

Probing into a Society of Symbiosis with Robots

– Reading from Comic Series “PLUTO” –

By **Baba Nobuhiko**

Robots are machines that have been created and developed as an extension of human organs; or, as it were, an expansion of the functions of the human body. They must, in principle, be convenient tools for and controllable by human beings. However, robots, thus far depicted in novels, movies, cartoons and animations, starting with Karel Capek's “R.U.R.” (Rossum's Universal Robots, 1920), the origin of the word robot, are for the most part rebellious against humans.

PLUTO (see the caption for the magazine cover on this page), today the most topical robot cartoon in Japan (serialized in *Big Comic Original* magazine since the 18th issue of 2003), is no exception. It is a remake of The Biggest Robot on Earth, the most popular episode in legendary cartoonist Tezuka Osamu's *Astro Boy*, serialized in *Shonen (Boys)* magazine. Nevertheless, it is not a mere recreation of the original through, say, a change in the style of drawing by a different artist. With the help of cartoonist Urasawa Naoki, it has undergone a wholesale modification in regard to the plot, composition and character creation as well. It is not so much a remake as an entirely new version of *Astro Boy*.

Worthy of particular note is that the new cartoon goes so far as to have robots experience emotions, such as pain and fear of death, and eventually deal with the problems of their bodies and minds. Essentially, robots are imperfect replicas of humans. It is unreasonable to associate them with the concepts of growth, evolution, life and death. Accordingly, for robots that cannot share historical time with humans, experience and memory ought to be nothing more than scattered pieces of information arranged in a row. Memorized data, unless erased, are thought to be preserved forever, irrespective of sequence or relative priority. This is because robots' artificial intelligence is

designed by making data processing independent of hardware. Nonetheless, since human memory is based on bodily activities, thought cannot be separated from the body (hardware). Because the human body is an organic existence and, as such, does not last forever, human memory fades with the passage of time (namely, the weakening of the body).

Nevertheless, robots of the Urasawa version tell about their “memories” as experience involving their bodies. When they recall their “memories” accumulated as experience, they are capable of rethinking the memories in terms of their “meaning.” Moreover, they have bodies outwardly indistinguishable from humans and fuse into human society by imitating human behavior without causing any sense of strangeness. That is, Urasawa's cartoon is devoted out and out to portraying the self-contained activities of “living” robots.

Generally speaking, robots depicted in various fictions have two aspects – “man-made humans” as typified by Frankenstein and the mechanical extension of human functions as represented by tanks and “powered suits.” The former type amounts to an act of generating an artificial life and, as such, an *ultra vires* act of taking the place of God for creating a life. However, such attempts only result in giving birth to an imperfect human or nothing more than an imitation. Therefore, they are dreaded for the most part as monsters. On the other hand, robots of the latter category represent an extension of the human body and, as such, are similar to the concepts of “tools” and “apparatus.” Basically, therefore, insofar as they are operated by humans who are alive, there can be no question of whether machines are “alive or not.” For instance, when humans are incorporated into machines as “man-machine-interface” as is the case with automobiles, there is a media-type

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PLUTO is drawn by Urasawa Naoki on the basis of Tezuka Osamu's original, with Nagasaki Takashi acting as a producer, under the editorship of Tezuka Makoto and in cooperation with Tezuka Productions.

temptation of the “expansion and severance of sensation” as commended by futurist Filippo Tommaso Marinetti.

What is characteristic of robots appearing in PLUTO is that although they are machines that have been given an eternal life, their memory fades with the lapse of time. Like humans with a limited life, they may have a function of forgetting. But in order to recall the memory of the past, they tell about their memory in the form of a story. This indicates that they sense a linear flow of time by placing what happened in the past before the present time. The future is given as an extension of this linear flow. It is through a bird's-eye view of this linear flow as a whole that the robots can form a sense of historical time.

The robots of Urasawa's version experience anxiety about their blurry memory, fear of imminent death or the joy of

living and sharing sentiments with their families. What they thus experience is nothing less than “feelings” or “emotions” typical of humans. Urasawa does not induce readers’ empathy by personifying his robots. He depicts the sufferings of robots from the viewpoint of machines that “have become humans” by acquiring emotional reactions. In this process, the dualistic theory of simply distinguishing between machines and humans is abandoned, and readers share the time of story by superimposing their minds upon the minds of the machines.

Nevertheless, if we carefully look around us, we notice that the above-mentioned problem is not limited to the highly intelligent robots we see in cartoons. For instance, in present-day air combat, the vision of a pilot in the cockpit of a state-of-the-art fighter plane is covered with the built-in display of the helmet, and he presses a missile-firing button, guided by a virtual image transformed into electronic signs. This clearly indicates that our physical organs have already been assimilated into machines. In our environment marked by excessively grown technology, the sufferings of machines in Urasawa’s version directly overlap the sufferings of humans. It may not be very long before humans and machines, both of which have different physiological bodies, become able to understand each other’s emotions.

As regards Urasawa’s *PLUTO*, it is particularly surprising to note that its central character from whose viewpoint the story is told is neither *PLUTO* nor *Astro Boy*. The idea of making a remake of *Astro Boy’s Biggest Robot* on Earth with *Gesicht*, a robot detective of Germany, as a main character was brought to Tezuka Productions by Urasawa and producer Nagasaki Takashi, according to Matsutani Takayuki of Tezuka Productions.

What prompted Urasawa to use *Gesicht*, who plays only a minor role in the original, as a main character? *Gesicht* is a robot detective of the “Euro Union,” ordered to investigate an assault on robots. Because this detective emerges as a main character, the tourna-

ment-like progress of robots’ activities in the original has been completely changed into a mystery story devoted to solving a riddle and hunting for the culprit.

At the beginning of the story, *Gesicht* suffers from a nightmare. This scene is noteworthy as an important episode indicative of the said change in the content of the story. Head lamps of a car speeding along an expressway on a dark night cast a bright light on the centerline ahead and its vicinity like a spotlight. In the next frame, with the sound of a crash into something, blood is spattered and *Gesicht* awakens from the nightmare.

Needless to say, the ability to dream a dream is something like a borderline that distinguishes humans from machines. What is important, however, is the effect of this episode being presented at the beginning of the story. Tezuka’s version starts with a third-person viewpoint of telling a story that took place “somewhere at one time.” But Urasawa’s version presents a story in the present progressive form, depicting what is happening “here at the present time.” It is structured in such a way as to draw readers into the world of story by successively presenting a series of such events. Each time a murder or the destruction of robots takes place, pieces of evidence and fact are presented in fragments, making readers feel as if cooperating (or acting as detectives) in the hunt for the criminal. That is, the mosaic presentation of incomplete images and processes creates a situation that leaves readers with no alternative but to actively take part in the story. Readers are engulfed willy-nilly in a tension-packed world where anything could happen next.

Herein is found one reason why Urasawa makes *Gesicht* play a principal role. His version, despite being an SF cartoon of future robots, is characterized by vivid reality and actuality. This is not a matter of whether robots look like humans or not. Rather, it may be said, the reason is that his detective story-like presentation causes readers to engage in what may be called teamwork with the author.

Tezuka’s version depicts *Gesicht* as a

robot of a shining gold color, made from a special alloy “zeronium.” However, Urasawa’s version portrays him as a middle-aged man with a balding head, who is covered with artificial skin. Moreover, the author gives him a new social environment in the form of being cared about by a tender wife. As a result, Urasawa’s story also includes the relationship of affection between man and wife – something human, missing from the original.

It claims attention that Urasawa’s robots are also accorded sub-themes involving their families. They aspire to obtain a high degree of humanity by outwardly imitating a human life. In this attempt, however, we can have a glimpse at a painful tenacity for clinging to life since the family is a basic unit for linking fragmented individuals and guaranteeing the continuity of life.

There is no overlooking either that all the high-performance robots were “weapons” for military purposes, deployed in the “39th Central Asia conflict” as weapons of mass destruction. This *raison d’être* of the robots as weapons holds a key to the actuality of Urasawa’s version and reverberates like an extremely low-pitched sound throughout the story, generating a weird mood.

If we imagine self-propelled tanks and automatically guided unmanned rockets, it is easily understandable that robots represent one ideal form of weapons for war. In order to destroy targeted objects without fail in a battlefield marked by a constant change in the situation, it is essential to have the ability to judge the ever-changing situation and choose the most efficient option. It is indispensable to protect oneself and always maintain fighting power so as to fulfill one’s mission with certainty. Since the September 11, 2001 terrorist attacks, the United States has been pushing ahead with the development of an “army of self-contained intelligent robots.” This clearly indicates that mechanical soldiers that perform their duties without regard to any danger to their own lives represent the most ideal image of weapons in guerrilla warfare. The deployment of

cyborg fighters and robot troops, which surpass human capacity, on the frontline is no longer the dream of futurists nor the monopoly of SF movies. It is already becoming a vivid reality.

Wars as depicted in Urasawa's version indicate what wars of the near future will be like when robot weapons take the place of human soldiers. Robotics is fraught with the danger of being used for weapons whether one likes it or not. Urasawa's version illustrates this danger as a concrete image of war fought by robots.

In *PLUTO*, the super-high-powered robots' "memory" of madness and violence is repeated as "nightmare." It is interesting to note, however, that this painful experience has a special effect on their inside, inducing their "evolution" – namely, "humanization" – as robots.

Hercules, who participated in a war, confides to Gesicht that he learned the "intent to kill" when he saw mountains of robot corpses in the war. An awareness of "intent to kill" inherent within himself causes Hercules to harbor a feeling of "sympathy" toward others. The awakening of feelings makes it impossible for Hercules to destroy his opponents, and Hercules asks: "Don't you think we are evolving?"

The idea that such painful experience brings about the "evolution" of robots is a classical concept. The robots in "R.U.R." say to their creator, scientist Alquist: "We used to be machines, sir. But fear and pain have changed us into different beings." Nowadays, this argument does not sound very extraordinary. According to the latest robotics, it is indispensable to have machines feel "pain" in order to ensure the stability of their systems. For, unless robots feel "pain," they cannot understand when exposed to danger. As a result, they confront the enemy without fearing death, bringing about their own destruction.

A yardstick for distinguishing robots from humans is whether or not they have the purpose (joy) of living and the accompanying attachment to life – that is, the fear of death. At present, industrial robots operating at automobile plants

have no functions feeling pain and fear of death. Moreover, as pointed out by Yoshikawa Hiroyuki, head of the National Institute of Advanced Industrial Science and Technology, the bodies of robots must be made soft so that humans do not feel threatened by their hard bodies. If robots and humans are to work in the same environment, it is indispensable for the former to have the same emotional reactions as those of the latter. To share the same emotional reactions, it is also essential for robots to have the same bodies as those of humans.

Robots, used as tools, represent the technical separation of human functions from humans. Nevertheless, if look-alike bodies, made through such separation, not only have feelings and emotional reactions, but are also immortal, they should be interpreted as "new humans" rather than as the separation of human functions.

The problem of the past and recollection is dealt with in *PLUTO* as follows: One day, Gesicht visits a travel agency to arrange for a trip together with his wife during a vacation. A computer of the travel agency tells them the couple finished arrangements for a trip to Japan two years ago, although his wife had never stepped out of the Euro Union before. Gesicht and his wife draw the memory of two years ago up to the present just as humans do and recall that they made a study tour of Spain for a year. As evidence of this, they place snapshots of the couple side by side, taken during the trip, in front of them in an attempt to physically confirm the memory linked with their experience. Nevertheless, as they take a close look at the pictures, they gradually become suspicious about their "memory." Because the photos, a substitute of their memory, are unnecessarily specific, they begin to suspect that the photos represent a disguised past.

Thereupon, Gesicht asks the scientist for maintenance work on artificial intelligence. But nothing wrong is found in any place. In this scene, the scientist says to Gesicht in a laboratory: "The memory of humans is very convenient.

They have a function of forgetting. If humans accumulate bitter memories, they cannot live... so they forget. But robots cannot do this. Their memories remain clear indefinitely. Erasure is the only option open to them."

If robots are to have a concept of time, they have to create a life similar to that of humans. They need to experience a process of growth, such as bringing up a child and watching its growth, or accumulate historical times they spend with their families. To be sure, Gesicht had photo-substitute "memories" without relying on memory in the form of accumulated data. By looking at the photos, he sought to recall "here at the present time" what he experienced "somewhere at one time." This act is very human. Gesicht, who relies on recollection, should be considered to have been humanized.

Urasawa's version portrays a sort of society of symbiosis with robots transcending Isaac Asimov's famous Three Laws of Robotics that embody a sense of values that looks upon machines as convenient tools for humans. The classical problem of robots' human rights is also taken up, but Urasawa's story is neither a mere satire on class society nor a tragedy providing a simple pattern of conflict between humans and robots. His robots are "new humans" who show emotional reactions like humans and have abilities far surpassing humans, as well as a clear consciousness.

The very reason such a world is accepted as something real is that a certain change is already being felt in our social structure as a result of complicated intervention in society by the "man-machine-system." Inroads into society by machines with both human and mechanical functions as typified by intelligent robots and cyborgs with human-like bodies have caused us to choose a path of advance, hand in hand with such machines. Robots may mirror an image of none other than ourselves. **JS**

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