



## Cultural Impact of Robots: Differences between Italy and Japan

Italy-Japan 2005 Workshop

The Man and The Robot: Italian and Japanese Approaches

Waseda University, Ookubo Campus  
3-4-1 Ookubo, Shinjuku-ku, Tokyo, Japan

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## The Two Regions: Far Away Each Other in Distance and in Culture






## Recent Humanoids and Animaloids for Human Environment in Japan



- SONY: AIBO, SDR-3X (3 years of secret collaboration with Takanishi Lab.), SDR-4X, QRIO
- HONDA: P2, P3, ASIMO
- TOYOTA: Partner Robots Performing in Aichi EXPO '05
- MITI: HRP-1, HRP-2
- TMSUK/SANYO: T-4, T-5, Banryu-Series (SANYO)
- Kitano Project(ERATO): PINO, PINO2, Morph, etc.
- NEC: R100, PaPeRo
- Mitsubishi Heavy Industries: Wakamaru
- ATR/MHI: Robovie, Robovie-2, Robovie-3
- HITACHI, Etc.




## Golem, a Humanoid Robot in the Modern Age(?), is an Dangerous Creature in Europe





Golem was made of soils (High Tech. Metals and Silicon Chips) and was activated by incantations (Computer Programs)?

## Differences in Sound Processing in Brain: Are Natures friends to Japanese not to Europeans?

	Left Brain	Right Brain
	Logical/ Sequential/ Rational/ Analytical/ Objective/ Looks at parts	Random/ Intuitive/ Holistic/ Synthesizing/ Subjective/ Looks at wholes
Listening to Someone's Talk or Speech	Europeans Japanese	-----
Vowels/ Crying/ Laughing/ Insects/ Animals/ Waves/ Winds/ Rain/ Streams/ Japanese Musical Instruments/	*Japanese	* Europeans (Other Asians)

\* By Prof. Tadanobu Kadota ( 1980s)

## Historical Backgrounds (Simplified History of Japan)

One Continuous Dynasty by One Imperial Family	BC 660 - Shomu Era	Jyomon & Yayoi Era	
	AD -1095	Nobles Era	Kyoto/Nara
	1095 -1600	Samurai Era	Portugal
	1600 -1867	Edo Era	Cultural Explosion (Japan's Renaissance) Karakuri/ Sushi/ Manga/ Ukiyo-e/ Kabuki/ Haiku/ Bonsai/ Tea Cer./ Hanami/ Kendo/ Judo/ Karate
	1867 -1989	Meiji Era	J. vs China/Russia Wars
		Taisho Era	WW1
		Showa Era	WW2 / Manga & TV Anime Industrial Robots
	1989 -	Heisei Era	Social Robots

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Origin of Manga in the 12<sup>th</sup> C:  
Japanese' Nature of Humanizations

(Chyo-Jyu-Giga 12C to 13C)

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Japan's Renaissance:  
Manga & Ukiyo-e in Edo Era

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Manga & Ukiyo-e in Edo Era:  
Ordinary People Enjoyed Reading Mangas

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Manga & Ukiyo-e in Edo Era

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### Karakuri Puppets in the 17C/18C (Automatic Type/Indoor Karakuri)

Shogun Only Allowed Development of Entertainment Technology

Sanbansou Doll      座敷からくり      Tea Serving Doll

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### Karakuri Puppets in the 17C/18C (Tele-Operated Types/Outdoor Karakuri)

山車からくり

Inuyama, Aichi (17th Century-)

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### Karakuri Puppets in the 18th Century (Tele-Operated Types)

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### Japan's Karakuri Books: Educated Many Ordinary People in Edo Era

碓訓蒙鑑草:多賀谷環中仙(1730年)

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### Japan's Karakuri Books (Theoretical Text Book)

碓訓蒙鑑草:多賀谷環中仙(1730年)

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### Japan's Karakuri Books: (Know-How/Hobby Book)

機巧図彙:細川半蔵(1796年)

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### First Humanoid in the Early Modern Age: Gakutesoku

Gakutesoku (學天則) by Dr. Nishimura in the 1920s

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### Walt Disney's Animation Movies Became Popular in Japan After WW II

Walt Disney's animations strongly affected Osamu Tezuka who made the first TV animation titled "ASTRO BOY" in which a boy humanoid robot is the hero, in the world.

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## The Birth of Japanimation:

- Tetsuwan Atom / Astro Boy
  - Autonomous Humanoid
  - Emotion
  - Human Size
  - In the 21<sup>st</sup> Century
  - Has Family (Father, Mother, Brother, Sister)
  - Fights for Justice
- Tetsujin 28 / Iron Man the 28th
  - Tele-Controlled Humanoid
  - No Emotion
  - Giant Size
  - In the '50s to '60s



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## Astro Boy (1951/2~)



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## Iron Man the 28<sup>th</sup> (1956~)



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## Waseda's Achievements Inspired by the late Prof. Ichiro Kato



WABOT-1 (1973) (1926-1994) WABOT-2 (1984)

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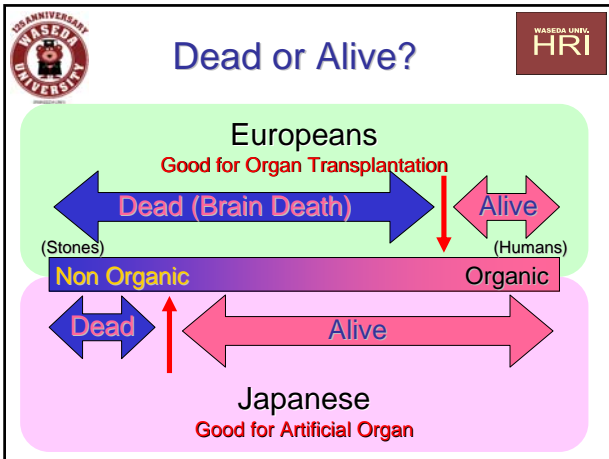
## High Social Acceptability of Robots in Japan

- Acceptability of Humanoids/Animaloids
  - Feel/Accept Life-likeness through the Robots which Mimics Humans and Animals
- Social Acceptability depends on Religious and Cultural Backgrounds
  - Western Countries (Monotheism) and Japan/Asian Countries (Animism / Polytheism)
  - Organ Transplantations VS Artificial Organs
- Need of Social Systemic Preparation for Robot Acceptable Society
  - Change of Laws/Regulations to Accept Robots (*Special Zone for Robot Test and Experiments in Fukuoka*)
  - Licensing/Insurance System
  - Black Chip (Black Box) for Better Life with Robots

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## Requiem Service for Broken Needles in Japan





**Special Zone for Robot Test and Development in Fukuoka:**  
Change of Traffic Law Enabling Robots to Move on Public Roads

.....next are for Easy Usage of Radio Waves for Robots and for Robotic Medicine, etc.

**Robot Experiments in the Special Economic Zone for Robot Test and Development in Fukuoka**

**The Law Extends Nation Wide Approved by Japanese Parliament on March 29.**

**Special Zone for Robot Test and Experiment in Fukuoka to Support Religious People**

2004.12.3  
Waseda Univ. Takanishi Lab.  
WL-16R11 Walking Experiment

**Going Up Outdoor Stairs and Entering a Tenmangu Shrine**

Rise: 140.2 ~ 140.7 mm  
Pedal tread: 250 mm  
Walking cycle: 1.92 ~ 5.76 s/step

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