

Chapter 2

The Futurability of Islands: A Japanese Reflection on the Harmonious Coexistence of Nature and Humankind

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Introduction

Islands are usually described as ecologically fragile places. Their sustainable development requires careful and long-term design. By “long-term” I means at least 100 years, whereas most development designs and plans are set up for much shorter terms of a few years at most. Development policies are usually designed for limited terms because political and/or economic planning is based on a strict budget and strict time frame in power which, for ministers and politicians in democratic societies, averages at around 3.5 years. Although detailed budget sharing may be possible only for cycles of a few years, practical planning should be conceived for such terms within a longer perspective of centuries and on the basis of appropriate scientific estimates. Sustainability will be maintained only when such long-term estimations are successful.

Islands vary in such features as size, topography, geographical position, climate, population, and the culture and history of their residents. A detailed discussion of these variations among islands is excluded here, and only relatively small islands are considered. Japan is a country consisting of many small- and medium-sized islands and its geographical area is collectively known as the Japanese Archipelago. In this paper, the development of the Japanese Archipelago is summarized in terms of its history after the New Stone Age, in reference to traditional Japanese concepts. In discussing the futurability of the islands, focus is placed on the smaller ones, in particular in relation to the concept of harmonious coexistence between nature and humankind. The four large islands, Honshu, Shikoku, Kyushu, and Hokkaido, are not generally considered here: they are commonly understood as the Japanese ‘mainland’. However, I suggest that peninsulas, such as the Shiretoko Peninsula, have nearly the same kind of ecology as the islands: the narrow peninsular belt is

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surrounded and strongly affected by marine ecology. A number of islands are included in the Japanese Archipelago, and the conservation of these islands faces a variety of difficulties, as each island has its own problems.

Island ecology is fragile, and many of the Japanese islands are no longer in a primitive state. Artificial pressures on island ecology are critical at present, and there is an urgent need for the secure and long-term conservation of island ecology. Nevertheless, it is a pity to note here that the scientific information available on island ecology is far behind what is needed. We urgently need more detailed scientific information if we are to establish an appropriate design for the futurability of island ecology and ensure the necessary conservation planning. For sustainable development of the islands, we need an accurate road map based on long-term scientific estimations.

In this volume, the topics have been summarized with reference to the objectives expected for biosphere reserves, especially in relation to the third World Conference and Madrid Action Plan (UNESCO-Man and Biosphere Reserve Programme [MAB] 2008). Information on various conservation successes on islands has been tabled for discussion, especially in relation to biosphere reserves. In this contribution, therefore, the subjects to be focused on are: (1) Biosphere reserves as tools for the sustainable development of islands; (2) the background and futurability of biosphere reserves in Japan; (3) development of the Japanese Archipelago in accordance with the concept of harmonious coexistence between nature and humankind; and (4) critical points to discuss in regard to the possible design of island futurability.

In promoting the sustainable development of islands in accordance with the concept of biosphere reserves, it is advisable to refer to the zoning of the Japanese Archipelago. This successful development was performed in accordance with the traditional Japanese concept of harmonious coexistence between nature and humankind. This particular concept is briefly introduced hereunder, and island ecology is noted in relation to the sustainable development that has taken place on this archipelago.

Biosphere Reserves

Four biosphere reserves have so far been registered in Japan. They are Mount Hakusan, Shiga Highland, Mount Odaigahara and Mount Oomine, and Yakushima Island. All were registered in 1980 and were thus included within the first generation of biosphere reserves. At that time, before the adoption of the Seville Strategy by UNESCO-MAB, the primary objective of the biosphere reserves initiative was limited to a contribution to their conservation. In Japan at the end of the 1970s, conservation of valuable natural sites was strongly expected by opinion leaders, and these four biosphere reserves were selected by the Japanese MAB Committee and submitted to UNESCO's MAB headquarters for acceptance. The registration process was an entirely top-down affair, and local people knew little about biosphere reserves and their registration. Even though a second

generation of biosphere reserves has been registered in other countries since the adoption of the Seville Strategy in 1995, Japan's four biosphere reserves are still not well recognized, even by the Japanese themselves.

All four biosphere reserves in Japan are located in National Parks, although some parts are under private possession. National Parks in Japan have generally been fairly well conserved by the efforts made by the Ministry of the Environment with the full collaboration of the Forestry Agency. In this sense, all four locales are well conserved, as is expected in the case of first-generation biosphere reserves. Detailed information on these four Japanese sites is available in the work of Iwatsuki and Suzuki (2007).

It is a pity to note, however, that these biosphere reserves are not being fully utilized under the current objectives expected for them. The Japanese National Committee for MAB operates under the Japanese Commission for UNESCO, but it has little financial support from its parent body and meets only once every 2 or 3 years. Therefore, the Japanese Coordinating Committee for MAB is organized on a fully voluntary basis for the purpose of holding activities within Japan in connection with the MAB. The volunteer committee members are all biologists with their own heavy workloads, and they can devote only a little energy to MAB activities. Only in years when fund-raising is successful can the Coordinating Committee run activities, and no one can predict whether the fund-raising will be able to maintain committee activities beyond a particular calendar year. Thus, long-term planning for biosphere reserve activities in Japan is difficult, and despite the MAB Coordinating Committee's recent efforts to raise the public profile of these reserves, they are still not well known in Japan.

In addition to these reserves, a variety of conservation sites are registered by various organizations. UNESCO's World Natural Heritage is a system that is very popular throughout the world. The Ramsar Convention aims to conserve wetland; while Geopark, which is also affiliated to UNESCO, is aimed at the conservation of geologically valuable sites. All of these bodies have contributed greatly to the conservation of valuable natural sites. Every country has its own system of registering its valuable natural sites for conservation. In Japan, National Parks and quasi-national parks cover wide areas to conserve beautiful landscapes as natural monuments. Cultural properties are designated by the Agency for Cultural Affairs, and a variety of natural monuments have been designated as requiring better protection. Under various conservation systems, areas are either legally registered or nominated by the authorities concerned.

Among the four biosphere reserves nominated in Japan, Yakushima Island is also registered as a WNH site, and Mount Odaigahara and Mount Oomine are included in the area of the Kumano Kodo World Cultural Heritage site. Duplicate registration helps to ensure that the general public knows the high value of these sites and that local government offices realize the importance of conservation of these areas. Conservation of the biosphere reserves is guaranteed by various laws and regulations in addition to the National Parks system. It is highly expected by UNESCO that the biosphere reserves will be utilized positively, for instance for environmental and cultural education, eco-tourism, cultural exhibition, and biodiversity production.

The World Natural Heritage system is currently even more popular than biosphere reserves, and people in various places expect their beautiful sites to be registered as a World Natural Heritage site. Additional registration for World Natural Heritage is strict, and those submitting nominations have to wait many years as there are many sites to be registered. The demands by people to have their sites nominated for internationally authorized registration are expanding to include other conservation sites, and biosphere reserves are now being watched carefully by those desiring their conservation.

In Japan, there are so far three World Natural Heritage sites: Shiretoko Peninsula, Shirakami Forest, and Yakushima Island. Shirakami is in the central mountainous area of northern Honshu, and the beautiful inland *Fagus* forest is highly valued. Shiretoko is a peninsula protruding eastward on the northeastern edge of Hokkaido; its ecological features are similar to those of an island in that it is mostly surrounded by sea. Drift ice is one of the most important elements of nature at Shiretoko. Yakushima is a small island just south of Kyushu. The other location now in tentative list of World Natural Heritage sites from Japan is the Ogasawara Islands, the oceanic islands some 1,000 km south of Tokyo.

When additional World Natural Heritage registrations were discussed in 2003, the Japanese secretariat for the World Natural Heritage, under the Ministry of the Environment, along with the Forestry Agency, undertook a systematic survey of all the conservation areas nominated by central and/or local government, and a large number of documents was presented to the selection committee, which used a completely open consultation process. After a careful survey, the Shiretoko Peninsula, Ogasawara Islands, and Ryukyu Islands were placed at the top of the list of candidates from Japan. Interestingly, all of these sites are islands or island like.

As with the registration of additional World Natural Heritage sites, the choice of candidates for registration of additional biosphere reserves is under discussion. This process is also expected to use bottom-up-style screening to give regional people a more general understanding of the reserves. To maintain the sustainable use of each particular site, it is vitally important to ensure full collaboration among decision makers from both central and local government as well as scientists, businesspeople, journalists, and local people. It is natural that collaborative discussions should be held to list candidate conservation sites; this is also true in the case of biosphere reserves. Many of these conservation sites are on land owned by local people and these people should be allowed full access to information.

The first generation of biosphere reserves was registered with the expectation that the sites would receive improved conservation. After the adoption of the Seville Strategy in 1995, the concept of biosphere reserves evolved from conservation to sustainable use. This was in line with a general tendency in the 1990s to consider the human (and not just the exclusively natural, meaning non-human) environment; moreover, the UN Convention for Biological Diversity, which was adopted in 1992 and came into force in 1994, placed importance on the sustainable use of biodiversity. Conservation became the basis for the better use of conserved sites by the people concerned, and biosphere reserves are now established along these lines.

To promote activities in and around biosphere reserves, a modern conceptualization of these special spaces is needed, as is their additional registration. To register any particular site as a biosphere reserves, people need to revise the biosphere reserves concept. Biosphere reserves are utilized for a wide range of activities, including environmental education, eco-tourism, and healing through the beauty of landscape; their use is not restricted to the monetary benefits from producing materials. Any discussion on the selection of new sites will need to involve introducing the new concept of biosphere reserves adopted in Madrid Action Plan to the people who will be involved in the selection process.

Harmonious Coexistence Between Nature and Humankind

I recently discussed the Japanese concept of nature in relation to the history of development of the Japanese Archipelago with a special focus on lifestyles that establish harmonious coexistence between nature and humankind (Iwatsuki 2009).

The lead organizer of the 2008 symposium, at which drafts of the chapters of this book were first presented, was the Research Institute for Humanity and Nature (RIHN) based in Kyoto; while I am now serving at the Museum of Nature and Human Activities, in Hyogo. Biosphere reserves are registered and maintained by the Man and Biosphere Programme (MAB) under UNESCO, and MAB-Japan has collaborated actively in the organization of the 2008 symposium. In themselves, these names suggest a contribution to the relationship between nature and humankind. The attitude of humans toward nature is one of the most important preoccupations of these organizations, and a variety of studies have been proposed and performed. In developing the research activities for such a subject a collective approach should be taken because of the need to synthesize data from various disciplines. An interdisciplinary approach has also been suggested and stressed in various ways. In the end, an integrated approach, based on sufficient data from a number of scientific fields, should have success in promoting research focused on the relationship between nature and humankind.

Throughout human history, there have been a variety of relationships between nature and humankind. It is evident that in recent times the human preference for using natural resources has been based on the concept of seeking wealth from materials and energy. One-sided consumption of natural resources by humans brought a variety of environmental difficulties in the twentieth century, and we now need to reconsider our profit-based use of materials and energy. An emerging consensus in this regard is that we need to achieve the sustainable use of our one and only Planet Earth. This is unlikely to be possible, however, if we consider the resources on Earth, or in our cosmos, as having only utilitarian, commercial or exchange value; existing merely for our use. We, humankind, need to embrace the concept of harmonious coexistence with nature.

The concept of harmonious coexistence between nature and humankind has in fact been applied in Japan throughout its historical development, at least before the time of the Meiji Restoration some 140 years ago. This is reflected in the scheme of development

of the whole Japanese Archipelago, which had a more or less clear zoning of its core area (*okuyama*), buffer zone (*satoyama*), and transitional and residential area (*hitozato*). This zoning coincides with the modern concept of conservation areas, such as those formally anticipated in the BR concept proposed by MAB in the 1960s. Development of the Japanese Archipelago did not occur under the direction of any great decision maker, and it was not suggested by scientists; instead, it unfolded through the local people's harmonious coexistence with nature.

This traditional Japanese concept is based on the people's sincere worship of nature, recognizing everything on Earth to be a gift from the *kami*, or deity. This general idea developed historically in harmony with the natural environment surrounding the people. The Japanese Archipelago is not abundant in mineral resources but it has a rich biodiversity, which is favored by its warm temperature and abundant precipitation under the influence of the Black Current. However, the Japanese Archipelago has been frequently attacked by a variety of natural disasters, including earthquakes, floods, lightning, and tsunamis. The Japanese people, then, had awe and respect for nature and held the traditional belief that nature gave them a variety of benefits. They also believed that eight million deities lived in the primeval forests. This belief was originally a form of animism seen in various civilizations throughout the world. As part of the animism concept, the people believed that nature itself was a deity and that, therefore, all things on Earth were themselves deities. They believed that they would be punished if they spoiled anything in vain, and they religiously utilized every substance; even waste materials, such as faeces. Today's Tokyo, which was often referred to as Yedo, was populated by a million residents during the eighteenth century, but at the time it was much cleaner than Paris or London. This was because of the lifestyle of the people of Yedo who did not throw away even sewage but used it effectively in a perfect recycling system. The people of Yedo did not think in terms of the money they could earn from the sewage; they simply respected the value of every substance.

It is difficult to introduce the traditional Japanese attitude toward nature expressed by "harmonious coexistence between nature and humankind". When the International Garden and Greenery Exposition was organized in Osaka in 1990, this concept was not correctly introduced in English. The Japanese phrase was therefore translated into English with the kind help of my colleagues at the Botanic Gardens in Kew. The original Japanese phrase was something like "humankind and nature live together", but it is very difficult to translate the true meaning of "live together" in Japanese (*kyousei*) into an appropriate English term. Most Japanese find it easy to understand the deeper meaning of the Japanese term for "living together", which, in Japanese dictionaries, is also used to mean "symbiosis", but only in a biological sense. In Japanese dictionaries, the general use of the word that means "living together" has more impact and currency than "harmonious coexistence". We therefore cannot find a suitable expression in English.

Regrettably, this difficulty in translation is not only an outcome of problems with terminology but also of a real difficulty in expressing concepts. Traditionally, the Japanese expected to have a harmonious coexistence with nature, and even now the Japanese people as a whole retain this concept. Recently, some Japanese people

seeking only their own financial gain have tried to exploit nature so as to earn more money from it. The sincere respect of everything, bestowed by the people's eight million *kami*, has been forgotten by these people, although most Japanese still love the beauty of nature. Sustainable development of our Earth may well be achieved only when all of Earth's people agree with the sustainable use of its resources, including its biodiversity (Iwatsuki 2009).

Sustainable Development for Island Futurability

RIHN, the Museum of Nature and Human Activities, Hyogo, and MAB share the idea embodied in their names that a better relationship should be established between nature and humankind. However, the strategies for achieving this goal differ according to the organization concerned. In considering environmental issues, we need to recognize at least four basic concepts:

- Environmental issues must be supported by all of the inhabitants of Earth. We must remember that the ideal development of the Japanese Archipelago occurred through the daily lives of the people living there. I do not know of any decision makers who could have succeeded in leading the people to create the beautiful zoning of the Archipelago, any scientists who could have designed the development of the Archipelago in such an ideal way, or any journalists who could have led the common people to live in this enhanced way. To promote general understanding of sustainability, we need to have more widespread dissemination of information appropriate to our environment and nature.
- Any action on environmental issues should be promoted under the concept, "think globally, act locally". All of the Earth's people should join together to act on environmental issues, and local people should act in, and for, their own localities. However, a diffusion of responsibility and egoistic actions that consider only people's own local districts may result in harm to Earth's environment, and people should always consider Earth's environment as an entity at the same time as they are taking action at the local level.
- Sustainable science should be promoted to integrate information. Development of science has been supported by the use of analytical methods and reductionism to reach common principles through the application of facts. It is natural that such a method should be promoted further in the twenty-first century. In addition to this, however, we should turn to the establishment of integrated and pluridisciplinary investigation to develop a better understanding of such things as life, the cosmos, and the environment. Scientific research can be promoted and can succeed in each discipline, and interdisciplinary or even multidisciplinary research should be promoted collectively by researching and interpreting the available information as a whole. Integrated and holistic investigatory approaches are increasingly popular in academic and research circles, especially in the steady and rigorous establishment of the science of sustainability.

- It is a pity to note that Education for Sustainable Development is less popular today, even in Japan, which was the country that proposed this program in the first place and continues to support it. Education for Sustainable Development was proposed to the United Nations at the Johannesburg Summit in 2000, and now UNESCO is responsible for its implementation. Education for Sustainable Development may stand as a useful and pertinent tool for promoting the release of information on environmental issues, and the establishment and promotion of integrated science has been strongly suggested by the Japanese Commission to UNESCO in relation to Education for Sustainable Development. This type of international collaboration should be promoted more aggressively and systematically in order to achieve a sustainable use and appreciation of Earth.

Discussion

In summarizing the above ideas, several points can be suggested in terms of the futurability of island ecology. The first point is the concept of conservation. It is usually noted that nature conservation is an action taken against the anthropogenic destruction of nature. For the complete protection of nature, we should avoid all actions against nature, and a reduction in anthropogenic activities should be one of the most important goals. To reduce the rate of artificial activity to zero, the best and easiest way is to make humans extinct, but no conservationists realistically expect this to happen. Conservation demands that the human race augurs a future, and a prosperous future, for itself. The development of any human activities is part of the destruction of nature, although I note respectfully that the zoning of the Japanese Archipelago was successful through the artificial actions of our ancestors. The primitive nature of the Archipelago was partly destroyed by these people, but no one can criticize the creators of the New Stone Age for their distinct influence on nature. They cut down primitive forests on the Archipelago and initiated agriculture in developed areas, but their attitude toward this development was driven by a desire to retain a harmonious coexistence with nature. In this sense, they partly modified the surface of the Earth but did not destroy the nature around them, even in cutting the forests down. This type of development with the expectation of harmonious coexistence with nature should be promoted to retain a better relationship between nature and humankind. After achieving rapid technological development based on modern science, humankind has acted as if it were the hands of the gods, and it has recklessly exploited the Earth's surface for its own benefits, without harmony with nature. As a result of such development, especially during the twentieth century, we now, in our daily lives in the twenty-first century, place a heavy load on the Earth's environment. We should keep in mind the concept of harmonious coexistence with nature and should develop a better environment for ourselves on Earth.

The second point again concerns nature conservation. Nature in its strict sense should be a term used to describe areas free of artificial influence. There is no truly authentic nature left on Earth, since human activity has covered most of the

Earth's surface; and impacted on most of the Earth's oceans. Today, "true" nature is called "primitive" nature, and the word "nature" is applied in a very broad sense. Sometimes, it is used as a term of praise for the countryside, but the countryside is an anthropogenic landscape where no sign of primitive nature is found. The countryside is rich and green – usually with beautiful landscapes – and is loved by the general public, but, still, we need to remind ourselves that the countryside is not truly natural and in a strict sense should be considered only as 'secondary nature'. (What inconsistent wording!) The countryside, its vistas, landscapes and greenery are admittedly loved, appreciated and sought for by most urban residents today, and those who live in busy cities – as do most Japanese – sometimes experience healing in their busy lives by visiting the rich green countryside. However, from this fact it is evident that modern people prefer not to protect nature in its primitive state but to modify nature to enrich their lives. The most important point is that the environment should form part of a concept of harmonious coexistence between nature and humankind; it should never be part of the concept of exploiting nature by science-based technology only to obtain resources from it for human gain and corporate profit. We learned a lot during the twentieth century: namely, that terrible destruction of the Earth's surface endangers also the lives of us humans, and not just that of other 'endangered species'.

Islands have more fragile ecosystems and are less tolerable to heavy artificial interventions. We need scientific information to enable us to correctly estimate the future of each island, and development there should occur only within long-term planning regimens. We should realize that any local action on a particular part of the Earth will influence, in various ways, the environment of the whole Earth. Development at any particular site should be done in accordance within the perspective of global development; this is particularly true in regard to development that impacts, or occurs, on islands.

It is evident that sustainable use should not be developed in accordance with the idea of conquering nature but instead in accordance with the concept of establishing harmonious coexistence and a friendly acquaintance with nature. Sustainable use of the only Earth we have can be promoted only in collaboration with all of the persons concerned, and the need for a sound scientific basis is inevitable in setting up a long-term development plan. The purpose of biosphere reserves is well in accordance with these points, and it is a good idea to consider the futurability of islands by applying such useful tools as the classification of biosphere reserves.

Conclusion

For the futurability, or sustainable use, of islands, a shift away from the strict concept of nature protection in its strict sense to that of sustainable use of nature is necessary. The concept of sustainable development is based on harmonious coexistence with nature, not on conquering the natural environment of the islands. We need to have general consensus on the concept of maintenance of the island environment,

and such a consensus was successfully established at the 2008 RIHN symposium. Can such a consensus be extended to a wider, much wider constituency? Ideally, the environmental issue needs to be supported and championed by everyone on Earth. Sustainability of island life should be promoted in harmony with nature for the sake of a prosperous future, and perhaps even just a future, for humankind.

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Island Futures

Conservation and Development Across the Asia-Pacific
Region

Baldacchino, G.; Daniel, N. (Eds.)

2011, XVII, 183 p., Hardcover

ISBN: 978-4-431-53988-9