POPULARITY OF ROBOTS IN JAPAN
— Tradition in Modernization —

Kuniko Miyanaga

Japan is unique, probably not for any reason commonly believed by the Japanese, but for the reason that Japan has utilized its tradition actively in the process of modernization. This article will exemplify this view through an examination of the vast robotization in Japan. Why are about 70% of the robots in the world concentrated in Japan,[1] and why are they so well-accepted without causing any 'culture shock' as has been the case in Europe and the Middle East? [2]

The background of the vast robotization in Japan has been analyzed mainly from the viewpoint of work conditions. According to Yoshinori Sakata, who represents an opinion generally shared by Japanese sociologists, the work conditions in Japan enable redistribution of workers without causing a serious unemployment problem. In major Japanese companies, the core workers (full-time male employees) are employed as soon as they graduate from college and stay in the same company until the given retirement age, which is usually between 55 and 60. The training programs energetically invested in by the companies, therefore, are fully utilized without (the companies' fear of) losing the trained workers. They remain loyal to their companies. With the fast development of technology, which is the usual condition today, companies in Japan are willing to retrain and redistribute their already hired employees within the same company, rather than discharging those whose positions have been eliminated and employing new workers for new jobs. Therefore, surplus workers replaced by robots are, according to Sakata, easily recycled within the same company. Thus, robots fill the gap in the labor shortage without threatening the basic security of the already employed workers.[3]

Accepting the above explanation, there still remains another type of question: Why are robots so popularly accepted in Japan? They are not only adopted pragmatically in industry; they are also popular heroes among children. For example, the prime TV hours for children, between 4:30 and 7:30 on weekdays, are full of cartoons and dramas featuring robot figures and mechanical monsters. On one evening alone: "Machineman" on Channel 4, "Vifum, the Galaxy Stroller" on Channel 6, "Dovak, the Special Machine" on Channel 8, "Galvion, the Super-speed" and "Shidar, the Space Lieutenant" on Channel 10, and so on. Especially, "Doraemon," the favorite of every child, is a robot cat. Replicas of these figures fill up the toy shops. All five of the commercial stations in Tokyo show robot cartoons. The explanation of this phenomenon requires a cultural analysis.

The major reason why the cultural image of a robot is not negative in Japan will be found in the basic notion of the human being in the Japanese tradition. Moral conditioning in Japan is highly behavioral rather than psychological. As in flower arrangement, the tea ceremony, and karate (a martial art), learning begins with the assimilation of patterns, basically by copying the actions of the master. In this process, beginners act "as if" they already share the same level of mastery as the master, although they do not. Real mastery is indicated by spontaneity of action; one responds to the situation spontaneously and correctly, without further reflection on the rightness of the action. The ideal is that one acts out of one's personality, with no errors. This is the height of moral perfection which was traditionally expressed in various images of the deities and the Boddhisatva. Variety in the process of achievement and in the quality of the achieved states creates an infinite number of images which comprise a pantheonic image of the universe in the Japanese religious tradition. In the vertical spectra of the moral hierarchy, between the "as if" stage at the bottom and moral perfection at the top, human beings mostly occupy the bottom and lower ranges, and robots the very bottom, because they are produced and programmed to act only "as if." In this sense, the robots are the most primitive kind of "man."

The above notion of moral achievement also provides a moderate definition of evil. It is, after all, an error. There is no notion of an active and willful commitment to evil by choice. In support of this view, it has been repeatedly said that the traditional Japanese artistic literature lacks a striking evil character as an anti-figure to justice. For this reason, robots are not feared to develop into another species, cold and heartless against human beings. Also, because evil is a failure in matching intention and action, it could indicate an inability of the person, or even laziness. This explains the cultural basis for the work ethic in the Japanese tradition. In this sense, robots may be morally superior to human beings. They work straight and do not complain. Although their "intention" is low and inferior to human beings (because a robot's intention is simply programmed), their level of accomplishment is high. Hence, even a positive image can be attached to robots.

The process of the behavioral conditioning of the individual, from copying actions to spontaneity, has been analyzed in my Ph.D. dissertation in the example of SMBK (Sekai Mahikari Bunmei Kyōdan), a heterodox religious movement in contemporary Japan. [4] The most fundamental characteristic of the "as if" stage at the beginning of this process is that the actions taken are standardized and sequential. These conditions apply to both human beings and robots.

In the example of SMBK, the continual and repetitive performance of the healing ritual is organized into a gradational procedure of moral education. The actions in the ritual are completely standardized and sequential. Even visiting an SMBK local center to perform the healing ritual is standardized according to sequence from entering to leaving the center. The following, quoted from my dissertation, is only the beginning:

1. Entering the room
    1.1   preparatory acts
        1.1.1   signing an attendance notebook
        1.1.2   writing a wish or words of thanks for the fulfilment of previous wishes on a small (about 10 × 20 cm.) slip of paper

1.1.3 picking up an envelope (about 15 × 25 cm.) which has the individual's name on it, and putting some monetary donation and the slip into it

1.2 prayer on arrival

1.2.1 putting the envelope on a long table in front of the shrine

1.2.2 prayer to the Supreme Divinity

a) bowing twice

b) clapping the hands three times

c) making a wish from a bowing position

d) clapping four times

e) bowing once

f) bowing once very lightly

1.2.3 prayer to the creator of Japan

a) bowing twice

b) clapping three times

c) making a wish from a bowing position

d) bowing once very lightly

1.2.4 bowing once very lightly for *Su no Kami* (the Supreme Diety)

1.3 greeting other believers

1.3.1 bowing, saying the standardized words for greeting (to which the other attendants respond)[5]

The above process takes 3 to 5 minutes depending on how fast the person goes and also how much time he or she spends making wishes.

The actions of robots are also standardized and sequential. Here is a description given by Takeshi Iwasaki:

As a very simple example, let's think about a task to pick up a cylindrical object placed on a desk and set it in a lathe. The orders would be given (to the robot) in the following way:

1. Stretch an arm to the desk (the information about the location of the desk has been given in advance).

2. Spread fingers.

3. Lower the arm ____ centimeters.

4. Close the fingers and grasp the cylinder.

5. Lift it by ____ centimeters.

6. Twist the arm 90 degrees and keep the cylinder horizontal.

7. Move the arm and bring the cylinder close to the lathe.

8.

(continued)[6]

Iwasaki also says: "In making a robot accomplish a certain task, a long and complex procedure can be separated into a series of steps, each one of which becomes a simple process."[7] The same principle applies to ritual: the whole procedure of ritual is long and complex, but each step is a simple process which can easily be assimilated through imitation.

One of the major features which is common to robots and ritual is that a step or steps is/are replaceable without disturbing the whole. This condition is a major merit in the use of robots. In the human case in Japan, this condition has contributed to a high cultural absorbency by reducing resistance against mixing tradition and modernization, although I admit that there has also been much confrontation between these. The point is that the replaceability of parts creates a toleration for combining elements from different categories. This has created a general characteristic of Japanese culture which is commonly described as "eclectic" or "syncretic." A pejorative sense is attaced to these words because they imply the lack of a principle or logic which would serve to organize the elements into a consistent whole. However, in the case of ritual, consistency is maintained in the image of wholeness; the standard of judging consistency is whether the elements are harmonized. Furthermore, the standard of judging harmony is highly intuitive, situational,[8] and even emotional.[9]

The importance of harmony in the work situation has been discussed by Eshun Hamaguchi. Emphasizing harmony as a major value in the Japanese tradition, he says

Harmony in the work situation is a secondary matter for Westerners who believe in individualism. They think it is enough if each

member fulfils his own responsibilities. However, in Japanese
organizations, the work group constitutes the unit of responsibility
and when any problem arises the members of the division or the
department cover it. Without harmony there is no organiza-
tion.... However, Japanese administrators who believe absolutely
in the principals of modern bureaucracy that originated in the West
tend to be suspicious of "harmony among people." And the
younger generations who have been educated since the end of the
War and who want individualistic independence feel it painful to be
forced to harmonize with the group under the spirit of "harmony"
and will show resistance. The harmonious tendency which is part
of the inborn nature of the Japanese is not always treated positive-
ly today. However, the "multiple effect" of harmony is not
negligible. The output of work done by a well-harmonized group
rather than by individuals is far larger than the simple sum of the
individuals' work. The outstanding efficiency of Japanese firms is
the result of such harmony. And the modernization of Japan, in
fact, depends on this group orientation.[10]

In spite of Hamaguchi's worry about the loss of harmony as a central
moral value, harmony and the traditional image of the human being have
been well retained. What really has been lost is the traditional ideology
which directly related to the moral actions of individuals. Since the
assimilation of the modern democratic ideology of human rights after
World War II, the traditional moral terms such as *giri* and *ninjo* which
used to insure harmonious human relationships have been repressed. As
a result, the traditional moral system has lost its powerful explanatory
value which used to provide an organized moral perspective to justify the
actions taken by individuals. Hamaguchi's complaint derives from a
situation in which individuals are struggling to, somehow, combine the
new democratic ideology with the traditional patterns of human relation-
ships. Under these circumstances, the traditional Japanese image of the
human being continues to relate to and reflect the Japanese people in
action who are deeply involved in the continuing traditional patterns of

human relationships, much better than the concept of a modern legal personality.

In fact, the patterns of human relationships on which social organization depends have remained unchangeably traditional. These relationships are maintained basically through a particular mode of interpersonal communication by the exchange of behavioral cues and signs, as has been discussed by Erving Goffman in terms of "interaction ritual," [11] and Thomas Luckmann in terms of "reciprocity." [12] The process of interaction typically taken in Japan may be schematized into three steps: First, the person makes a rough estimation of his surroundings. For this, he must be able to distinguish formal and informal occasions and estimate the degree of formality and informality. Second, the person gives verbal and nonverbal cues to indicate how he has defined and estimated the occasion. The body movements, tone of voice, degree of eye contact or its avoidance, laughter, smiles, expressions of seriousness, and even the degree of strain in the body are to a certain extent carefully controlled to constitute the cues. As is well-known, the Japanese language is differentiated into degrees of politeness to indicate formality. For the purpose of interpersonal communication, what matters in language is the indication of formality more than the content or subject matter of the conversation. If a person is not expressive in giving cues, he will be considered "difficult," "closed," or "cold." Thus, the human relationships become highly behavioral and sequential, rather than principle oriented.

The third step, then, is for the person to try to catch the signs given by the other who has been playing the same game of defining the shared occasion and providing cues. If a person keeps missing the given cues, he or she will be judged as "blunt" or "dull" (because he or she is unreceptive), "impolite" (when it is judged that he or she deliberately lets himself or herself miss cues) or "*gaijin mitai*" (like a foreigner). High receptability is admired. The Japanese word generally used to indicate it is "*sasshi*," which literally means to guess. However, the word is used to mean that one guesses the real intention of others in spite of their surface disguise. For example, the Japanese rarely say "no" in a linguis-

tic statement, but very often indicate "no" in behavioral cues. When the verbal "yes" and the non-verbal "no" are given simultaneously, a good recipient will chose "no" over "yes." He or she is good at "*sasshi*" and will be liked. If instead the person choses to believe in the "yes" because the other person said it, the recipient will likely be able to make the other person do as he or she has said, but will also likely lose him or her in the long run.

This situation causes trouble for Westerners, and especially for liberal Americans, because they often refuse to label a Japanese hypocritical, preferring to decide that the Japanese say "yes" meaning "no." Their trouble is accentuated when the Japanese affirm that saying "yes" and doing "no" *is* hypocritical! Here comes a cultural combination of formal and informal. On a formal occasion, the verbal statement means a commitment. Deviant actions are prohibited and the actions become impersonal and "formal." As people generally (not only in Japan) speak of principles, the Japanese also state principles rather than explaining what they in fact do. From the standpoint of moral principles, of course saying "yes" meaning "no" is immoral, but in reality and in general (not only for the Japanese) people cannot always carry out their principles.

In our anthropological experience, this type of situational operation of principles is common. What is unique about Japan is that human relationships built on such personal contacts constitutes the functional aspect of social organization, and that an advanced modern technology has been produced by people who are totally involved in this kind of traditional human relationship.

In Japanese relationships, deviation from principles is institutionalized on their informal side. Mutual understanding (based on *sasshi*) of the inability to fully realize moral principles is socially admired. Although this type of compassion has been conceptualized negatively as *amae* by Takeo Doi — because it creates mutual dependence and blocks people from independence and maturity [13] — Japanese society has traditionally tolerated and incorporated mutual dependence as part of normal activities. Especially, close human relationships are typically built on and maintained by it. As the relationship develops, it becomes more informal

and less principle-oriented. The ideal is harmony based on a perfect and mutual *sasshi* relationship. It is a custom-made relationship unique to the pair involved. In other words, it is diadic and exclusive. Because the business relationship depends on this informal friendship network consisting of numerous pairs in close relationship, business in Japan is closed and its market is hard to penetrate. This type of closed network of numerous pair relationships (though in a vertical hierarchy here) constitutes a functional aspect of social organization in large business corporations. In small-scale companies such as family-owned factories, harmony is even more explicitly taken as an ideal in human relationships (in spite of Hamaguchi's worry) because they are also much more traditional ideologically, although they may not be able to successfully achieve life-time employment. This is because life-time employment, although it produces loyalty among the workers and a greater efficiency based on it, requires a large enough enterprise to make it possible to switch workers around and to have other safety valves (such as part-time workers and sub-contractors) in case of economic depression.

In the stage of a perfect and mutual *sasshi* relationship, the involved pair enjoy spontaneity. Both parties have mastered how the other party keeps and deviates from moral principles and even where he or she abandons principles. The conditions are understood as their personalities. A complete knowledge of personality in this sense gives a solid basis for mutual trust and loyalty. The essence of the personality is mastered, which is a kind of existential base that the person cannot further deviate from. Thus, the Japanese businessmen estimate the personalities of the people involved in a business often more highly than the value of the merchandise they offer. Although the dependence of business on a valuation of the businessman over the business itself is not unique to Japan, non-Japanese are often convinced that it is unique because the Japanese consider it to be unique to the Japanese. Certainly it is not possible to completely guess the exact meaning of vague signs of the other and to respond spontaneously by giving another set of behavioral cues. And also the Japanese cannot do this with everyone. When the relationship is remote, even among the Japanese, they remain

formal, reserved, and principle-oriented, while also avoiding interaction as much as possible. By doing this, they save themselves from confusion.

Obviously, robots cannot participate in the process of *sasshi*. But it is not difficult, within the Japanese cultural context, to accept robots as "formal men." They are impersonal and do not know how to deviate themselves. When the robot and computer become more personalized as technology develops, as has already partly been done, they will become even friendly. In the image of the Japanese, they are already friends. Hence the image of the robot in children's cartoons and dramas as a good friend of pure-minded children. Or, the robot gains power when a human being controls his heart. When a human being rides a robot in a seat located in the center of its body, the robot gains the spirit or magical power to do more than would be expected.

For the Japanese, the robot is considered to accept the Japanese mind better than foreigners, with whom the Japanese historically have not had much close contact at the daily life and individual level. This explains the cultural background in Japan for the preference of developing their own robots over importing an alien labor force.

Conclusion

In the process of modernization over the past hundred years, and especially in the forty years since the end of World War II, some aspects of Japanese society have changed greatly and other have remained traditional. Probably the most changed has been the moral ideology of Japan and the most unchanged has been the basic pattern of human relationships. Between these two poles, syntheses have been forming. The vast robotization in Japan is an excellent example of such a synthesis. Robots are not only successfully produced, but are also tremendously accepted and used by people in their daily lives. In spite of their highly modern and mechanical nature, the traditional Japanese image of the human being has been projected onto them and humanized them into friendly figures. This traditional image of man has been retained because it is a reflection of the traditional human relationships which have been continuing. Although the organized moral system contained in

the traditional ideology has been lost, the traditional image of morality and fragments of the traditional cosmology still survive, into which robots have fit well.

Acknowledgement

Notes

(1) Sakata, Y., "Robotto to Ningen" (Robot and Man), *Gendai no Esupuri*, No. 187, February, 1983, p. 14.
(2) Yamamoto, S., "Naze Nihonjin niwa Robotto Arerugi ga Nai no ka?" (Why don't the Japanese have an Allergy to Robots?), *Ibid.*, pp. 136-143.
(3) Sakata, Y., *op. cit.*, pp. 5-26.
(4) Miyanaga, K., *Social Reproduction and Transcendence: An Analysis of the Sekai Bunmei Kyodan, A Heterodox Religious Movement in Contemporary Japan.* Ph.D. Thesis, University of British Columbia. Shikosha, Tokyo, 1984.
(5) *Ibid.*, pp. 92-93.
(6) Iwasaki, T., "Robotto to wa Nani ka?" (What is a Robot?), *Gendai no Esupuri, op. cit.*, pp. 53-54.
(7) *Ibid.*, p. 53.
(8) Hamaguchi, E., *Kanjinshugi no Shakai, Nihon* (Japan, a Kanjinism Society), Toyo Keizai Shinposha, Tokyo, 1983.
(9) Nakane, C., *Japanese Society*, Penguin Books, 1970.
(10) Hamaguchi, E., *op. cit.*, pp. 125-126.
(11) Goffman, E., *Interaction Ritual*, Anchor Books, New York, 1967.
(12) Luckmann, T., "Language in Society," *International Social Science Journal* (forthcoming).
(13) Doi, T., *The Anatomy of Dependence*, Kodansha, Tokyo, 1973.

References

Doi, Takeo, *The Anatomy of Dependence*, Kodansha, Tokyo, 1973.
Goffman, Erving, *Interaction Ritual*, Anchor Books, New York, 1967.
Hamaguchi, Eshun, *Kanjinshugi no Shakai, Nihon* (Japan, a Kanjinism Society), Tokyo Keizai Shinposha, Tokyo, 1983.
Iwasaki, Takeshi, "Robotto to wa Nani ka?" (What is a Robot?), *Gendai*

122

no Esupuri, No. 187, February, 1983, pp. 42-56.

Luckmann, Thomas, "Language in Society," *International Social Science Journal* (forthcoming).

Miyanaga, Kuniko, *Social Reproduction and Transcendence: An Analysis of the Sekai Bunmei Kyodan, A Heterodox Religious Movement in Contemporary Japan.* Ph.D. Thesis, University of British Columbia. Shikosha, Tokyo, 1984.

Nakane, Chie, *Japanese Society*, Penguin Books, 1970.

Sakata, Yoshinori, "Robotto to Ningen" (Robot and Man), *Gendai no Esupuri*, No. 187, February, 1983, pp. 5-26.

Yamamoto, Shichihei, "Naze Nihonjin niwa Robotto Arerugi ga Nai no ka?" (Why don't the Japanese have an Allergy to Robots?), *Gendai no Esupuri*, No. 187, February, 1983, pp. 136-143.

日本の文化とロボット

〈要　約〉

宮　永　國　子

　日本におけるロボットの普及については，いままでにも論じられている。ロボットとは何かという定義の仕方にもよるが，世界のロボットの約70％までが日本に集中しているという。

　今までの社会学的な分析では，日本の終身雇用制がその根本的な理由となっていると考えられている。つまり，ロボットによって過剰となった労働力は配置転換によって同一の企業内で吸収することが可能なために，欧米で一番問題となっている，ロボットの「雇用」による人間の失業という問題が，日本では大きな社会問題とならずにすんでいるのである。

　本論文では，このような従来の社会学的分析に立脚した上で，文化人類学的な立場から，日本の文化の伝統の中では，ロボットの存在が伝統的に受け容れられやすいのではないか，という点を論じている。欧米では，ロボットとは非情な金属の機械に過ぎず，またイスラム圏では「ひとがた」を造ること自体に抵抗がある。

　これにたいし，本論文では，日本ではロボットというのは人間になりかかっているが完全にはなりきれない，いわば，原初的で未完成な人間として，伝統的な宇宙観の中に抵抗なくすっぽりとはまり込んでしまっている種族という視点を提出した。欧米のように人間に対抗する新種族ではなく，進化すれば人間に同化する存在として，ロボットは日本ではイメージされているのである。