Going Back into a Future of Simplicity: Taiwan Aborigines' Sustainable Utilization of Natural Resources

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ABSTRACT

Deep ecologists E.F. Schumacher and Arne Naess (among others) believe that living a simple lifestyle helps to reduce the consumption of natural resources, and to protect nature and wildlife. For example, the simple life of aborigines around the world contributes to sustaining the ecosystems of their respective communities. The way of life of Taiwan's indigenous peoples—their hunting, farming, housing, logging, and making of clothing—has been studied in certain detail; however, little scholarly attention has been devoted to describing how their lifestyles protect the natural environment. This paper explores these ecological implications. It argues that the way of life of Taiwan's indigenous peoples is ecologically sound, and that a better understanding of it can give us valuable insight into problems associated with consumerist cultures and lifestyles. This understanding is necessary if we want to construct an ecologically sustainable future for both humans and nonhumans.

KEY WORDS

aborigines
ecotopia
animism
wildlife habitats
slash and burn farming
hallowed places
environmental protection
sustainability
wildlife reserves
endangered species
piscatory taboos
fallow
simple lifestyle
frugality

Introduction

Taiwan traditional aborigines used natural resources frugally. Their anthropogenic perturbation on the natural world was slow in rate and small in extent, and as a result their world did not move toward environmental degradation or collapse. Scholars have recognized this merit of their life (芹田騎郎 Serita Kirou, 1999: 62; 李遠哲 Lee Yuan-tze, 2000: 006; 鄭先祐 Cheng Hsien Yu, 1992: 紀駿傑 Chi Jiun-jieh, 1997: 72-93; and 劉炯錫 Chiung-Hsi Liu, 1999: 11).[1]

Up to now, however, few people except Cheng Hsien Yu have explicated the relationship between their simple life and the sustainability of their use of natural resources in terms of gathering/hunting, fishing, farming, logging, building, making clothing and food.[2] This paper therefore aims to study these topics with emphasis on the traditional aboriginal use of natural resources in their daily life activities. It regards the aboriginal lifestyle as a model of simplicity useful for our reference in the management of our environment, and suggests a return to this study as a stop along the way toward a future with more encompassing environmental protection, which requires also the complementary contributions of many other ecological thoughts and movements. "Traditional aborigines" here does not include the Pingpu groups, who have long been sinicized. It refers to all other Taiwan aborigines whose natural life has not been degraded by the Han civilization of the Ching dynasty (Mori Ushinosuke 577), by the Japanese colonization, and by the destructive industrialism and formidable capitalism starting in the early twentieth century when the KMT government moved to Taiwan.[3]

I. Gathering and Hunting

Taiwan traditional aborigines lived mainly by gathering, hunting, and farming. All the aborigines gathered wild plants and caught small animals for various purposes (Chiung Hsi Liu and Der-Tze Lin, 1999; 94). They gathered betel nuts as an energy stimulant, and roots, leaves, seeds, fruits, stems to be used as fuel, cleansers, dyes, medicines, or foods. They had a wide knowledge of seaweeds and selfish (Lin, Futol, 1999; 56-57) and a variety of herbs (Antonio I. C. Hong, 1999; 84-85). Gathering plants at that time did not exhaust those species into extinction. First, the amount the aborigines gathered was small in proportion to the supply, and the areas they searched were limited to roadsides, riversides, and valleys due to the fact that plant gathering was performed only by old people, women, and children (Wen, 1962; 91). Secondly, the aborigines' wide knowledge of edible plants prevented their eating up one single species.

Comparatively speaking, hunting was more important than gathering for the aborigines. In the West and in Taiwan, hunting is a bad thing to critics. Crevecoeur disapproves of it as savagery, and Joseph Krutch censures sports hunting, saying, "The killer prefers death to life, darkness to light," and therefore hunters are "vandals" (Krutch, 1989; 408). Taiwanese nature writer Chen Huang 陳煌 in *Human Beings and Birds* 人鳥之間 also objects to hunting, for on this island people kill migratory birds, roast them for tourists at scenic spots, and kill and dress larger animals for urban consumers at game restaurants. Traditional Taiwan aborigines, however, never hunted for pleasure. Some Vataan Ami might catch birds by traps for their beautiful feathers and make every effort to shoot ominous birds as urged by the creed of their myth (Hsu Chen-fu, 1962; 47), but they never committed such cruel acts as training falcons to hunt whooping cranes as the ancient Japanese nobles did (Matthiessen, Peter, 1996; 258), and never netted thousands of sparrows as modern bird catchers have done, of which KoamHack Tarn 陳冠學 has disapproved in *Fields in Autumn* 田園之秋 (Tarn, 1997; 75). Traditional aborigines hunted mainly for subsistence, a hunting which Chen Huang approves of (Chen Huang, 1997; 67,70).

The aborigines caught such small animals as grasshoppers, frogs, crabs, turtles, bats, and fresh-water snails for protein (Wen Jui-ying, 1996; 94-95). They also killed bears, boars, fowl, monkey, deer, mice, snakes, etc. The view that hunting/gathering can really be the best way to ecotopia (Devall 173) has not yet been proved by Taiwan scholars. It is certain, however, that aboriginal hunting has never been a perturbation harmful to the biotic communities of their environment due to the existence of the hunting taboos, the measures taken to protect animals, the communal use of game, the limitation of weapons in mass slaughter of game, and low frequency of hunting combined with the limitation of hunting only in small areas.

Believing in a mystic animism, a concept of souls as the dominators of the fate of humans and nonhumans, which cannot be explained, in Thoreau's words, "according to mechanical laws" (Worster, 1998; 92-93), the traditional aborigines demanded of themselves that each and every hunting trip follow taboos which involved ominous signs, totem animals and plants[4], augury, and the rites of worshiping the souls of dead ancestors and nonhumans.[5] As the taboos were innumerable, and the frequency of their appearance prior to and during each hunting trip was high, and as the probability of ominous signs appearing before and during a hunting trip was equally capricious and unpredictable (Kalapay Pan and Chiung-His Liu 126-32), they in combination frustrated more than they facilitated the execution of hunting, and thus reduced the number of game killed.

The measures taken to protect game here means the development of a wildlife reserve called *parisi*. *Parisi* is an area (or several areas) of forests that no one was allowed to enter in ordinary times (Mori Ushinosuke 森丑之助 214), though in Lanyu, a period of time for flying fish to recover their schools after the fishing season is also called *parisi*. Originally, the aborigines, especially the Paiwan group, developed *parisi* as a hiding place for the tribal people to evade attacks from enemies. It gradually became a hallowed forest, which no one was allowed to enter, and a place of wildness, where wild animals bred in large numbers and trees grew in profusion. We do not know whether the existence of these wildlife reserves preceded Western parks of wilderness advocated by Thoreau. It is certain, nevertheless, that these *parisi* were much more wild and free than American national parks, for there were free from such annoyances and interference as sightseeing, scientific research, and business activities common in American national parks. Although the system of *parisi* was later desecrated for the most part by the Dutch colonization, the Han people's large-scale immigration, and Japanese occupation, some part of those hallowed places which have been left wild are still held in awe even by our contemporary professional poachers in the Dajen Hsiang, Taitung. Though its function in the protection of game is no longer strong, it still serves as a kind of refuge for wild predators (Kalapay Pan and Chiung Hsi Liu 132).

The communal use of game is the principle of local game local use. Once the hunters came back from their hunting trip, they shared the meat with their tribal people and made maximum use of the leftovers. Take a boar for example. They cut the meat into pieces and gave them to the villagers. The teeth and skin were used as a part of headgear and the bones as a sacrifice or an incarnation of the soul of the boar, which they had to worship and pray to each time before setting out for a new hunt (Pan Kaplapay and Chiung-His Liu 124). The aborigines never traded the game with the people outside the tribe for foreign money or for sophisticated machines. Their adherence to this principle alleviated the need for game in the tribe, reduced the frequency and the degree of hunting, and prevented mass killing which happens in modern times to meet the demand of markets. This explains why such mass killing of deer as is described in the novel 倒風內海 *Dao Feng Nei Hai* (Wang Jia-Xiang 47-64) hardly ever happened before the Dutch came to colonize the island. Today, this principle of "local game local use" is no longer practiced. Many hunters, especially professional aboriginal hunters, kill wild animals to trade outside their territory for money (Kalapay Pan and Chiung-His Liu 126-36). The number of the animals killed has outpaced the survival of species. A query made in 1996 showed that a hunter using a modern gun and traditional devices caught 25 boars, 17 goats, 30 monkeys, 60 rabbits, 300 rats, 20 flying mice and 30 squirrels annually (Kalapay Pan and Liu 133). The real number of animals killed is larger than these statistics, for many hunters who kill relentlessly are not included in this report, due to their refusal to answer the questionnaire and their unwillingness to be exposed. A more reliable investigation would show that the extent of hunting has reached a degree near to exterminating the extant endangered animals or decimating their population so they are no longer able to sustain themselves. Although the hunting law was enacted in 1989 and the wild animals protection law revised in 1994 (Kalapay Pan and Chiung Hsi Liu 135-36), the Taiwan indigenous deer, cerus nippon 梅花鹿, has become extinct and some other predators including neotelis nebulosa brachyurus 雲豹 had become endangered species long before the laws were enforced.

The inefficiency of traditional hunting in mass killing is a good thing here. It is a common phenomenon of hunting with simple weapons. The traditional aborigines used no more than bows, spears, nets, and traps (*svata* and *chimaj*) in hunting. A study on the Vataan's bird-catching did not show that the Vataan used nets to catch migratory birds (Hsu Chen-fu 47-48). Mori Ushinosuke told us that the conventional hunting tools were not replaced with guns using powder ammunition until 1883. Hunting before that year had thus remained small in scale. The aborigines were all skilled hunters, but simple tools killed slowly and inaccurately. They could not result in the island-wide elimination of any species from the aboriginal biotic communities. These weapons were not reliable all the time even for hunters' self-protection if the hunters got too near to ferocious beasts. Several Taiwanese novelists have told us of this danger in their short stories (Chung Chao-cheng 25). Even when these weapons worked, they often failed to kill game instantly but lengthened the time of dying, enclosing the hunter in the long heart-rending cry of the victims; these cries usually affected him, arousing his compassion for the terrible suffering of the victim, and thus slowing down the enthusiasm for the next hunt. A contemporary nature writer tells us such an experience he had in his short stories, "Fish Gui To Dao/*fowala-ra-yu* 鬼頭刀", and "The Iron Fish 鐵魚" (Liao Heng-chi 29-30).

The low frequency of hunting and the limitation of hunting to small areas in *sitarak* 圍獵 (hunting by enclosing an area with dogs at the front and traps at the opposite end) and *niiloh salijoh* 焚獵 (hunting by burning an area to force the game out) are also important. *Sitarak* and *niiloh salijoh*, being regarded as cruel and anti-ecological because they killed young and old game indiscriminatingly, are not employed but regarded as an anathema nowadays. In fact, even in ancient times they were not adopted with high frequency: *Salijoh* was held only once a year (Hsu Chen-fu 51), and *sitarak* (hunting by a group of people) was limited to four times annually in the mountainous tribes (Hsu Chen-fu,1962; 48) and applied to a small hunting area only. As there were much larger zones of wilderness outside the fields of *sitarak* and *niiloh salijoh* at that time and as the intermissions were long, the animals surviving the hunting and those outside the fields of game still had many opportunities to breed and grow to compensate for the loss. The sustainability of game therefore was kept to an acceptable degree. Today, with the rapid expansion of our population into the wilderness areas and the shrinking of the wildlife habitats, these two ways of hunting are banned.

The taboos, simple weapons, *parisi*, limited frequency and areas of *sitarak* and *niiloh*, as well as the social code of communal use of the game meat are a result of the aborigines' historical development and their natural responses to their environment. The aborigines probably did not know the importance of the minimization of hunting to the restoration of the game and the biotic community of the environment, and probably they did not do anything on purpose to alleviate the impact of their hunting on the biotic environment of the game and the plants. But this is not important to us, for what we are concerned about is whether the aboriginal way of hunting is detrimental to the environment or not. Here the answer is negative, for the results of their hunting practices demonstrate that taboos, or their simulacra, wildlife protection laws, and the limitation of hunting to simple tools and specified areas, the code of "local game local use," and the maintenance of wildlife reserves are all absolute necessities if we allow some hunting as legitimate and want to save our wildness at the same time.

II. Fishing

Traditional aborigines did not drain ponds to fish, as they did not commit island-wide elimination of terrestrial animals in hunting. They caught fish with simple fishing tackle in the same manner as they hunted game with crude tools. They gave fish time for restoration in ponds and in the oceans when necessary, and they stuck strictly to the principle of local use, a principle which they applied to the game killed, too, as we mentioned before, and also to their wine drinking, a custom which Chang Gin-Seng describes in detail in his report (113-20).

Almost all Taiwan's aborigines catch fish. Here we are to talk about the Vataan Ami in Hualien, the Dulan Ami in Taitung, and the Tawo (Yami) in Lanyu as examples. The Tawo and the Dulan Ami are competent in ocean fishing and the Vataan in river fishing. The fishing tackle these three groups use are all simple and crude. The Tawo use canoes, wooden boats, spears, nets, etc.; the Vataan used *teravinan* (bamboo crates), *tserin* (bamboo screens), bamboo traps, and nets; and the Dulan Ami used nets, spears, and others. They hardly employed state of the art technology to catch fish. This simple fishing tackle could not destroy the fish resources in the river and seas. They could not ruin the water and the watery community of the environment either.

The Tawo are famous for catching flying fish. Since ancient times they have followed the custom of taking canoes group by group to the seas to catch flying fish. Each time they have invariably come back with a huge haul. But they always follow the unwritten rule of fishing only at the irruption season (*alibangbang*) from February to June. After the season, they have prohibited themselves from catching the fish till the next year. Besides, no other tackle than nets can be used for catching such fish as *Fa-Wo-Yu* 天狗鮭魚 and *a-ra-yu* 鬼頭刀 (Hsien Yu Cheng 256). The period of intermission in which the fish can breed and develop again for restoration is called *parisi* as was mentioned before. Besides, they allow neither themselves nor others to net or shoot other fish or to catch shrimp by modern devices during the irruption season. If they do, they believe it will induce plague, drought, famine, death or other calamities (Syman Rapongan 118-24). If they refrain, they believe it will help the flux of nature keep the population of different fish in balance. They take it for granted that if the affluence is abused, scarcity will follow. As they follow this rule of restraint, the cornucopia of the ocean resources in Lanyu has been a bountiful fishery to them.

The Dulan Ami catch fish mainly along the coast and in the sea near the coast. They do not have piscatory taboos, and they hardly go far into the ocean to catch fish. Besides, they have no predilection for any special fish so as to endanger its existence. As a result, they are optimistic about fishing and about life, having never been worried about the depletion of their ichthyic source. This case of the Dulan Ami's is very exceptional. They have enjoyed natural advantages not available to other aboriginal groups. But we must remember that they have not dared to pollute their coast and the sea and the rivers in any way; otherwise, they would have lost their life's sustenance early in their history.

As to the Vataan, they are optimistic about their ichthyic resource, too. They live on the plain of Huatung Valley near three rivers including Satovo Creek 馬太安溪, Waratau Creek 萬里橋溪, and Futan Stream 布農溪, all abundant in aquatic animals. Due to this geographical advantage, they have since ancient times enjoyed good fish resources, without employing the rule of *parisi* as the Tawo do. Their way and areas of fishing are different from those of the Tawo and those of other Ami groups. Their fishing areas are their own fishing districts, which are man-made ponds along and connected to the rivers by ditches. They build these ponds at different places near their villages to let crabs, eels, turtle, shrimp, fishes, clams, mussels, hornwort, duckweed, and other aquatic plants flow or swim in naturally from the rivers and settle there as a new habitat. In the pond they put bamboo tubes at the bottom for eels and loaches to hide in, bundles of sprigs for shrimps to nestle in, and leave other space for common fish to live in. When these aquatic animals proliferate and grow big, and are ready for harvest, they just take the bamboo tubes out of the water to catch eels and the bundles of sprigs out to catch shrimp, and then use bamboo screens or hand-nets to gather the fish. Fishing in a district is done regularly at an interval of two weeks (Chiu Chi-chien 77) in all seasons. Since there are many ponds and since new fish keep flowing in from the natural rivers, the life force of the fishing districts is forever dynamic.

The Vataan sometimes went far to the creeks in the mountains or to the fountainhead of the three rivers to catch fish by building a weir, but such activity was limited in ancient times, for decapitation by other indigenous groups happened frequently while they were fishing there. Thus the resource of fish from the rivers was never exploited terribly. The resource did not dry up also because the aborigines at that time never built apartments, put chemical plants, or cleared the hillsides as modern people do today to pollute the rivers. The Vataan here are as significant as the Tawo ecologically speaking, for they both show that if we want to have our source of fish sustainable, the protection of the environment is always a necessity and always a grave issue; if environmental protection miscarries, not only the fisheries but also the whole biotic community will vanish, a fate which almost all the Han's modern fisheries in the southeastern Taiwan have already met.

III. Agriculture

Agriculture was as important a part of the Taiwan aborigines' life as hunting and fishing. Western critics are against agriculture in general (Devall 97) although Indian people regard it as functional in "preserving the earth and life on earth"; Virgil and the Roman satirist Decimus Junius Juvenalis considered it the only solution to urban ills (Meeker 52), and Wendell Berry refers to it as a way of participating in nature. Those who do not like agriculture say that an ecologically sane future requires that almost all forms of farming together with genetically altered plants and animals must go (Shepard, Paul, 1973; 237), and that agriculture is the main reason underlying the destruction of forests (Takeshi Umehara, *At Century End* 219-20). Their negative criticism, nevertheless, cannot be applied to the agriculture of Taiwanese aboriginal people, for their farming belongs to good agriculture, which can not only maintain the land's biotic capacity but also provide the farmers with an ample supply of food. This is because of the following reasons.

First, the traditional farmers did not farm on an extremely large scale, only for the sake of providing food for a tribe of small population.

They grew things on small fields. Small is not harmful. This is true even in the case of the slash and burn farming. In order to develop fields for planting millet, taro, corn, peanuts, gelatinous rice, tares, and sweet potatoes, the aborigines in ancient times cut down shrubs and bushes both on the hillsides and on the savannas, and burned the bushes up with the weed. This slash and burn agriculture (燒墾 *sao ken*) is a way of farming modern ecologists abhor, for the "large fire" has destroyed numerous tropical forests, exterminated innumerable species, and damaged the ecosystem in the Third World (Arne Naess, "The Third World" 327-29). But such disasters did not happen to Taiwan's aboriginal environment in the ancient times, for the fires the Taiwan aborigines built to clear the wasteland were limited to a small site with fire-sheeting measures. In Lanyu, people have never applied *sao ken* to any wooded land (Cheng Hsien Yu 257).

Secondly, the traditional aborigines used their own hands and hand-made tools in farming, which are efficient enough for growing plants and harvesting on small farms. They also used water conductors to lead water from creeks for irrigation (Yuan, Chang-jui 31). At that time there were no mechanical farming instruments such as power tillers, power threshers, or fertilizer distributors. The farming instruments available to the Saisiat up to 1915 were *sawki* (sickle), *malat* and *palakaw* (faggot knife), *kaehlk* (shovel-spade), *kapasrahoe* (rake), *kapanahan* (bamboo crate), and *raraem* (backpacking basket) (*A Report on the Customs of the Aborigines. Vol. III.* 番族習慣調查報告書, 第三卷, 60-61). The instruments used by the Bunun, and the Ami, and Tawo were almost the same as those used by the Saisiat groups. These tools were good only for digging and loosening the soil, cutting, gathering and carrying crops. They were not useful to shake the land into tremor, level a hill, fill up a swamp, or destroy the aquifer under the ground. Consequently, what modern machines have done to the land as described by Leo Max (*The Machine in the Garden*) and by Wayland Drew ("Killing Wilderness" 118) did not happen to the tribal communities.

Thirdly, aboriginal farming is biological and natural. The aborigines did not use chemical fertilizers, herbicides, or pesticides. Instead, they used the ashes of burnt wood and compost formed naturally with rotten weed, stems and leaves of crops (Yuan Chang-jui 34) to make the fields fertile and productive, a fact which Serita Kirou praised highly in his memoir (Serita Kirou 159). And they burnt up weeds to feed the soil and let it lie in fallow for renewal. Thus, such pollution as that found nowadays in the paddy fields of the Western parts of Taiwan, and that which Lovelace rebuked in his *Gaia* and Carson attacked in *Silent Spring,* were unknown among the aboriginal tribes.

Fourthly, the aborigines discovered diversified and rotation of crop farming. They developed these two methods indigenously, not learning them from immigrants, but through years and years of experience with the soil (Mori Ushinosuke 246). Take the Bunun people for example. Knowing that one-crop farming might impoverish a field, they at first grew millet, gelatinous rice and a deciduous bush called *kainonan*. After reaping the millet and rice, they grew *tai* (green taro) and sweet potato, and then *batal* (a millet-like plant) and *tsala* (tares). Sometimes, they grew tree bean and a rice-like plant called *tipulka-izxats*. Such a rotation and diversified-crop farming led to more bountiful harvest in the following year.[6]

Fifthly, the aborigines let the land lie fallow, a way for the land to refresh itself, which we mentioned in passing before. They left a field uncultivated for five years after every four year of use (If not all the tribes did this, at least the Bunun practiced it all the time). During the fallow period, many natural things came to breed or to grow on the field to help the soil restore its original central PH degree and its natural fertility. In the case of an uncultivated field of the Bunun group, the first thing which happened to it was that the leaves of small bushes called *kainonan* fell on the soil to rot into compost. This newly formed manure immediately became a home for the growth of myriads of insects and bacteria beneficial to the renewal of the fertility of the land. The second thing to occur then was the growth of weeds, which became a natural fertilizer afterwards as the farmer burnt them up on the field four years later. Finally what happened was the arrival of wild birds and other wildlife whose droppings reinforced the biotic strength created by the weeds and the fallen leaves. All of these then worked together to benefit the farmer, for they caused the crops to be more productive. This primitive fallow system is still prevalent in some parts of the Bunun groups (Chiu, Chi-Chien, *Social Organization of the Take-Bakha Bunun* 136).

Generally speaking, the aborigines farmed only for local use as they did in the case of hunting and fishing. They did not trade produce for commercial purposes. Their observance of this custom is the basis on which the other complementary elements of the ancient aboriginal farming including small-scale management, biologically friendly ways of cultivation, employment of simple tools, and the fallow practice combined to form an ecologically successful method of farming. This principle of local use has been upheld most earnestly by Wendell Berry in his recent book (*Home Economics* 124-26); it is a principle good not only because it makes possible its related elements of ecological farming. It is good also for quality farming leading to a good ecological management of the environment and ultimately to a good culture, which is being debased by the WTO, and its concomitant formidable capitalistic system.

IV. Logging

Logging is an important topic in ecology. Thoreau's travels to the Kitaatan forests made him awestruck at the sublimity of nature yet doleful over the commercial deforestation there. The fate of forests in many parts of Taiwan, unfortunately, is more miserable than that of Kitaatan in the time of Thoreau. Many old-growth trees which have been revered as *shen mu* (divine trees) on Ali Mountain, for example, are gone and their lands have been left naked and barren today, a tragedy for which Chen Yu-feng has rightfully accused the log rustlers and the irresponsible and ignorant forest officials in his books including *The Sad Song of Taiwan's Ecology* 台灣生態悲歌, *The Confrontation of Man and Nature* 人與自然的對決, *Love the Land with a Bitter Mood* 土地的苦戀, and *Records of the Movement to Save the Hinoki of Chi Lan Mountain* 搶救棲蘭山檜木材運動誌. In reality, the early Han immigrants, Japanese colonists, the forest officials, and some modern commercially oriented aborigines are all responsible for the disastrous deforestation. But most of the traditional aborigines cannot be so blamed because they did not cut trees for economic gain as the Japanese and the Han people. They scarcely cut down trees except for creating small fields, constructing small canoes, building small huts or making crates; and the number of trees they felled for these purposes was not large and did not jeopardize the integrity of the forest's ecosystem. Han people and the Japanese colonists were different. The Han people at first taught the aborigines to use axes, chisels, and saws and tempted them to cut trees for commercial gain. Then they built lumber mills in the early twentieth century to gnaw up trees like a pestilence. Finally, they cleared hillsides to denude whole mountains, or replaced natural forests with betel trees, tea, or other economic crops. The Japanese colonists did the same thing, though to a lesser degree. They built railways to transport giant trees back to Japan. They also cleared hillsides to grow *wasabi*. It was because of them that most of such valuable trees as 毛柿，象牙樹，欖仁樹，小西氏楠，烏心石，櫸，茄苳，黃連木 were destroyed.

Before the Han and Japanese people moved in, the traditional aborigines had never cut down trees in the hallowed places *parisi* (Cheng Hsien Yu 256). They did not replace natural forests with economic trees and did not cut them down fast and extensively either. They certainly did not know Wayland Drew's warning, "technocracy…like cancer will destroy its host," for they had no experience of mechanical tools, let alone using chain saws to recklessly slaughter the bodies of trees. They cut trees frugally with hand-saws and knives and cut them only when necessary. Their frugality accounts for the miracle that even today many parts of their mountains and lands are still filled with green trees, if not stately old-growth forest.

V. Buildings, Clothing, and Food

Taiwan traditional aborigines built their own houses, wove their own clothes, and prepared their own food. In building houses they used only local, natural and durable materials such as hardy lumber, pliable but strong bamboo, and everlasting slate for the columns and main structures. In the Hao Cha tribe 好茶 the Rukai used only the hardest stones which were resistant to crushing, compression, shearing, typhoons and torrential rains. Atayal, Bunun, and Saisiat used hard stones, too. In Hualien the Vataan used bamboo of strong tensile and torsional strength. In Lanyu, the Tawo used hard stone and large, thick, sturdy, worm-resistant lumber. Slate and stone can be reused over and over; lumber and bamboo are durable for many generations.

The traditional aborigines built only small houses, having no interest in pretentious mansions. A good example was found in Lanyu. The local government of the Taitung Hsien urged the people of Lanyu to demolish their traditional houses and build modern houses under the governmental financial support in 1960. But two tribes refused to follow the government's housing policy. Even today they still live in their traditional under-the-ground-level houses (Cheng Hsien Yu 291). The main concern of the Lanyu people as that of other aboriginal people about houses was safety, practicality, and harmony with nature. They do not like to build large houses to assert pride of wealth and to proclaim presumptuously the mastery of human intelligence over the unruliness of nature. Smallness of durable materials and stable location fit perfectly with their goals. They like to place their houses so as to integrate them into nature and protect them from flooding, typhoons, landslides, tremors or avalanches. Thus, the Tawo built their houses on a rectangular hole deep in the ground of a stable slope or hillside on Lanyu, each with a humble pavilion and a work hut nearby the roof of the main house; the Tso erected their wooden buildings on stable locations in the mountains. The Bunun nestled their structures on flat ground enclosed by the mountains as their shelter. A bird eye's view of these houses conveys a feeling of perpetual easiness and the grandeur of nature (Mori Ushinosuke 202).

In using durable materials, designing and constructing small houses, and in selecting good locations, the traditional aborigines perhaps had no clear idea of their close relation to environmental protection and sustainability of the material resources. But this possibility counts for little with environmentalists. What is important is that their practice in these matters proves superior to the pretentiousness of modern palatial commercial apartments. Smallness of the house saves materials and removes the necessity of employing heavy machines and ex-territorial materials harmful to the local landscape. Unshakable location prevents damage to the environment. And durability and re-usability keep the frequency of exploiting nature to the minimum.

In making clothes, the ancient aborigines used local, natural, and durable materials exclusively and used only simple tools as they did for building their houses. The common materials they used were such crude materials as ramie, plantain fiber, and, sometimes, animal skins. It was only after the Han people did business with them that they began to use strands of cotton threads, woolen twine, and glass beads, and only then began to weave the four cloth types including the northern type represented by the Atayal and Saisiat tribes, the central type by the Tsao and Bunun tribes, the southern type by the Paiwan tribe and the Yami type (*An Exhibition of Taiwain's Aboriginal Culture*, Taiwan Folk Arts Museum, 1994); all the fibers were dyed with natural dye plants gathered locally (Ho Hsiu-lan and Kuo Shih Hsu 32). The garments they made were beautiful, durable, and often treasured as works of art (Syman Rapogan 166). They did not use synthetic yarns, artificial dyes, mechanized looms, and such chemicals as plasticizers, defoliants, pesticides, and chromium or machines to make clothes.

They were abstemious in using clothes. Unless necessary, they did not wear anything but one or two pieces of cloth to cover the genitals. On rainy days they put on rain cloaks of betel leaves and hats of bamboo splints. In cold seasons they wore animal skins, as witnessed by a Japanese scholar (Mori Ushinosuke 216). They did dress up, but that was only for important occasions or in the presence of important persons. Even when they were supposed to dress up, they did not do so until the last moment lest their sweat dampen or dirty the clothes (Kwan Hwa-san 153; Mori Ushinosuke 223).

Nowadays, their custom of the thrifty use of dress has changed. Most of them live in cities and wear modern suits. But many tribal people are still very conservative in dressing. Most of the people in Lanyu still prefer to wear plain clothes of crude materials or remain nearly naked. Obviously, they do not like to make themselves clothes hangers and their home a fashion center. These simply-dressed people to me look nobler than those in suits. Without anything on, they are a part of nature whether swimming in the ocean or farming in the sun. Nakedness or plain clothes facilitates hunting, fishing, farming, or just running in nature. The Tawo in Lanyu reveal that actually humans can live better on earth without the necessity of wasteful clothing.

In preparing and eating food, diversity, simplicity and abstention from gluttony are the basic principles for the traditional aborigines. These people know myriads of edible plants, seaweeds, shellfish, medical herbs (Lin and Liu 55; Latalibata, Tinebega and Chiung-Hsi Liu *The Botanical Culture of Darumak*), and a variety of eatable grass-hoppers, frogs, crabs, turtles, bats, and fresh-water snails (Wen Jui-ying 94-95) in addition to fish, fowl, and territorial animals. Their knowledge keeps them from overindulgence in only one kind of food supply, and makes them less vulnerable to starvation than the Han people in the wilderness, and less likely to gather/hunt any one species to its extinction. Their staple foods include millet and taro, which are fast growing and have the greatest reproductive capacity. The source of their protein is flying fish, pig, and common aquatic animals, which are thriving species. These foodstuffs can be easily preserved and stored through salting, wind-drying or sun-drying (Futol Lin and Liu 59). The large productivity, easy viability, and great availability of these varieties of food guarantee their ample supply and replenishment.

The traditional aborigines cooked food in simple ways. They roasted meat and boiled most kinds of food in plain water and ate them with salt sprinkled on it. They did not use non-renewable electricity or nuclear power for cooking, and they did not add chemical preservatives to food and did not use chemical detergents to wash dishes. The leftovers and dishwater therefore did not harm the biotic community of the aboriginal habitats. Besides, they did not eat and drink to excess (Chang Gin-seng 113-20).[7] They were not gluttons as are their modern comrades and the Han people, whose indulgence and waste of food have embittered ecologists (Cheng Ching-heng, 1997; 104-18).[8] and endangered rare species (*The Independence Evening Post*, Oct. 3, 2000) 6.

Conclusion

The discussion above shows that the simple way of hunting, fishing, logging, agriculture, and clothing practiced by Taiwan's aborigines can better save our environment than our modern over-consumptive lifestyle, whose vast manufacturing system, gigantic commerce and expanding towns and cities have increasingly deteriorated our planet. It can do so, for it is characterized by frugal use of natural resources, small-scale agriculture, reasonable logging, environmentally non-harmful hunting, and practical ways of making houses, clothes and food. It does involve anthropogenic perturbation, but this is not detrimental to the environment.[9] This is because it meets the requirement of the two standards—slow rate and small extent—two standards which cannot be regarded as harmful to the biotic community of the environment according to Callicott (Zimmerman, *Environmental Philosophy* 160). It is no wonder that even today most aboriginal habitats including the Huatung Longitudinal Valley, the Central Ranges, eastern shores, and Lanyu are still clean and abundant in wildlife and crops today while most other places are deteriorating severely.[10]

The aborigines in ancient times probably did not know the importance of the minimal human interference for the restoration of the game and the biotic community of the environment, and did not do anything on purpose to reduce the impact of their perturbation on the renewal of natural resources. What they did was probably merely a natural response in the unfolding of their history. Horkheimer and Marcuse once said, "history is a one-way street" and "there is no going back" (Dobson 195); yet their words do not abrogate the truth, and the truth is that the past aboriginal way of life was ecologically sound and that we can go back to it to learn how to interact with nature in a sustainable way. The reasons are threefold. First, a going back to the wise traditional aboriginal way of life is not an indiscriminate return to the primitive age but a learning modified by our present problems mixed with our prospect for the future, not a nostalgic illusion but a pursuit of something past yet contemporaneous with the people of the twenty-first century, not a love of the dead past but a choice of good things renewable. Secondly, recent cultural development in Taiwan society shows that many aborigines are now swarming from cities back to their native places like "salmon" (Nokan 144-49) to settle down, struggling persistently to reconstruct their cultures (Chuan Chi-ting 2), and on the other hand many distinguished scholars are encouraging a return to keep the aboriginal culture alive (exemplified by Lee Yuan-tze, 1999, 196).[11] Thirdly, going back to the traditional way of aboriginal life to find a good ecological future is not an anachronistic absurdity, for Foucault in *The Order of Things* tells us that the Enlightenment idea of the present as a progression from ignorance to greater truth is mendacious; Paul Shepard shows us that the past is "the formula for our being" (Shepard 260); and a Chinese sage said, "The past unforgotten is the future mastered." Indeed, if the simple way of the traditional aboriginal life, even with its limited degree of anthropogenic perturbation, has effectively made possible a sustainable use of natural resources, then I dare to hazard that going back to it is to find a good way of saving and maintaining our ecological future. Therein lies the principle of stability and integrity of our ecosystems.

NOTES

[1] Serita Kirou said, "After experiencing their simple and natural life, I feel that my own life is too complicated and wasteful (看了他們單純合理的生活，就覺得自己的生活多複雜，多浪費); Lee Yuan-tze also says, "They have expertise in the maintenance of the forest among many things, for they grow up in such circumstances, knowing how to take care of nature, protect the environment, and hand down valuable natural resources (森林的維護是他們的專長之一，因為他們在這樣的環境長大，懂得愛護大自然，保護環境為人類留下珍貴的自然資產…)"。Cheng Hsien Yu's 鄭先祐 whole book, "The Impact of Technological Civilization on the Ecology of the Yami" in *A Study of the Impact of Technological Civilization on the Ecology of the Yami in Lanyu* (科技文明對雅美生態的衝擊, 科技文明對蘭嶼雅美生態的衝擊之文化生態學研究), is a detailed study of Lanyu as a

perfect model of a beautiful ecology of symbiosis between humans and nonhumans although sinicization of the island is gnawing away on its pristine beauty.

[2] Cheng Hsien Yu's book (1992) concentrates on the impact of technological civilization on the culture and ecology of the Ami people in Lanyu. Different from Prof. Cheng's study, my study is a general survey of the sustainability of use of natural resources of all the aboriginal people excluding the Pingpu.

[3] The harmful influence of the Japanese and the Han civilization on Taiwan's aboriginal simple life has been explored by environmental scholars, though some scholars argue that the Japanese are more ecologically oriented than the Han people. Prof. Cheng Hsien Yu's study of the devastating effect of Taiwanese social system and capitalism on Lanyu's simple life and its ecological system (in *A Study of The Impact of Technological Civilization on the Ecology of the Yami*) is an epitome of what has happened to the ecological life of all the aborigines over Taiwan.

[4] Totems here refer to totem animals and plants. They were numerous in kind. For example, rattlesnakes in the Puyuma, Paiwan and Bunun; crabs in the Saisiat; *neotelis nebulosa brachyurus* 雲豹 and toads in other tribes, and such trees as 木舉木, *fiteu* 石木解蘭 (Wang Song-Shan, 10) 木瑾 (Wang Song-Shan 10), *yono* 赤榕 (Pu Chung-chen 4), 茄冬 (Pu Chung-chen 6) in different groups. In addition to these, many other trees or plants, though not strictly totems, were held in awe, for they had their protective gods (Wang Sung-Hsing 112) or had the function of keeping evil things away. These totem animals and plants along with such things as poisonous plants, which were safe from human use, other animals which were not regarded as eatable game and therefore were not killed, and other totem wildlife which have not yet been discovered by modern anthropologist, usually became an amorphous web of refugia which in turn contributed to the survival of game.

For example, they had to practice augury at the outset of hunting. If they found signs which they considered ominous, they immediately gave up the scheduled hunting. On the way to a field of game, they remained alert to the possible appearance of a bird that was called *siliek* in the Saisiat (Furuno Kiyohito, 42) and called *oazomu* in the Dapan of the Tsou (Wang Song-shan, 42). If they saw the bird fly in a certain manner or heard it chirruping rapidly, they had to stop the journey and take the way home all at once; otherwise, they believed the trip would incur disasters (MasaoAji 馬紹・阿紀, 43-44). If they perceived other sinister phenomena, running across a pregnant woman, or meeting a certain insect that they arbitrarily regarded as bad, etc., they could only curse their fate and gave up their plan.

[5] Prof. Cheng Hsien Yu also mentioned the third way of farming called *yu ken* popular in Lanyu in addition to the diversified and rotation-crop farming.

[6] Almost all aborigines made wine by themselves. Chang Gin-Seng in his eassy on the wine culture of Luvaniyaw clan of Paiwan people reports interesting ways of making wine. Chang tells us that traditional aborigines drank frugally on ceremonies and other important occasions according to strict regulations. It was only after the external cultures intruded upon their tribes that such strict conventions gradually disappeared. In drinking, the wine was shared in group according to the social hierarchy (Chang Gin-Seng, 2000; 113-120). The habit of eating was almost the same in many tribes. In Vataan groups, food was always shared. Meat of wild animals hunted and fish were distributed to the people proportionally in a fair manner. In Tawo, when there were any fish left over which could not be distributed equally, they were tossed back into the sea to signify fairness and equality (*An Exhibition of Taiwan's Aboriginal Culture*, 1993; 12). When there was a surplus of meat, it was salted for future use. Nothing was wasted as things are thrown away so prodigally in modern cities.

[7] Mr. Cheng Ching-heng says, "One hundred thousand dollars are spent for a meal; food and drink are squandered profligately as if they could be piled into a stage for showing off dishes are ordered and dumped at will; meals are consumed with drink extravagantly 一頓飯一擲十萬金，飲食淪為炫耀舞台…暴點暴丟，暴飲暴吃" (1997; 104). He also says, "After disturbing…and destroying nature…, we produce food processed with low salt and high calcium in contrast with what is natural…, these foods then become the tabs of green capitalism in its

domination of life 在我們干擾破壞大自然之後…以生產低鹽…高鈣種類食物來對付自然…成苟綠色資本主義宰制生命的標篠" (1997; 118).

[8] Ji Jun-jieh 紀駿傑 says, "Unlike the mainstream societies all over the world, the aborigines and nature have lived with nature in a more harmonious way; therefore they have left us a good natural ecology as a whole 不像全球主流社會的大肆破壞自然生態，原住民千百年來與大自然較為和諧共處，因而才保留住完整的自然生態…" (Ji Jun-jieh, "Yellow Stone National Parks, Aborigines and Natural Protection," *Taiwan Daily*, Oct. 31, 2000) 35.

[9] According to He Ke's *The Birth of a Village*, most plains in the western part of Taiwan had been exploited in 1895 when Japan obtained Taiwan (11).

[10] Lee says, "We all hope that the illustrious culture and languages of the aborigines can all be kept and transmitted" ("我們大家都希望看到原住民非常燦爛的文化，語言都能夠留下來").

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