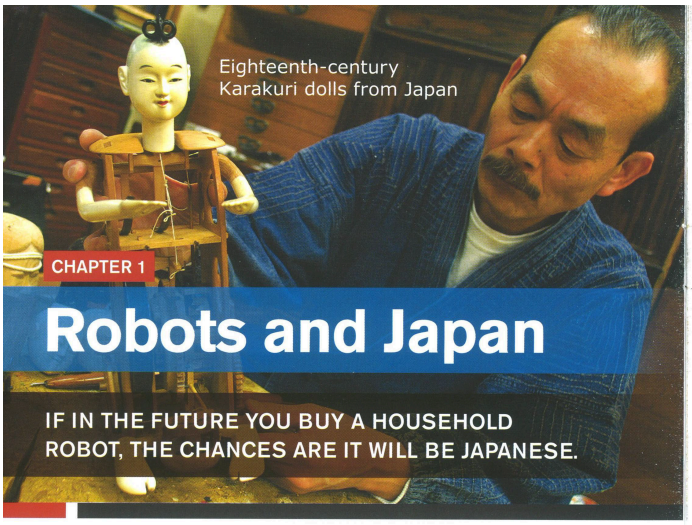


Japan is famous for its long tradition of automatons, or machines that look and act like humans. In the 18th and 19th centuries, realistic human models, known as *Karakuri ningyō*, or "dolls that trick," were seen in homes, theaters, and religious ceremonies. The most common example was a small model of a woman in a kimono that served cups of tea to guests.

p. 1

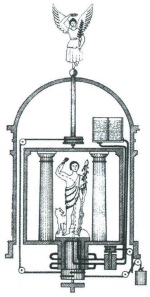
These **sophisticated** dolls became highly popular. Interestingly, the great engineer Tanaka Hisashige, founder[1] of the company that would eventually become TOSHIBA, actually started his career in the early 19th century as a maker of *Karakuri* dolls.

p. 2

[1] **founder:** someone who begins a business or company

But Japan did not invent automatons. In fact, they have been with us for thousands of years. The word automaton comes from the Greek "it moves itself." The 1st-century Greek inventor Hero was famous for his automated machines, which included moving dancers and fountains.

p. 3



Hero's automatic theater

There are also many stories from ancient China of wooden automatons that sang, danced, or served drinks. Later, in the 12th century, the Islamic scholar Al-Jazarī wrote a whole book on mechanisms and automatons, which included clocks, animals, a waitress, and even a programmable musical band complete with flute-player and drummer!

p. 4

The English word robot comes from the Czech language and means "to serve." It was first used in the 1920s in a play by the Czech writer Karel Capek, titled *R.U.R.* (Rossum's Universal Robots). The play showed a futuristic world where human-like machines did all the work. In Capek's play these machines could think and feel, and eventually they rebelled[2] against their human **rulers**.

p. 5

[2] **rebel:** not follow rules

EVALUATE

Do you think Karel Capek's play accurately shows what will happen in the future? Why or why not?

By the 1920s in Japan robots were starting to appear in department stores. At first, however, they were not much more than complicated Karakuri.

p. 6

The first Japanese humanoid robot was created in 1928 and was called *Gakutensoku*, or "Learning from the Laws of Nature." It was a Buddha-like model that used air to move its head and hands.

p. 7

Its creator, the biologist Makoto Nishimura, believed these machines were part of nature. He is quoted as saying, "If one considers humans as the children of nature, artificial humans created by the hand of man are thus nature's grandchildren." His robot became a huge success and toured Asia and Europe.

p. 8

Nishimura's opinions highlight the Japanese attitude to machines and technology and the fascination they have with robots. This may be linked to Japan's Shinto religion, whose followers regard all things as having spirits. Tools and all objects made with tools possess their own special qualities, almost as if they were individuals. Certainly the Japanese view of robots is very different from the views traditionally held in Western cultures, which are often suspicious of robots.

p. 9

Gakutensoku and Makoto Nishimura (left), 1928

The Japanese look upon robots as things of interest and beauty, designed to help humans and make our lives better. This view was most famously expressed in the 1951 Manga comic, *Tetsuwan Atomu*. Atomu, or Astro Boy, as he was later known in the West, was the first major robot character to show robots as friendly and helpful.

p. 10

Astroboy, a robot hero in comic books

The Japanese love of comic book robot characters, together with the country's fast increasing electronics industry, meant that by the 1980s Japan had become a world leader in robot research and production. Today, more than a third of the world's industrial robots work in factories in Japan.

p. 11

As well as the typical industrial robots, many robots are designed simply as toys or for entertainment. Animal robots, dancing robots, car-driving robots, even piano-playing robots are all made and sold in Japan. And as technology improves, the differences between humans and machines may become increasingly blurred.

p. 12

A) Read the text on page 1.

- Find the words for the following definitions on the text.
- Translate the words into German.

Definition	**word in text**	**German**
clever and complicated (p. 1-2)		
representing things as they are in real life (p. 1-2)		
happening often (p. 1-2)		
known by many people (p. 1-2)		
made of wood (p. 3-4)		
to make somebody/something part of something (p. 3-4)		
a person who gives orders (p. 5-6)		
extremely modern and unusual in appearance (p. 5-6)		
to start to be seen (p. 5-6)		
a person who has made something or invented a particular thing (p. 7-8)		
the fact that you have achieved something that you want and have been trying to get (p. 7-8)		
a personal attitude towards something (p. 9-10)		
to decide how something will look, work, etc. by drawing plans (p. 9-10)		
to become greater in amount, number or value (p. 11-12)		
how easy or basic something is (p. 11-12)		

B) Discussion tasks:

- Can you relate to people's fascination for automatons and robots?
- What characteristics must an automaton have to be impressive?
- What skills must an automaton creator possess to be successful?
- What do you think is more important for robots – to impress and entertain or to be useful?
- Where do you see the biggest need for robots to be used? Why?

Video: The 9 most advanced AI robots

C) Watch the video and fill in the table in key words.

name	what the robot is used for / what the robot can do
 **DIGIT**	Delvier packages, carrying them from the car to the door or helping in a desaster recovery
 **PEPPER**	he is a little helper at shopping, serving in a restaurant and some other tasks
 **ATLAS**	he is the most humanoid robot
 **SPOT**	robot dog for industrial uses and can be used in different usecases
 **HRP-5P**	he is an humanoid robot which can work autonomiously in inhuman enironments
 **SURENA IV**	
 **AQUANAUT**	he is used in deep sea tasks
 **STUNTRONIC ROBOT**	its used for stunts
 **HANDLE**	is used in a logistic centre
 ***Addition: AMECA***	this is the most advanced humanoid robot

Key task A:

Definition	word in text	German
clever and complicated (p. 1-2)	***sophisticated***	***anspruchsvoll, komplex (oft auch: gebildet)***
representing things as they are in real life (p. 1-2)	***realistic***	***realistisch***
happening often (p. 1-2)	***common***	***häufig***
known by many people (p. 1-2)	***famous***	***berühmt, bekannt***
made of wood (p. 3-4)	***wooden***	***hölzern, Holz-***
to make somebody/something part of something (p. 3-4)	***to include***	***einschliessen, beinhalten***
a person who gives orders (p. 5-6)	***ruler***	***Herrscher, Machthaber***
extremely modern and unusual in appearance (p. 5-6)	***futuristic***	***futuristisch***
to start to be seen (p. 5-6)	***to appear***	***erscheinen, auftauchen***
a person who has made something or invented a particular thing (p. 7-8)	***creator***	***Schöpfer, Erzeuger***
the fact that you have achieved something that you want and have been trying to get (p. 7-8)	***success***	***Erfolg***
a personal attitude towards something (p. 9-10)	***view, opinion***	***Sicht, Blick, Anschauung***
to decide how something will look, work, etc. by drawing plans (p. 9-10)	***to design***	***entwerfen, gestalten***
to become greater in amount, number or value (p. 11-12)	***to increase***	***(an)steigen, zunehmen***
how easy or basic something is (p. 11-12)	***simply***	***lediglich, einfach***