

*A Sustained Society:
Japan of the Edo Period -
A Great Experiment of Sustainability*
Ei-Ichiro Ochiai

Japan is a country consisting of four small islands, completely surrounded by the sea. It experimented inadvertently to see whether such a country could sustain itself virtually without input of energy and material from the outside, except for solar energy. It succeeded in doing so during the Edo period, which lasted about two and half a centuries, from about 1600 until the 1860s.

Up until about 1625, Japan was fairly open to outside influences. Free trade was conducted with a number of European countries, as well as China and Korea. Material was transported in and out of Japan, though perhaps the total amount was not very significant compared to the GNP (if GNP for that time could be estimated). This pattern shifted with the consolidation of power within the Tokugawa clan, which established its Shogunate system, based in Edo (today's Tokyo), in 1603. This system tried to remove

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the Christian (Catholic) influence on daimyo's (warlords) and the general populace, because Christian doctrine was a grave threat to the secular authority of the Shogun. Eventually the Tokugawa banished all Christian missionaries, and banned all foreign trade and communication except for that with China, Korea, and the Netherlands (1637). The Dutch convinced the Shogun that the Protestants, particularly those of Holland, would not be a threat, because they were not interested in spreading Christianity. Their coming and going was, however, strictly controlled and they were allowed to reside only on one small island off the shore of Nagasaki. The Japanese themselves were prohibited from traveling abroad. Hence Japan virtually closed itself to the outside world, in terms of material, energy, and flow of human population. They imported a very limited amount of such luxury items as silk from China and books from the Netherlands, and exported silver, gold, and, later, ceramics.

Japan, in a sense, embarked on a large-scale survival experiment based on only the material and energy available to them on the four small islands. It must be noted that the surrounding sea provided some food, other resources such as salt, and also transportation means. The material living condition of the general public was far from high, particularly as compared to today's standard. As a matter of fact, many of them, poor farmers, were just subsisting, and often faced starvation when crop failures hit them. Nonetheless, many of them could participate in a number of cultural activities, and hence their lives were far from that of a dog's life. Not only did the Japanese collectively manage to sustain themselves and their society, they improved (rather than degrading) their environment; i.e, made their rivers and the surrounding sea cleaner, their soil more fertile, and increased forestation (a very recent book, "Collapse" by J. Diamond¹, identifies these accomplishments as a great success story). And the domestic culture flourished in literature, the performing arts, painting, woodblock printing, and even mathematics. It has been suggested that Japan in this period was at the top among the nations in the volume of books published. This presupposes the existence of a high literacy among the people. Indeed about half of the whole population, and as much as three quarters of the children in big cities received at least a basic education (in privately operated schools). That includ-

ed, in many places, even poor farmers' sons and daughters.

I would like to discuss some of the important factors that contributed to this sustainability, in the hope that we can learn something important from that experience toward creating a sustainable human civilization. This article was inspired by and is partially based on the writings of Eisuke Ishikawa.²

SOCIAL BACKGROUND

The internal war that raged throughout the 16th century virtually ended in 1600 (except for a final battle fought in 1615 and a minor military rebellion in 1637), and a peaceful condition then persisted for the subsequent two and a half centuries under the Tokugawa Shogunate system. This was the single most important factor enabling Japan to sustain itself, for they did not have to waste material and energy only to destruct themselves and the environment. In 1721 the Shogun government started to take a census every six years; hence there is a relatively reliable record of population since then. The population increased rapidly once a peaceful condition began to prevail during the 17th century, and then it remained more or less constant at about 30 million throughout this period, which is about a quarter of the current population of Japan. (Even this number represents three times as dense a population as that of the current U.S. population. It also needs to be taken into consideration the fact that the Japanese islands are quite mountainous and the area fit for human habitation is quite limited.) The constant population was not a result of governmental regulation, but a result of natural causes and some intentional actions by people. Famine caused by crop failure due to unfavorable weather was the major reducing pressure. It seems that the people tried to lower the birth rate in general, and that some form of abortion and infanticide were practiced occasionally when the increasing pressure overwhelmed the food availability.

The Japanese diet consisted of rice, vegetables, and fish, but only rarely meat. The meat they did consume was obtained mainly by hunting, such as birds and wild boar, rather than from domestically raised animals such as pigs and cows. Cows and horses were kept, but mostly for the purpose of transportation. This diet is much more efficient in energy use than one dependent on meat.

Eighty percent of the population was tied to farming and their

crops provided basic materials and food for both themselves and the rest of the population. The remaining twenty percent of the population consisted of “bushi” (samurai-warriors) and townspeople, merchants and artisans. It was definitely a pre-industrial, agrarian society. Bushi (about six percent of the total population) were the ruling class and not involved in economic activities nor production. Under the Tokugawa system, their original role, that of warrior, became moot. Bushi of higher classes turned into bureaucrats. Because their salaries (given in terms of rice) were fixed and mostly inherited, they became relatively impoverished as time progressed. Bushi of lower class (i.e., of lower salary), particularly, suffered from economic hardship. They turned to some devices of earning: teaching, writing, some special jobs, and even farming and others. Merchants on the other hand gained economic power, and hence became the main mover of the popular culture, along with some of the retired intellectuals, bushi.

Firearms, first introduced by Portuguese in the mid 16th century, were used extensively in the internal war period (up to 1615). Once the peace started to prevail, their use declined and their development was neglected. Bushi adopted the sword as their status symbol. Toward the end of the 16th century, i.e., before the Tokugawa rule started, weapons had been confiscated by decree from everybody except for warriors (“Katanagari”). In the beginning of Meiji era (1870s), swords were removed also from the former bushi, and since that time it is a norm in Japan that nobody is allowed to carry weapons except for regular military personnel and a few special professionals (licensed hunters, etc).

Because of this, city streets and highways were quite safe. It is known that only 24 policemen, from the top rank to bottom, were on active duty in the city of Edo, whose total population was about 1.2 million. The number of bureaucrats for this megalopolis totaled about 280, including the police. This situation reduced the number of non-producing persons to be fed, and made sustainability a little easier.

Japan was divided into about 260 autonomous small regions (called “han”). Each han had an independent administration, and the Tokugawa was simply the largest and strongest han. The Tokugawa government devised an elaborate system to keep other hans in line, but the Tokugawa allowed each han to run its own

business on its own terms, unless it threatened the authority of the Tokugawa.³ It was a kind of subsidiary system, where problems were fixed by the local people who were most affected by the changes to be made and also most familiar with the situation. However, the Tokugawa was also sufficiently strong in the political power so that it did control every detail of the conduct of people of bushi rank and all the other people, and even influenced the development of technology, when such a development might jeopardize their authority. For example, wheeled carts were prohibited in Osaka, the second largest city, because their use was considered to jeopardize the livelihood of the other transporters who were in service of the authority as well. That is, the society was far from a free society.

Now we would like to attempt to answer two questions: how and why.

QUESTION 1: HOW DID JAPAN MANAGE TO SUSTAIN ITSELF?

The Efficient Use of Energy

Except for a minor use of non-renewable natural gas, coal, and petroleum in certain regions, all the energy used was provided by the sun (solar energy); that included human power (labor), wood (plants), water- and wind-mills. Electricity was unknown, of course. Lighting was provided by plant oil and wax, and some fish oil. Mechanical work was mostly carried out by human power and a little by animals; this included long distance transportation. The energy efficiency in their diet was mentioned earlier. That is, their diet was mostly vegetarian, and little use was made of meat. The energy output efficiency of meat (i.e., the ratio of energy output to the total energy input, including direct solar energy and all other energy inputs) is at most one-tenth of that of rice.

One way to measure the efficiency of energy use would be to take the ratio of the energy value of material produced to the energy input (excepting the solar energy). For example, in rice production the energy input is the total energy used to produce a certain unit amount of rice, while the energy value of that amount of rice is the energy output. In the Edo period, almost 100% of the farming activity was carried out by human power. The implements used were not mechanical devices, but rather simple farming tools such as hoe, spade, and sickle. The energy value required to

produce these tools are negligibly small. Modern agriculture requires various kinds of mechanical devices; the production and use of them requires a large amount of energy. Ishikawa attempted to estimate the energy efficiency in various aspects of human activities in the Edo period.⁴ The following description is based on this source.

First note that rice production was the basis of the economy of the period. Ishikawa made assumptions as follows. On the average 2.4 tons of rice was produced on one hectare of land; three persons worked full time for about a half year (183 days) to attain this production. The energy required for a day's work can be assumed to be about 1000 kcal/person. Therefore, the total energy input is 5.5×10^5 kcal. The energy value of rice is about 3400 kcal/kg; hence, the total energy output is 8.2×10^6 kcal. Therefore, the energy efficiency in the rice production in the Edo period can be estimated to be about 1500 percent, i.e., 15 times.

How about the situation in the modern rice production? It was estimated by the Science/Technology agency of the Japanese government that the production of 1 kg of rice requires about 2300 kcal of energy. Therefore the energy efficiency is about 150%; that is, one-tenth of that in the Edo period. About a half of this energy is required to manufacture and use the various agricultural mechanical devices. The energy required for the production of chemical fertilizers, pesticides, etc., is estimated to be about a quarter of the total. The issue of fertilizer in the Edo period will be discussed later. Suffice to say that the energy requirement for fertilizer in the Edo period was negligible.

The major difference in these two situations is human labor; it was very hard work in the Edo period while it is much less so in today's farming. In other words, reduction of the human drudgery in farming in terms of both farmers' work and the number of farmers needed to produce the same quantity of rice costs an enormous amount of extra energy. This is still economically possible only because a relatively cheap energy source, i.e., fossil fuel energy, is available for now.

A similar value has been obtained for the energy efficiency in fishing in the Edo period; i.e., the energy value of fish obtained/energy input (in human labor) = 1000-2000%. In the Edo period, fishing could be done only in lakes, rivers, and close to the seashore as the fishing boats could only be operated by

human power. On the other hand the energy efficiency in today's mechanized fishing industry seems to be about only fifty percent.

Until quite recently, domestic heating in Japan has never been "space-heating" of rooms or houses. Fortunately, Japan is located in a mild climate region and the severity of cold in winter is not extreme except in the North. Hence no very elaborate heating system was used in most regions. This is an advantage that is afforded by the accidental location of the nation. It is very warm and humid in summer, however. The traditional houses and buildings were hence built in a way to provide as much comfort as possible during the summer time. The building material was and still is mainly wood. Brick and stone are not suitable for building in Japan, as it is often subject to earthquakes. Wood happens to be a better thermal insulator than brick and stone. The thermal conductivity of typical wood is five to ten times less than that of brick, ten to fifteen times less than that of concrete and twenty to thirty times less than that of marble. The structure of the traditional Japanese house is not suitable for space heating; it is too porous and open. The traditional heating devices include "hibachi" and "kotatsu" (a foot warming device for several people). These devices heat only the people sitting nearby. People wore more clothes when cold. The other device, called "irori" (hearth), was mainly used in farmhouses, and may be considered to be a space heater; it is a kind of fireplace. That was usually sufficient, but of course was not as comfortable as the space heating common in this country. It was very frugal energy-wise.

The traditional procedure of iron/steel production is called the "Tatara" method. It used charcoal as the reducing agent. It has been estimated that production of 1 kg of base iron using this method required about 2.3×10^4 kcal, the major portion of which is the energy of charcoal. Modern technology has reduced this energy down to about 4×10^3 kcal. That is, the older technique was not very energy efficient. A large amount of wood had to be cut to provide the charcoal for iron production; hence the forest from which the wood was supplied was usually left to re-grow for at least thirty years before it was reused. The properties of the iron/steel produced from the old technology is known to be far superior to that obtained by modern technology.

The long-distance transportation of rice, sake (alcohol), and

other relatively heavy items was accomplished by wind-driven boats. This, again, was made possible because of the geographical location of Japan. Such transportation is very energy-efficient.

The Use of Renewable Material

Virtually the only resources utilized were of renewable or recyclable materials, primarily from plants; the exceptions were iron and a few other metallic materials obtained from non-renewable resources, and a little fossil fuel. While plants are renewable, an excessive rate of their use would exhaust their supply, because their growth rate is limited. Other than food, plants provided material for cooking, heating (directly and as charcoal), building, furniture and other fixtures, fertilizer (as compost), oil for lighting, and so on. Today, Japan imports more than half of its need for lumber/pulp, etc. In the Edo period nothing was imported, and yet the forested area in many regions was even expanded during the period.

Let us look at a few examples. The Japanese had an extensive supply of paper in the Edo period. How was it possible? Paper was made only from the annually grown portion of certain fast-growing trees. Therefore, trees were never exhausted. The Japanese method of making paper was such that the cellulose fiber used to form paper was of much longer size, about 10 mm long, than that made in the modern mechanical procedure, which is about 1 mm long. This made the paper making easier and required less of other additives. The resulting paper is sturdy and yet flexible and lasts long. This alone still does not guarantee an ample supply, because the resource was very limited after all. The secret was “recycle” which will be addressed later.

Publication was quite extensive in the Edo period. It is estimated that the average number of publications was about 250 items per year for the population of 30 million during 1600-1850. This was in a pre-industrial society. According to an official record, the number of publications in Canada in 1952, an industrial society, was 684 items per the population of 14 million. This comparison would make the number of publications in the Edo Japan look very significant. In addition, daily newspapers were published in the capital and a few other cities, and artworks such as woodblock prints were also published extensively. This presupposes the existence of a literate and cultured public, not only the bushi but also

the townspeople and, perhaps, some farmers.⁵

Printing in Japan had a curious history. The oldest known printed paper material in the world was published in Japan in the 8th century; literally a million copies of a Buddhist charm (dharani) was made. A woodblock printing method and copper plate etching appears to have been used. A printing method using metal moving types was invented in China and then in Korea, and was brought to Japan in the mid centuries (13-15th). The Portuguese introduced the modern European printing method of moving type to Japan in the 16th century. The Japanese used the method with movable types made of lead, and a few tens of books printed in this manner are known to exist. They used it for awhile and then abandoned it altogether. The last printed matter using the method of movable types was made in 1611. They reverted to woodblock printing. A few reasons can be suggested. One is the nature of Japanese writing. It consists of two sets of fifty phonetic letters plus several thousands of Chinese characters that are structurally complex. This would make the system of “movable types” made of metal cumbersome and complicated, including the enormity of the number of reserved types necessary. It is easier to carve out letters and characters as needed on a piece of wood. The piece of wood can be used over and over again; once done, the wood needs only to be resurfaced for reuse. Thus, it is much more economical and environment-friendly. The material is renewable. Intentional or not, this was the second reason. When it comes to printing other than letters/characters, i.e., artworks, woodblock printing would be easier and more flexible than, say, metal etching. Eventually a multicolored woodblock printing was invented and was used to print artworks, and hence artworks were made accessible to the general public as well.

Recycling

If only renewable material is used and its rate of consumption is limited by the natural growth rate, material would never become abundantly available. It appears, however, that the people in the Edo period generally enjoyed relatively affluent lives (materially), though many people in certain quarters (poor farmers) could not enjoy such lives. While “luxurious” life in the Edo period obviously could not be compared to today’s materialistic lifestyle, nevertheless, with only a limited supply of renewable resources, the people in the Edo peri-

od managed to lead relatively comfortable lives. How?

The answer is “recycle,” “recycle,” and “recycle.” They recycled almost everything and almost exhaustively. They also repaired almost everything over and over again until no more use could be made of it. Of course, most of the devices and implements were of simple structure and construction, and hence were easy to repair unlike some of today’s electronic gadgets.

Let us again look at a few examples. Paper was 100% recycled. This is not an exaggeration. It was a business to recycle or rather buy back paper products. It is said that a poor person could live off collecting paper products or just parts of them discarded and left on the street. Even soiled toilet paper was collected and recycled in certain regions. The Japanese paper could withstand reuse much better than modern paper, as it was made of longer and stronger fibers. Likewise, most clothing was recycled, as the production of fiber (mostly cotton) was limited, expensive and time-consuming.

The ash of firewood and charcoal was also collected and bought by a business. It was sold as fertilizer and also some chemical compounds such as potassium carbonate were extracted and sold. Even candle droppings were saved, bought, reshaped and sold. Human and animal wastes were completely recycled. They were collected, bought and sold to farmers as fertilizer by business establishments. That is, such items were made a salable commodity. Rice straw was used extensively as wrapping material and to make other products, such as sandals, and it would be composted after all these uses. Likewise food waste was completely composted. The agriculture in the period was truly “organic” (of course nobody knew of “chemical” [rather synthetic] fertilizer or chemical pesticide at the time). In some places, ammonia and nitrate were extracted from urine, and were used to make gunpowder. This made unnecessary a sewage system, and did not load polluting substances on rivers, lakes and seacoast.⁶ By the way, the city of Edo established an extensive water supply system (perhaps more extensive than that of London at the time).

An umbrella was entirely made of plant material. The structure and the mechanism of opening and closing are the same as those of today’s umbrella. The stem and spokes were made of bamboo, and the cover is oiled paper. It was easy to repair, and every part of it could be recycled.

It may be unnecessary to point out that any material containing iron and copper parts, no matter of what shape and conditions, was avidly collected and recycled. These attitudes and the existence of an active recycling industry minimized garbage, and made garbage disposal easy. Simultaneously, city streets were made clean without much intentional cleaning, because almost any material would be picked up and sold to a business and reused. Every foreign visitor during the Edo period reported to corroborate such a state.

QUESTION 2: WHY COULD JAPAN DO IT WHILE MANY OTHER SOCIETIES FAILED?

This is a complicated issue. Some possible reasons are suggested, without much corroboration. They are:

- 1) The fortuitous geographical location: they did not need elaborate heating systems.
- 2) The peaceful situation: they did not waste human, energy and material resources.
- 3) A basically vegetarian diet: such a diet is much more energy-efficient.
- 4) The generally high educational level of people: they were informed of many issues.
- 5) A political system that permitted a long-term view of environmental and other issues.
- 6) Cultural factors: the basic attitude of people, toward nature and the world.

I will discuss those cultural factors that seem to instill an appropriate attitude toward nature and the environment in people.

WORLDVIEW/VALUE SYSTEMS OF THE EAST AND THE WEST

A Cultural Analysis

The Japanese culture is based on a few basic tenets that are quite different from or contrasting to those of the Western culture based on the ancient Greco-Roman culture and Judeo-Christian tradition. I will discuss three of them in connection with the present concern, i.e., a sustained society during the Edo period. They are:

- a) man is a part of Nature,

- b) everything is connected to everything else (a holistic worldview), and
- c) the most important concern of an individual is his/her feeling toward other persons, rather than his or her own individuality; this is often called “group mentality” in contrast to Western “individualism.”⁷

First of all, the Japanese knew nothing of “ecology” as a science, but their notion (a) that man is a part of Nature and hence that man should live harmoniously with Nature, is indeed the basic principle of ecology and of environmental ethics. This notion comes from the ancient religion “Shintoism,” a kind of pantheism. There is no supreme God in this religion. This is in stark contrast to the Western notion (Judeo-Christian) of the man-nature relationship; Genesis 1.28 says this: “And God blessed them and God said unto them, ‘Be fruitful, multiply and replenish the Earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air and over everything that moveth upon the Earth.’”

The ways the people of the Edo period lived and the concerns they had were based on the notions (a), (b), and (c). First of all, the majority of the people in the Edo period were farmers, and they lived in and with Nature. Today, the majority of people live in cities, in artificially created environments, and can have no direct feeling toward Nature. Even where they lived in and with Nature, the people in the West had different notions about Nature and the environment, and hence treated them quite differently from the Japanese of the pre-modern period. That is, the Western people tried to subjugate Nature to the will of man.

Science in the modern (Western) sense requires an attitude to dissect Nature, abstract factors from it, and find relationships among those isolated factors (i.e., an analytic approach). It tends to ignore the context, i.e., other factors which may be significant or insignificant in affecting the abstracted factors. Where those other factors are insignificant, science can provide a useful model. Physics has been quite successful in constructing models of Nature, as it deals with phenomena that have strong correlations among a small number of factors. This Western scientific attitude is contrary to the notion (b) of the Eastern concept mentioned above. It is likely that science in the Western sense did not develop in the Eastern society, mainly because of the notion (b). This

does not mean that no science developed in the East; it did but was of a different kind. The people looked at Nature as a whole and learned a lot about it, but it was difficult to formulate this learning in terms of a small number of formulae or principles. Such knowledge accumulated and became something like a collective wisdom, and constituted the culture. And that was their science.

Notion (c) would afford a sense of balance regarding the people; for example there is a sense of sympathy for losers among the Japanese. Winning is not everything. These are just a few examples of manifestation of the basic tenets.

Environmental Concern

Indeed the Japanese lived very close to Nature, and the structure of their houses is conducive to interactions among people. Their houses are quite open and in close contact with the surroundings and the rooms are communal. In contrast, a house and rooms in the West are closed, independent castles for individuals.

The collective wisdom taught the Japanese people that Nature should not be overexploited, and that everything is indeed connected to everything else. If they overused trees, they would soon face a difficulty in securing them. They recognized, for example, a relationship between the presence of forest in the upstream of a river and the abundance of fish in its estuary. Recycling of human and animal waste was done, perhaps, out of necessity, but they learned that it helped to maintain the fertility of the soil and the cleanliness of the streams and lakes. As a result, rivers, lakes, and estuaries, even the bay facing the city Edo, were clean enough to provide an abundance of fish, shellfish, and edible seaweed. Unlike today's mechanical harvest, the fishing in that period was not over-exploitative. That means that fish may not have adorned the dinner plates so often as in today's life.

The drinking and cooking water was supplied from unpolluted rivers through an extensive piped water system. As a result diseases due to use of the polluted water were rare; here is an observation by Dr. Edward Morse, an American zoologist: "Diseases caused by polluted water and imperfect sewage treatment systems in the United States are either unknown or very rare in Japan. In the U.S. the polluted sewage water enters rivers and bays, and pollutes them, killing living organisms. Apparently, those wastes were recy-

clad back to the soil in Japan and make it fertile, but would not pollute the streams”⁸

Love of Nature, trees and flowers made their environment clean and beautiful. British botanist Robert Fortune wrote about Edo and its surroundings in 1860 thus: “Edo is a big city in the East...the Bay facing Edo is beautiful...The scenery from the castle can be favorably compared to many European cities. Hills are covered with trees, and roads are lined by trees and green hedges. Its beauty is perhaps the best in the world....”⁹

The Japanese did not consciously concern themselves with these matters. It was rather their way of living. Unfortunately, some of these virtues have been eroded by the competitive pressures of internationalization/globalization.

The Political/Economic System

The Japanese way of living with Nature as described above may not by itself be sufficient for sustaining such a society. The economic and political system must have allowed it to happen, if not actually fostering it. Though each of 260 small “han” (regions) was under the general control of the central Shogunate government, it was allowed to have sufficient autonomy. The bureaucrats in “han” government were bushi and positions were inherited. The people in “han,” including bushi, townspeople, and farmers, had little freedom to leave their “han.” This situation allowed people, farmers, and bureaucrats alike, to have a long view of their affairs and environments. If one’s children and grandchildren and their children inherit the same land and environment, one has to consider the welfare of the future generations, and do something to maintain them. This concern applies not only to farmers but also to bureaucrats who depended on their inherited natural resources. This is based on notion (c) mentioned earlier: “the important concern of an individual is feeling toward other persons, rather than his or her own individuality.” This “other” includes future generations. The forests and the environments had been devastated during the internal war period (16th century). Once the peace was established, they (the bushi as well as farmers) could afford to concern themselves with how the forests and the environment would affect their descendants as well as themselves. In other words, they could have a long-term view. In the representative democratic sys-

tem as practiced today, it is hard for long-term views to prevail, as the government and its agenda may change every four years or so. On this background, the 8th Shogun, Yoshimune, issued a decree to suppress unnecessary new land developments and luxury items in the beginning of the 18th century (1720). This worked as a controlling factor of consumption.

The modern Japanese system, its economic system in particular, is often criticized for its inefficiency by Western observers. The basic reason for this inefficiency is believed to be the emphasis placed on the concern for other people, i.e., notion (c), rather than the economic efficiency. This is reflected in life-long employment, a wage system based on seniority, relatively complicated, inefficient distribution systems, and high living costs, among others. The Japanese tend to tolerate high prices of service and commodities if they would help others (i.e., offer employment opportunities for others). This system/notion is losing ground, though, thanks to the Western, particularly American, pressure.

THE CULTURAL ANALYSIS – AGAIN –

What was described in this essay about the pre-modern or pre-industrial Japan could also be found in many other pre-industrial indigenous societies. Most of those indigenous societies were of hunter-gatherers, though some of them had developed fairly advanced agriculture. They had sustained their ways of life for a long time, creating their own cultures, until the Western powers destroyed them. It is a striking fact that most souvenir shops at most of the modern international airports carry the arts and crafts created by the indigenous people, but not much artwork created by the invaders, though it may be that only those indigenous artworks are exotic enough to be bought by travelers from the modern societies.

Some reports told of abundant natural life when the Westerners reached the shores of the new world (American continent): e.g., “Cods are so thick by the shore that we hardly have been able to row a boat through them,” or “...so great abundance of all kinds of seabirds so that all my crew and myself, having cut clubs for ourselves, killed so great a number...that we were unable to carry them away. And aside from these the number of those which were spared and which rose into the air made a cloud so

thick that the rays of the sun could scarcely penetrate it.”

No census data are available, but the indigenous populations on the American continent or Australia may not have been overwhelmingly large. If not large, it is very likely that their living styles (i.e., hunter-gatherers, with some agriculture) were such that they would not endanger their environments. On the other hand, many of the great ancient civilizations in the Middle East, Egypt, India, Greece, and Mesoamerica are believed to have declined due to the over-exploitation of their environments among other reasons (Ponting, and most recently argued so by Diamond).¹⁰

The Japanese experience is different from both of these examples. It was a fairly developed agrarian society with a number of large urban areas and had a relatively high population density. Its geographical location in mid-latitude is one advantage, but the major factor for the Japanese success in sustaining itself seems to be its characteristic notions toward Nature and other people mentioned earlier (a-c). The gigantic monuments such as pyramids found in the ancient Middle Eastern and the Mesoamerican civilizations suggest their attitude, i.e., dominance over Nature and the nature of their political systems. The latter cannot stem from the Japanese notion (c).

It is now obvious that Western civilization cannot sustain itself as it is, particularly in terms of its material/energy use, but also in terms of its view toward others. This second point (view toward others) encompasses the contrast between Western thinking and the Japanese notion (c) but is a much wider issue, and cannot be pursued further here. Notion (b) has a lot to do with today's maladies in the scientific presumptions in many disciplines of social science. This is another big issue that I would relegate to another occasion. Anyway, it is well, therefore, that we try to learn from other cultures. And this is, I think, what our “Cultural Analysis” courses ought to be doing.¹¹



NOTES

- ¹ Jared Diamond, *“Collapse: How Societies Choose to Fail or Succeed”*, (New York: Viking, 2005), 294-306.
- ² Influential works include: Eisuke Ishikawa, *“Matter of Energy in Edo”* (Tokyo: Kodansha, 1993); *“Technology in Edo”* (Tokyo: Kodansha, 1995); *“Everyday Life in Edo”* (Tokyo: Kodansha, 1997); *“Recycling in Edo”* (Tokyo: Kodansha, 1997).
- ³ Conrad Totman, *“Early Modern Japan”* (Berkeley: University of California Press, 1993).
- ⁴ Ishikawa, *“Matter of Energy in Edo”*.
- ⁵ An incident indicating that even farmers were quite literate and cultured was unraveled by a Japanese historian. He discovered, in a storehouse in a farming village 70 km northwest of Tokyo, a collection of books, both Japanese and Western including such books as those by J. Locke and H. Rousseau. It also contained a document that was written by young farmers at the juncture of the Meiji revolution (1860s) that they intended as a constitution for the new Japan. Many such examples have been uncovered all over Japan since then.
- ⁶ Contemporary big cities in the West, for example, Paris, had an extensive sewage system. However, the sewage system did not have treatment facilities and hence polluted the river Seine extensively. In Paris, people obtained water, that is the polluted water, for drinking, cooking, and washing, from the same river. *“Les Miserables”* uses the sewage system of Paris as a major backdrop, and, very interestingly, the author Victor Hugo was keenly aware of this problem.
- ⁷ See for example, Richard Nisbett, *“The Geography of Thought...and Why”* (New York: The Free Press, 2003).
- ⁸ Edward S. Morse, *“Japanese Homes and the Surrounding”* (1888), cited in, Ishikawa, *“Recycling in Edo.”*
- ⁹ Robert Fortune, *“Yedo and Peking”* (1863), cited in, Ishikawa, *“Everyday Life in Edo.”*
- ¹⁰ Clive Ponting, *“A Green History of the World”* (London: Penguin, 1993).
- ¹¹ *Editor’s note: Dr. Ochiai presented this bookend seminar as a closing reflection on his involvement in the Cultural Analysis component of Juniata’s curriculum. From 1999 to the present he has collaborated with Professor Emerita Betty Ann Cherry to bring Japan alive to students in a course titled “Japan: A World Afar.”*