The Conception of Nature in Japanese Culture

Masao Watanabe

Some 10 years ago, when I had the privilege of teaching at the University of Missouri, I read an old Japanese story to my class one day and asked each of the students to write a short comment on it. It was a story related by Lafcadio Hearn (*1*), a European-American journalist and writer who went to Japan in 1890 and decided to stay there permanently because he was much fascinated by Japanese life and culture (*2*). From the comments of my American students about this story, I learned that one of the points which most impressed them was that, in order to welcome his adopted brother home from a long journey, a Japanese warrior filled the vases in his guest room with chrysanthemum flowers. They observed that this was quite different from American custom and perhaps was unique to Japan.

As the students had noticed, this small incident pointed to something characteristic of Japan: a love of nature which has existed from very early days. This love of nature has resulted in a refined appreciation of the beauty of nature in, for example, landscapes, miniature gardens (*hakoniwa*), miniature trees (*bonsai*), flower arrangement (*ikebana*), the tea ceremony (*chanoyu*), short poems called *haiku*, and even the art of cookery.

Nature for the Japanese has not traditionally been an object of man's investigation or of exploitation for human benefit, as it has been for Westerners. For the Japanese and for other Oriental peoples, man was considered a part of nature, and the art of living in harmony with nature was their wisdom of life.

I recall a story an American missionary to China once told me. Three men went to see Niagara Falls. One was an Indian from India, one a Chinese, and one an American. On seeing the falls, the Indian, as a matter of course, thought of his god, manifested in this grandeur of nature. The Chinese simply wished to have a little hut beside the falls, where he might invite a friend or two, serve tea, and enjoy conversation. The American, however, on viewing the falls, immediately asked himself what could be done to make the most of such an enormous amount of energy. Of course, the roar of Niagara Falls might have been too much for the Chinese, but the story illustrates the different attitudes of different peoples.

To a Chinese or a Japanese, drinking tea and eating food are not merely matters of nourishment or of meaningful companionship, they are also considered occasions for artistic appreciation of nature. Therefore, the landscape you look at while eating, the room in which you serve your meal, as well as the tableware you use and the food itself, must suit your attitude. This appreciative attitude toward nature has been a central theme of people's lives in Japan.

During my first visit to America 20 years ago, one of my friends, an American student, saw the powdered tea leaves which I had brought from home, and he thought it was instant green tea. In fact, it was for use in the tea ceremony, during which one sits formally on the floor for at least half an hour while the tea is being prepared. The Japanese people now have instant tea, but without Western influence, they would never have thought of making it in an instant form, as the tea ceremony is an inheritance from the medieval Japanese people, embodying their intuitive recognition of the beauty of nature and life.

A similar theme is expressed in the art of flower arrangement, which was developed primarily during the 15th century (Fig. 1). The underlying principles of flower arrangement are indicated by three main stems or branches that symbolize Heaven, Man, and Earth. The "primary stem" is symbolic of Heaven and forms the central line of the whole arrangement. Therefore, the arranger selects for it the strongest stem available. Next to the primary stem is the "secondary stem," which is symbolic of Man. It is placed in such a manner as to give the effect of growing sideways and forward from the center line. It should be approximately three-quarters of the height of the "primary stem" and inclined toward it. The "tertiary stem," symbolic of Earth, is the shortest and is placed to the front or slightly to the opposite side of the roots of the first two. All are fastened securely in a holder to give the effect of growing from one stem. Additional flowers may be added to fill out each arrangement, but it is the correct position of the three principal stems which is of paramount importance.

Although the idea of a structured universe was alien to the Japanese mind in the 15th century, the composition of the flower arrangement may be compared with Western cosmology to illustrate differing views of man and nature.

Traditional Western cosmology originated in the Middle Ages. It was a creation of Christian theology, given form by the adoption and modification of the Aristotelian-Ptolemaic theory of world structure. Not only did it represent the physical setting of the visible world, but it was also symbolic of spiritual truth.

As exemplified by Dante in the *Divine Comedy*, man was seen as the crucial intermediary in a world comprising a hierarchical chain of substance that stretched from the inert clay of the center to the pure Spirit of the Empyrean (Fig. 2). As described in Genesis, man was made of earth, and medieval scholars held that he therefore gravitated naturally toward the center of the world, Hell. However, it was also written in Genesis that he was the only terrestrial creature inspired by the Spirit of God. Therefore, he constantly aspired to ascend to the Kingdom of God. The entire setting of medieval cosmology thus mirrored man's hope and fate. Although its physical structure was later altered by the so-called Copernican revolution, the

The author is professor of history of science at the University of Tokyo, Komba, Meguro-ku, Tokyo, Japan. This article is adapted from a paper presented on 29 December 1972 at the meeting of the American Association for the Advancement of Science in Washington, D.C.

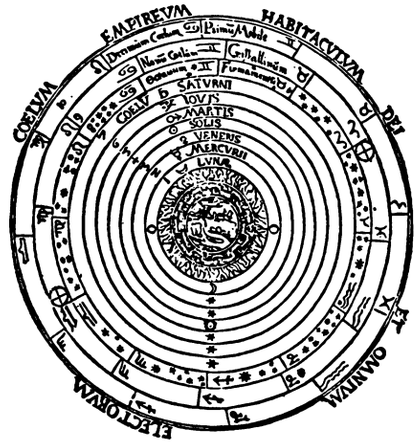

Fig. 1 (left). Japanese flower arrangement, an illustration from an old textbook by Ibuki Sanjin Seiko, *Sunabachi Ikebana Den* (1775). Fig. 2 (right). Medieval European cosmology. [From Apianus, *Cosmographia* (Antwerp, 1539)]

basic idea of man which it portrayed remained little changed and continued to play an important role in the history of Western thought.

Because the Japanese people did not adopt the sort of cosmology that can be expressed in terms of a geometrical structure, the form of the flower arrangement could be considered most comparable to the structure of Western cosmology. A comparison of the two reveals that they represent very different ideas of man and of the world. It is true that, in either case, man's place was intermediate between heaven and earth. In the Western system, however, heaven and earth were, by definition, diagonally opposite, forming a dichotomous world in which man's place was absolutely crucial. On the other hand, there was no such dichotomy in the traditional Japanese ideas. There, nature was a unity, and man lived in it as a part of this unity.

In the Western idea, man was not an ordinary part of nature. He was a specially privileged creature, and nature was subordinate to him and even to his sin. He was the master of the natural world, which was at his disposal to analyze, examine, and make use of. Moreover, since the natural world and the whole universe were manifestations of God's creation, the study of it was not only a useful but also a highly esteemed endeavor. Cotton Mather (*3*) stated that knowledge of "The Book of the Creatures" was indispensable for an understanding of "The Book of the Scriptures"—an idea shared by many scientists of the 17th and 18th centuries. Both the study of science and the utilization of science for the comfort of mankind were important items among the Calvinistic "good works." Indeed, such an outlook provided some of the important religious motivation which fostered the development of modern science in the Western world.

Nature for the Japanese was different. It was an object not of his mastery, but of his appreciation, and was even his best companion (Fig. 3). An illustration is a famous *haiku*, a verse of 17 syllables, composed by a young female Japanese poet of the 18th century, Kaga no Chiyo (*4*). Early one summer morning, when she went out as usual to get water from her well, she found to her surprise that the pole of her well-bucket was entwined by the tendrils of a morning glory with fresh, dewy flowers. Instead of removing the plant from her pole, she went to a neighbor for water. Later, with brush in hand, she described the scene and her sentiments in the form of a *haiku*.

> The well-pole taken by a morning glory
> I went to a neighbor for water.

Another illustration from Japanese literature may be drawn from "An account of my hut," an essay written by Kamo no Chomei (*5*) in the early 13th century. The author presented a pessimistic view of the world by enumerating recent natural disasters, such as fires, whirlwinds, famines, and earthquakes, and he deplored the hardship and impermanence of life. His only escape was to "abandon the world" and to retire to a lonely but quiet life in a small hut in a countryside. He wrote that "my only desire for this life is to see the beauties of the seasons" and that "It is better to have as friends musical strings and bamboo and flowers and the moon" (a similar hermit tradition has also existed in the West).

In the Japanese view, there existed varieties of beings and seasons, but there was no absolute division of heaven and earth, nor an absolute

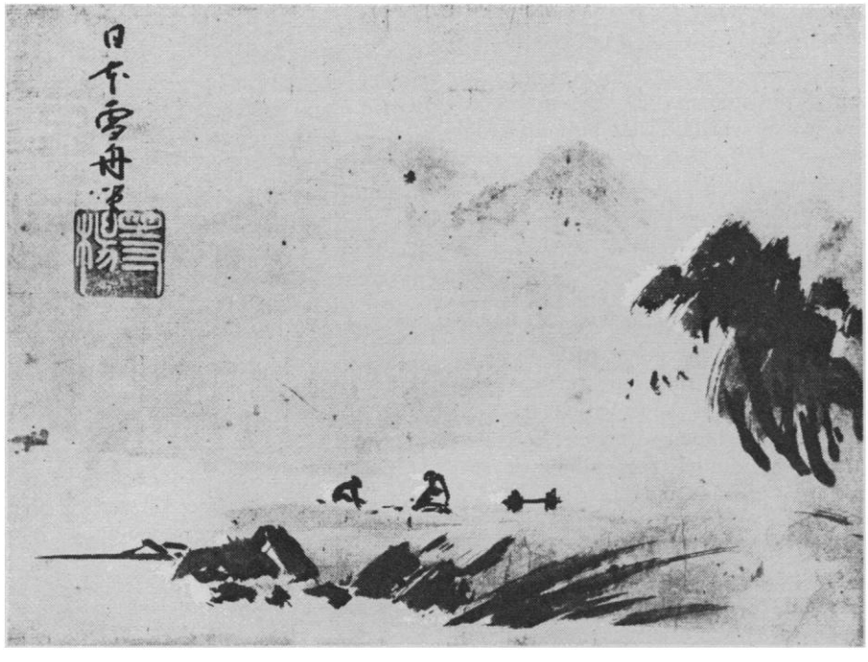

Fig. 3. "Fisherman and Woodcutter" by Sesshu Toyo (1420–1506).

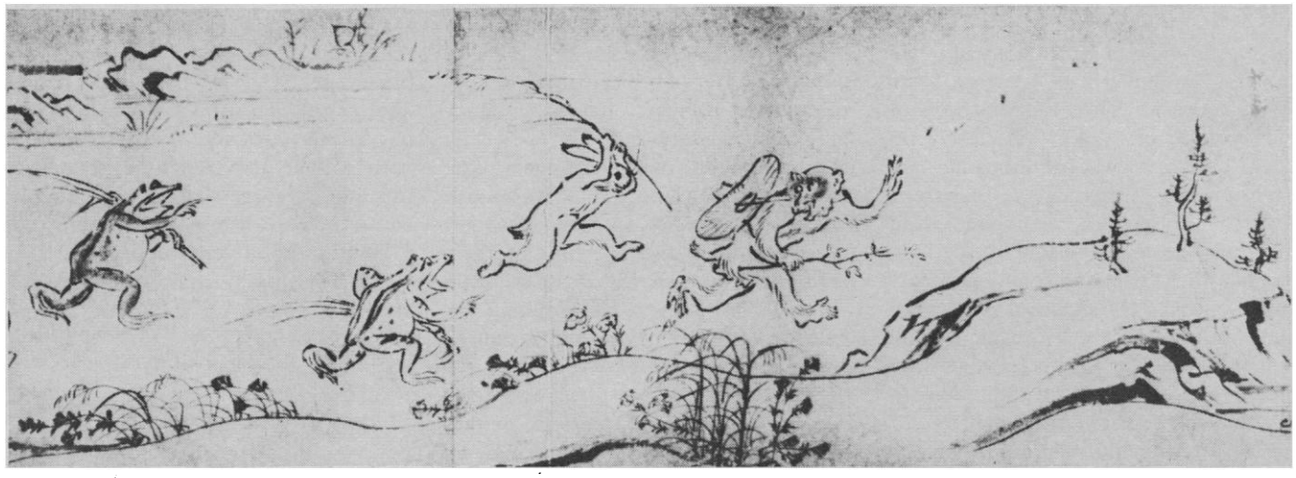

Fig. 4. Section from *Choju Jinbutsu Giga* (scrolls of frolicking animals and people), attributed to Toba Sojo (Heian period, 12th century). The scrolls are owned by the Kozanji Temple, Kyoto, Japan.

"onceness" of time in the Western sense. Everything came and went in cycles. Even though the violence of nature, together with the pessimistic teaching of the Buddhism of his time, made a man like Chomei so pessimistic, he still found his rest in nature. As pointed out by a contemporary Japanese critic (*6*), similar attitudes of the Japanese people were revealed in their reactions to the great earthquake and consequent fire of 1923, which almost completely destroyed Tokyo and Yokohama. Although the Japanese people have been frequently visited by earthquakes, they did not initiate the scientific study of earthquakes. This can be explained largely by their attitude of coexisting with nature. It was only after Japan was opened to the Western world in the late 19th century, and Western visitors were exposed to earthquakes there, that seismology was initiated. Because of this beginning and because earthquakes occur frequently there, Japan is now among the leading countries in the study of seismology.

If the view of nature in Japan has traditionally been as I have outlined, is there any possibility that traditional elements can make a positive and unique contribution to the science of today and of the future, rather than simply being presented as a relic in arts and literature? This is an important but difficult question. When it was put to a group of Japanese people staying in America, one of them gave a figurative answer. Making a comparison with the construction of a modern Western building, he suggested that for structure and materials, we Japanese have to rely mainly upon Western people, but in the interior decoration, we may contribute elements of our own. This was about as far as I too could see, until I met a more promising sign in an article by Frisch (*7*).

Frisch, who studied anthropology at the University of Chicago and now teaches at Sophia University in Tokyo, evaluated Japan's contribution to modern anthropology in the article. According to him, a group of Japanese scholars have gained worldwide recognition by their unique contributions to studies of the social behavior of animals. From their many years of observation of the life of wild monkeys around feeding stations, these Japanese fieldworkers were able to discover much concerning the social structure of the groups of monkeys, the variability of behavior between different troops, and the "inventive behavior" of the monkeys.

The results of their investigation have been regarded as important in that they show that nonhuman primates can adapt to changed conditions by spontaneously modifying their habits. In other words, they are able not only to modify or enlarge already existing behavioral patterns but also to create new ones. These discoveries, anthropologists consider, make a positive contribution to one of the key issues of modern anthropology, namely the understanding of the origins of human culture and society.

Even more interesting, however, is the fact that the approach used by the Japanese fieldworkers contains something original which is not often found in similar studies by Westerners. It may well reflect the traditional Japanese way of looking at nature, that is to say, an affinity and sympathy with all living things. To most observers, all monkeys look very much alike, and it is difficult to identify individuals in a group. Therefore, most Western fieldworkers catch the animals and mark them with numbers. The Japanese, however, became acquainted with the faces, general appearance, and personalities of the monkeys, and succeeded in identifying individuals not by numbers but by giving them names of popular and traditional figures from Japanese history (Fig. 4). "This seems hard to imagine for Western scientists," Frisch wrote.

Thus, the Japanese observers were able to produce abundant and valuable data concerning the life and behavior of the animals. Such an approach might not so naturally have developed in the Western cultural zone, where the distinction between man and other living things has been observed more strictly. In other words, to quote Frisch, "while the Western scientist tends to regard the animals as objects situated in front of him, somewhat as bacteria under the microscope, his Japanese colleague tends to think in terms of a personal relationship with individuals who have names and whose life stories are often familiar to him" (*7*, p. 240).

Frisch maintained that the intellectual and spiritual tradition of Japan constitutes a most favorable environment for the science of nonhuman primate behavior, and that, "we may see in this particular example an indication of the nature of the contribution which Japan can be expected to make, not only to anthropology, but to our wider understanding of nature in its relation to man" (*7*, p. 243).

Thus far, I have attempted to sketch

the typical view of nature in traditional Japan. The underlying idea of Lynn White's article, "The historical roots of our ecologic crisis" (*8*), is closely related to my view. In discussing the environmental crisis today, he asserts that "both modern technology and modern science are distinctively *Occidental*," that "Human ecology is deeply conditioned by beliefs about our nature and destiny—that is, by religion," and that "Our science and technology have grown out of Christian attitudes toward man's relation to nature . . . ." In the counterculture groups, he discerns "a sound instinct in their affinity for Zen Buddhism," but he is doubtful of the viability of these faiths among Western people, an opinion with which I agree. White ends his article by proposing as "a patron saint for ecologists" St. Francis of Assisi, who "tried to depose man from his monarchy over creation and set up a democracy of all God's creatures."

I do not know whether White would include Buddhist priests in a catalog of patron saints for ecologists. But let me cite two instances of Buddhist practice. When going out for the daily mendicancy, it was customary for Southeast Asian monks to wait until twilight, when there was sufficient light to see the lines on the palms of their hands, lest they should tread on little worms and insects while walking on the dim ground. A second example comes from the life of Ryokan (1757–1831), a Japanese Zen priest and poet, who had a particular following among farmers and children. He is said to have used a mosquito net in summer, not to protect himself from being bitten by mosquitoes, but to prevent his unconsciously slapping them while sleeping. He left one of his legs outside the net so that mosquitoes might live on him.

Obviously, this kind of sentiment has been rapidly fading in Japan since the hasty introduction of modern science and technology. This traditional sentiment, however, has not been completely replaced by the idea of man and his relation to nature which underlies Western science. Still immersed in nature itself, the Japanese people do not quite realize what is happening to nature and to themselves, and are thus exposed more directly to, and are more helpless in, the current environmental crisis.

References and Notes

1. "Of a promise kept," in L. Hearn, *A Japanese Miscellany* (Tuttle, Rutland, Vt., 1954), pp. 11–17.
2. Lafcadio Hearn (1850–1904) thus came to contribute a great deal to the introduction of the Japanese culture to the Western world.
3. C. Mather, *The Christian Philosopher* (E. Matthews, London, 1721), p. 8.
4. K. no Chiyo, in K. Abe and I. Abe, Eds., *Kinsei Haiku Haibun Shū* (Iwanami Shoten, Tokyo, 1964), p. 152.
5. K. no Chomei, in *Anthology of Japanese Literature from the Earliest Era to the Mid-Nineteenth Century*, D. Keene, Ed. (Grove, New York, 1955), p. 211.
6. I. Shimizu, *Kindai Nihon Shisoshi Koza*, **3**, 9 (1960).
7. J. Frisch, in *Studies in Japanese Culture*, J. Roggendorf, Ed. (Sophia University, Tokyo, 1963), pp. 225–244.
8. L. White, Jr., *Science* **155**, 1203 1967).

Soaring Prices and Sinking Sales of Science Monographs

Curtis G. Benjamin

Having a perennial and nagging concern for the economic viability of scientific monographs and treatises, I was interested, but not surprised, to read a letter from David Lester (*1*) complaining about the high prices of scholarly books. He is right in saying that such prices have increased drastically in recent years. Since I have long maintained periodic indexes of the costs, prices, and sales of scientific books of monographic nature, I can document the case retrospectively.

Per-page prices were 2.5¢ for books published in 1957, 3.8¢ for 1967, and 6.1¢ for 1972. Thus prices have increased by 144 percent over the 15-year period, and about 60 percent of the total increase came in the last 5 years. These rates of increase certainly are drastic—indeed they are alarming.

Although one might naturally assume that publishers are getting rich on sales at current prices, this is not so. In fact, the opposite is true: the publication of monographs has become less and less profitable in recent years. Sales per title continue to decline sharply, hence printings must be smaller and unit production costs higher in proportion. Many of the major publishing firms have already felt compelled to cut back on their production of monographs, and more probably will soon have to follow suit.

The main cause of this enigmatic price-profit situation is, clearly, the historic pattern of declining markets for monographs in the United States. According to my index of sales per title in the 5-year period after a book's publication, average sales of such works declined from 4977 copies in 1957 to 3761 copies in 1967, then to 2961 copies in 1972. (The dates indicate the ends of the 5-year sales periods.) Here one can readily observe an acceleration of the declining sales curve, although it is not as rapid as that of the mounting price curve. At any rate, it is obvious that smaller sales have resulted in higher prices or that higher prices have resulted in smaller sales. As a close student of the matter, I opt for the former cause, and I shall try to explain why the rate of price increase has been greater than the rate of sales decrease.

Of the several observable reasons for the sales decline (none of which is accurately measurable), the most obvious one is resistance to high prices. This resistance comes largely from librarians, and it can be readily understood, what with the deplorable squeeze

The author, former president and chairman of the board, McGraw-Hill Book Company, is a consultant to McGraw-Hill, Inc., 1221 Avenue of the Americas, New York 10020.