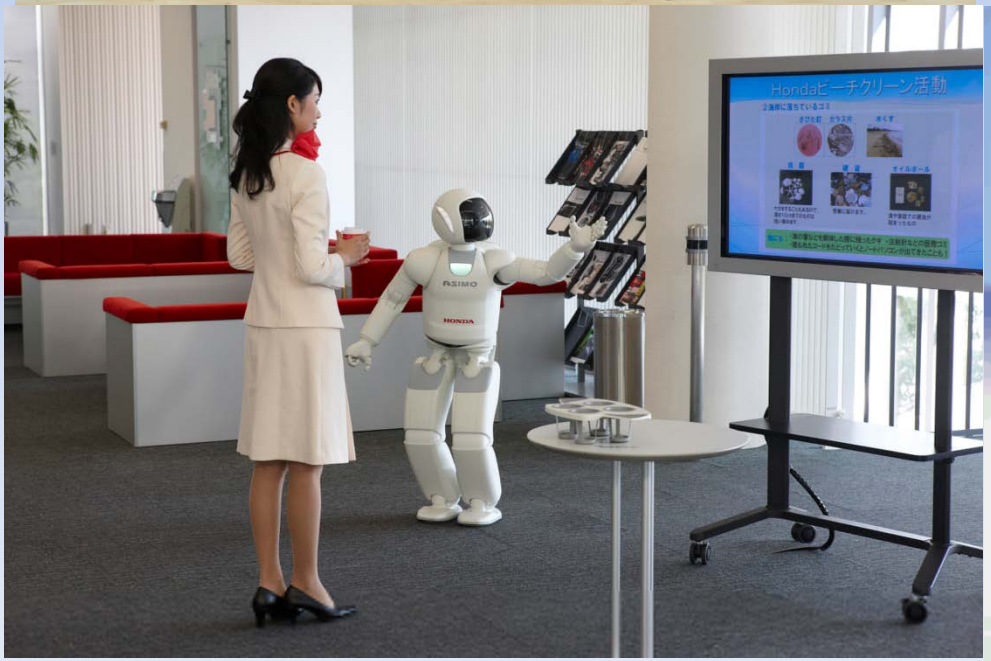

Hondaビーチクリーン活動
ASIMO
HONDA

Japanese Robotics in a crisis?

- The ‚Asimo-effect‘:
  inducted **high expectations** of general public
- The **missing market performance** of entertainment robotics
- Former fascination turned into disillusionment. The “dream-oriented” concept of robotics become increasingly subject to **public criticism**
- 2011: the **Fukushima disaster**
  Authorities preferred the well-experienced American demining robots to the Japanese rescue robots
- This accelerated the shift from the
  ‘utopian future visions’ to the **harsh reality**

Available legal Regulation

- Until now there is no regulation for the **deployment of non-industrial robots** in Japan
- No specific law on **privacy issues** related to robotics
- **Road traffic** act: mobile robots do not meet the legal definition of a 'vehicle'
- The 'robotto tokku' are still special **closed districts**
- Foreign Exchange and Foreign Trade Act (FEFTA): the so called '**three principles of arm exports**' cause impediments to Japan export industry

➢ Consequence: manufacturers move to other countries, e. g. Singapore, **Denmark**

Planed legal regulation

The **cultural factor**: observe what other countries do before and decide afterwards

Both politics and research have three main interests: **security, liability, privacy**

1. The programs of the Ministry of Economy, Trade and Industry (METI) put emphasis on the issues of **product security**
2. **Product liability** is seen as granted through the establishment of (internationally-agreed) safety standards and certification authorities
3. **Privacy** issues are discussed in connection with the network robotics technologies

Legal culture background

Liability: the approach to this issue grounds on the particularity of the **Japanese civil litigation system**, where the complainant bears the burden of proof in case of a product liability lawsuit

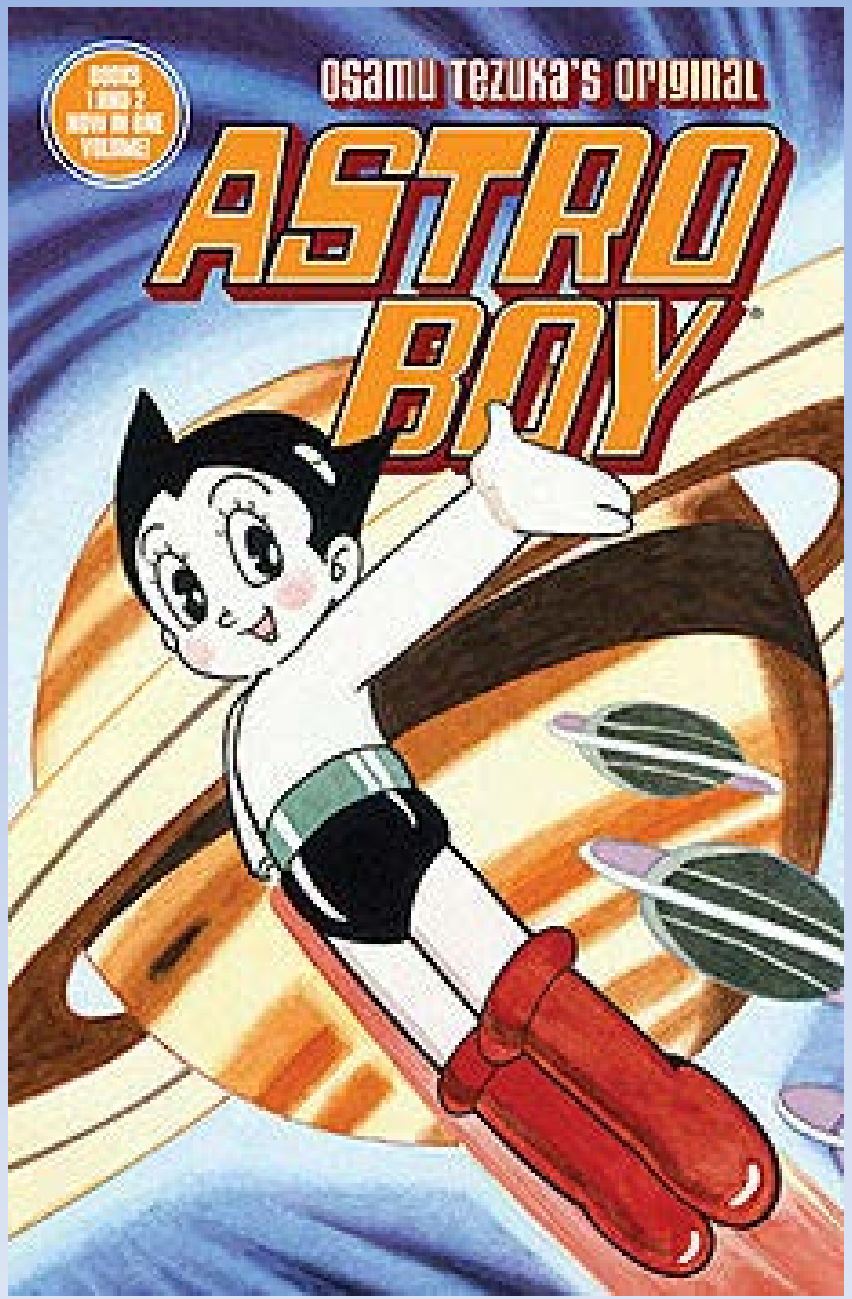
Agency: there is no agency debate in Japan.
It is taken for granted that in any case **a person** has to be made **accountable** for the actions of the technological artifact

Robo-Ethics: there is hardly a robo-ethics debate in Japan. The issue is considered irrelevant because there is **no status ambiguity** relating to robots

The social acceptance issue

Assumptions:

- Classical assumption: Japan as the '**Robot Kingdom**'
- Idea of higher acceptance of Robots based on Japanese **popular culture** e. g. the comic hero 'Astro Boy'


Osamu Tezuka's Original
ASTRO BOY

The social acceptance issue

- Classical assumptions: Japan as the ‘Robot Kingdom’
- Idea of higher acceptance of Robots based on popular culture like the comic hero ‘Astro Boy’

Studies:

- Available (less representative) studies about acceptance

Table 1. Sample size and mean age of participants.

Country	# of Univ.	Male	Female	Total	Mean Age
Japan	1	200	111	313	18.68
Korea	3	159	158	317	23.54
The United States	1	96	69	166	23.93

Source: Nomura, Tatsuya, et al. (2008): »What People Assume About Humanoid and Animal-Type Robots: Cross-Cultural Analysis Between Japan, Korea, And The United States«, *International Journal of Humanoid Robotics*, 5(1), S. 25-46.

The social acceptance issue

- Classical assumptions: Japan as the ‘Robot Kingdom’
- Idea of higher acceptance of Robots based on popular culture like the comic hero ‘Astro Boy’
- Available (less representative) studies about acceptance
- Representative studies about the total population are missing
- **Speculative assumptions** about the cultural background of robot acceptance in Japan point to the alleged ‘animistic attitude’ of Shintoism

The religious background of robot acceptance in Japan

The speculative assumption about the cultural background of acceptance in the animistic attitude of Shintoism **cannot be confirmed empirically**

Per contra it can be shown that the mixed religious background of Shintoism and Buddhism allows a **coding of interaction** where objects of everyday use are deemed to belong to the 'circle of personality'

This can facilitate the introduction of robots into social interaction as a **'material integration' of personality**

Thank you for your attention!

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