アメリカ，日本及びイギリスに於ける環境研究(欧文)

ENVIRONMENTAL STUDIES IN AMERICA, JAPAN AND BRITAIN : their backgrounds and development in the 1960s and 1970s

Yukio Himiyama

INTRODUCTION

Environmental issues became a major academic, as well as political, concern in many parts of the world in the 1960s and 70s. Environmental problems, such as population expansion, environmental pollution and destruction, or the misuse of natural resources, were widely recognised not only by specialists but by ordinary people. As a result, a variety of disciplines have emerged in environmental studies. Many of them, however, seem to have their common central theme in environmental conservation.

Environmental conservation, according to R. F. Dasmann (1976), is "the rational use of the environment to provide a high quality of living for mankind, and involves the planning for and control of man's use of his environment, with a consideration of the long-range future of the human race with a view to providing environments suitable to the satisfaction of the widest possible range of human aspirations." This definition of environmental conservation is generally acceptable, but it is also true that the term has many different meanings in different circumstances, particularly in different cultures.

There have been several good books or reports on the history of environmental conservation in America, Japan or Britain. However, they are not necessarily intended to portray the cultural dimensions of the development of environmental studies. The present paper aims to compare and contrast the historical and cultural backgrounds as well as the development in the last two decades of environmental studies in three different cultures, i. e. America, Japan and Britain, in order to establish their characteristics and their difference, similarities and interrelationships. It will be stressed that understanding and cooperation between the three cultures are necessary and desirable.

HISTORICAL BACKGROUNDS

AMERICA

Forest conservation and management was the major environmental issue in America during the period between the Civil War and World War I. This was because settlement had been progressing through predominantly forest land, and the results of thoughtless felling were

obvious. By then George Perkins Marsh's *Man and Nature* (1864) or the works of John Muir were known as conservation textbooks. In 1881 Congress established the Division of Forestry in the Department of Agriculture, largely through the efforts of Benjamin Hough. When Gifford Pinchot was the chief of the Division and of its successor, the Bureau of Forestry, from 1898 to 1903, the area of national forests was greatly increased, and the conservation philosophy of forest management was established. Several forestry schools were opened during this period. Such moves had a good effect on the development of other conservation movements, such as the establishment of the Park Service or the Geological Survey. The coming to power in 1901 of a conservation-minded President, Theodore Roosevelt, also contributed greatly to the trend.

During the period following the Great Depression, notably in the 1930s, conservation of various sorts, such as that of forest, soil, or natural resources, became a particular concern of the general public. Among these concerns the problem of soil conservation was at its most serious. Cultivation, when it was confined to the eastern forest area, was fairly successful, with few soil destruction problems, and the capable immigrant farmers continued their agricultural practices on the new lands. However, serious problems occurred when the settlement reached the grasslands, where an entirely different set of conditions was encountered. Although the grassland soils were resistant to erosion and slow to lose fertility in their natural state, yields began to decline as the natural sources of nitrogen, organic materials and mineral nutrients were removed. Farming in this region reached its lowest ebb during the 1930s. In the brown soils of the Great Plains the most serious difficulties arose. In the fall of 1933 a series of dust storms occured which gave the region its popular name, the Dust Bowl. The plains region became almost uninhabitable, and a mass exodus of farmers streamed from the region. The nation was brought to an awareness of the need for soil conservation, and in 1935 the Soil Conservation Service was established. Despite its effort, however, drought returned with a new record of severity in 1950. In 1957 the rains returned to the region, but violenty, and washed the surface soil away.

Drought returned repeatedly to the region, and various measures for soil conservation were taken every time. However, erosion still remains a major conservation problem in America. It always reminded people of the necessity for environmental conservation, and it still continues to do so.

JAPAN

The counterpart in the Japanese language of "conservation" may be "hozen" or "hogo". However, these terms are by no means synonymous to "conservation". Hozen usually means forest management or river control, whereas hogo tends to mean protection of wild life or the natural environment. The latter idea is new, but the former idea has long been one of the national interests.

Japan is blessed with high humidity and temperature in summer. Hence, even at a place where the fertile surface soil has been washed away, vegetation quickly returns and tolerant trees such as pine then establish themselves. What is called the climax will be achieved within

a matter of a hundred years. However, high humidity is not always the guarantee of a good life. On the contrary, it frequently exhibits features of a violent nature. Typhoons and other atmospheric depressions are frequently accompanied by heavy rainfalls and storms which cause floods and soil erosion. To minimise the damage, afforestation and river control have been widely pursued for a long time. Pine trees were planted along the coastal lines where the wind damage was serious. Forests once cleared were replanted without delay. The roles of some lakes and ponds as buffers against floods were well understood, and they were carefully preserved.

"Suiden", or a water-filled paddy field, also has excellent characteristics in terms of land conservation. It may function as a buffer on the occasion of heavy rainfall. It also protects the soil and the nutrients from being washed away. In nutrient terms, it is generally regarded that 2/3rds of the nutrients of rice originate from the soil, whereas 1/3rd comes from the fertilizer. The fertility of paddy field soil is maintained for a very long time by a complicated mechanism which is characteristic to water-filled paddy fields. As a result, the paddy field agricultural system, which has been dominant in Japan, has made a remarkable contribution to soil conservation and water control.

As for "Hatake", or non-paddy field farmland, little is known about its history, since the importance of rice has been over-emphasized. However, knowing that about 90 per cent of the Japanese population in the late Edo era were farmers and that they consumed a good deal of cereals or potatoes as well as rice, we should anticipate that the area of Hatake may have exceeded that of Suiden. Hatake might have presented more conservation problems than Suiden in the past, but it attracted less attention. In the development of agricultural technology and the improvement of the plant breeding of rice, a large part of Hatake was turned over to Suiden. The ratio of the area of Hatake to that of Suiden was three to four in 1903, and two to three in 1971. About half of the area of Hatake is on steep slopes, the angle of which is more than 5 degrees, and about 40 per cent of which has a slope angle of more than 15 degrees. On such slopes, soil erosion might have been tremendous regardless of people's efforts at land conservation. However, partly supported by the rich environment which guaranteed people at least a minimum crop even after the removal of surface soil, and partly owing to the relative importance of rice, the effects of soil erosion have been relatively low in Japan. There has been no such great shock as the Dust Bowl as far as we know.

With regard to forest conservation, it is said that nearly 70 per cent of Japan is covered with forest, and that the woodland flora is surprisingly rich in comparison with the European one. Thanks to the high temperature and humidity during summer time, the growth of trees is fairly rapid. Moreover, a large part of the forest has been very well protected for a long time by the authorities. In the Edo era, Japan was divided into local authorities called "Han", and each Han ruled its land with strong power. They preserved a large part of their forests for the rulers' use and for some commercial use. However, there was no known forest conservation movement on a nation-wide scale during the Edo era. Each Han had its own interest, and it acted for conservation only within its own boundaries. In 1868 the Edo era ended, and the greater part of Han-owned forests was transferred to the hand of the central

government. Since then, the central government has been responsible for the conservation of the forests and the water control of the whole nation. The water control ability of forests was accurately appreciated for the first time. It was not until World War II that Japan suffered a serious destruction of forests. Most of them have already recovered, but in some northern regions or at high altitudes, tree growth is very slow and afforestation has been very difficult. Generally speaking, however, forest conservation in Japan has been very successful and it has contributed to soil conservation and water regulation along with the water-filled paddy fields.

People enjoy a rich environment thoughout the year. Richness of life and the wisdom of the ancestors have kept the land in a fairly good condition in Japan for a long time. However, for the same reasons, the Japanese people have been too ignorant of new types of environmental destruction. To cope with the new environmental problems, they have been forced to learn western science and technology.

BRITAIN

M. Nicholson's *The Environmental Revolution* (1970) includes, as well as many other interesting items, a good review of the British conservation movement. He claims that many of the main principles and structures of conservation have stemmed from the British movement. His claim may be justified to a certain extent, if we look at the history of the British conservation movement.

Britain was once largely forest, but the natural tree cover was destroyed by fellings to make way for agriculture, or to provide timber for ships and pre-coal industry. Near Rogate in Sussex we can see a history of human activities in the British forest. The area cleared in the Bronze-Age still remains as a heath land, where Calluna or Urex is dominant and birches and brackens are still desperately trying to invade it from the edge. We can also distinguish the areas that were damaged in the Tudor era by deer, in the 18th century by the clearance for ship building, etc.

Until 1918 there was no national plan for forestry. Britain was, and still is, a great importer of timber. The over-fellings during the two World Wars, however, obviously made the people aware of the necessity of afforestation, and this led to the creation in 1919 of the Forestry Commission and proposals in 1943 for a fifty-year planting programme. The Forestry Commission was given the duty of "promoting the interests of forestry, the development of afforestation, and the production and supply of timber in the United Kingdom", and was empowered to "acquire and dispose of land and timber, to make grants or loans available to private woodland owners, to establish and assist woodland industries, to collect statistics and undertake research". It thus had two main functions : to develop state forestry and to encourage the planting of privately-owned woodlands.

The main aim of forest conservation in Britain seems to have been the production of timber. A second aim may have been recreational. Thanks to the moderate elevation of her land and the relatively low precipitation, the problems of erosion and flooding have not been so serious in Britain, or at least they have not received as much attention. Forests were even considered to be the great prey for agricultural land. Britain's moderate climate and her

successful history of cultivation probably gave the people a confidence in their capability to control nature. It seems that people also considered that if they did not take up positive attitudes towards nature, their survival would be insecure. The nature was not so violent as in Japan, but it was nonetheless harsh. Weeds did not bother farmers so much, but by the same token, the natural reforestation process was slow once a forest was cleared.

There were, of course, many other sorts of conservation movement in Britain, as may be exemplified by the foundation in 1895 of the National Trust for Places of Historic Interest or Natural Beauty, or in 1913 of the British Ecological Society, and later by the activities of the Nature Conservancy or National Parks Commission. The role played by such great names as Julian Huxley or Arthur Tansley as conservationists should be properly appreciated. They all contributed greatly to the creation and shaping of new disciplines of environmental studies in Britain in the 1960s and 70s.

DEVELOPMENT IN THE 1960s AND 1970s

AMERICA

In America there has been a long history of man-nature conflicts, such as forest destruction or soil erosion, and as a result environmental conservation had become a well developed science by 1960. It contributed to the creation of a variety of disciplines within the field of environmental studies.

A new dimension of environmental study was opened in 1962 by Rachel Carson when she published *Silent Spring,* a pioneer book that showed the hazards posed by the use of dangerous chemicals. It was the story of the use of toxic chemicals in the countryside and of the widespread destruction of wildlife in America caused by pesticides, fungicides and herbicides. It was not merely about poisons, but about ecology or the relation of plants and animals to their environment and to one another. Carson succeeded in awakening the public. Her somewhat emotional approach was accompanied by more sober accounts such as Robert Rudd's *Pesticides and the Living Landscape* (1962). Public interests in pollution problems increased drastically in the 1960s, and Carson's philosophy prevailed along with her warning. She states :

> "The control of nature" is a phrase conceived in arrogance, born of the "Neanderthal" age of biology and philosophy, when it was supposed that nature exists for the convenience of man. The concepts and practices of applied entomology for the most part date from that Stone Age of Science. It is our alarming misfortune that so primitive a science has armed itself with the most modern and terrible weapons, and that in turning them against the insects it has also turned them against the earth.

This was written in 1962, one year before Odum's *Ecology* and eight years before Ehrlich's *Population, Resources, Environment.* Her ideas and warnings obviously had a great effect on the environmental writings and articles which followed.

By 1970 there were conservationists who were broadening views and deepening involvement in social affairs, new types of biologists or ecologists, who accused classical biologists of their short-sightedness, geographers, engineers, unsatisfied youth, etc. Responding to the demands of society and students a number of environmental departments and institutions were

established. Many environmental books were also written at that time. Ehrlich's *Population, Resources, Environment* was published in 1970, G. A. Love's *Ecological Crisis* in 1970, Meadows' *The Limits to Growth* in 1972, G. M. Van Dyne's *The Ecosystem Concept in Natural Resource Management* in 1969, A. S. Boughey's *Man and the Environment* in 1971, etc.

With regard to college education, some twenty new departments and institutes were established for environmental studies. It is regrettable, however, that only a few of them were truly interdisciplinary. Some of them were mainly engineering-oriented, and some others just had new names with old contents. Most of the successful environmental scientists remained in old departments or institutes. Ehrlich, one of the most successful environmental educationists, was in the Department of Biological Sciences, Stanford. It is doubtful, however, that those outstanding educators could function in old educational systems and meet students' and society's demands. Ehrlich says :

> While a great deal can be done to improve our educational system within the general framework now recognised, more fundamental changes will probably be required if large technological societies are to discover ways to govern themselves satisfactorily while avoiding the social and environmental problems which now threaten to destroy them..... we feel that a major effort should be made to extend education throughout the life span..... The discontent expressed today by many groups is based on the fact that they feel cut off from participation in important decisions that affect their lives.

It is evident that environmental studies in America at their beginning had a close interrelationship with the students' radical movements against the existing order—the order which forced them to go to Viet Nam, or to become a part of a big, inhumane machine whose destination nobody knew. Ecology and ecology-centered environmental studies, it was hoped, would establish some philosophy for survival and knowledge about the structure and function of natural and human environmental systems to pass on to the students. They, in turn, learnt from the young people their ecological philosophy. Again, we listen to what Ehrlich says :

> In the United States, the unorthodox but constructive and quasi-religious attitudes expressed by members of the so-called 'New-Left' and the Whole Earth 'hippie' movements may well help save our environment. The hippies especially have borrowed many religious ideas from the non-Christian East, including Zen-Buddhism, the rewards of close personal relationships, spiritual values, a reverence for life and an abhorrence of violence in any form. Members of both these groups of young people share a disdain for material things, a fascination for nature, and an interest in what might be called an ecological way of life.

Ecological philosophy or way of life was not then new in America, as was clearly demonstrated by Aldo Leopold in *A Sand County Almanac* (1949). However, many of the environmental or ecological books published in America in the last two decades suggest that they were influenced by those young people, and had at least some interest in Oriental philosophy.

With the Viet Nam War over in 1975, new lefts and hippies lost their momentum. However, without enthusiasm but with the steady support of the general public and the students, what are called ecologists, environmentalists, or survivalists continued their battle against environmental problems, for human rights and welfare. The most influential power

among such movements may have been the one represented by Ralph Nader.

In the academic world, physicists were losing their influence and voice during this period. They were almost totally unsuccessful in presenting the new philosophy that people were longing for. Only a few of them reconsidered their roles and aims in the changing society. One such physicist, M. L. Goldburger, wrote in 1970 as follows :

> Physicists can not only do anything, but they can do it better than anyone else....Physicists can make a contribution to environmental problems...by actual research and development, by education, and as participants in a multidisciplinary team.

It is true that there have been contributions from physicists in those issues, but their activities look so faint in the outgrowing influence of biological and ecological sciences.

V. R. Potter (1971), a then leading bio-chemist, writes :

> Establish a science for survival on the bases of biological sciences, extend the traditional territory of biology, absorb the most important elements of social and human sciences, and emphasize the philosophy of "love for wisdom" in a strict sense. The science for survival should be more than mere science.

His themes include the fundamental issues of environmental studies : (a) the relation between order and disorder, (b) the concept of dangerous knowledge, (c) human evolution and human survival, (d) the duty to the future, (e) the control of science and technology, (f) the necessity of efforts among interdisciplinary fields, (g) the role of science and scientists within society. Although he oversimplifies the geographical dimension of the world environmental issues, his structuring of the themes is still attractive as a guideline for environmental studies as a science and philosophy.

The Strahler's books on physical geography (eg. *Elements of Physical Geography*, 1976) show how capable geographers in America learnt the philosophy and knowledge of ecological and environmental studies, synthesized them with their own, and are establishing a new perspective for geography. Quite naturally, he emphasizes spatial distribution of physical environmental variables and their interactions, and stresses the global patterns of climate, soils, vegetation, and landforms, and attempts to explain these patterns in terms of natural processes. He regards physical geography as being closely involved with an analysis of the human impact on the environment, since this integrates most of the diverse factors contributing to environmental changes. Since most environmental issues have both local and global dimensions, the geographical perspective is likely to become an important element of environmental studies.

Towards the end of the 1970s environmental studies in America established itself as an important academic field. The growing contribution of geographers, ecologists and related professions was evident. It is regrettable, however, that few philosophers and human scientists made notable contributions to the development of this important field. Most of them kept silent when people wanted to hear their voices, probably because they did not even realise the existence of the environmental crisis. Environmental studies in America is still immature, but its development during the last two decades makes one feel that a variety of approaches would be made at many places for conservation, for survival, for the better understanding of man and environment, and for pursuing scientists' duty to the society and to the people. Starting from

the conservation of forest and soil, environmental studies extends its territory to include a wide range of disciplines, now.

JAPAN

In Japan the land was fairly well preserved thanks to the richness of nature and the wisdom of the ancestors, although nature sometimes showed its violent features. People developed both passive and receptive characteristics in such an environment (Watsuji 1935), and consequently they remained quite indifferent to the new types of environmental problem. Thanks also to high precipitation and Japan's oceanic location, Japanese people did not pay much attention to the pollution problems until the 1960s. The air and water were kept clean by the wind from the ocean, by the rapid streams of the countless rivers, and by the oceanic currents. Although there were serious pollution problems caused by the toxic water from the copper mines even a hundred years ago, the general public were not awakened to the dangers of pollution and environmental destruction until the 1960s. After World War II, which ended in 1945, the first priority of the nation was given to the development of industries and the reconstruction of the war-worn nation. The nation's economy grew at a tremendous speed in the 1950s, 60s and 70s, until Japan finally achieved the status of the third strongest economic power in the world. However, this could not be done without creating serious environmental and other problems. Japan became one of the most developed countries in terms of pollution as well.

In the 1960s, what was called Minamata Disease attracted public attention. The cause of this dreadful disease was proved to be methyl mercury that was discharged into Minamata Bay from a chemical industry called Chisso. The number of victims of this disease was estimated to be several thousand. Many similarly serious pollution problems were uncovered in the 1960s : mercury pollution of Agano River ; arsenic-poisoned milk that killed and harmed thousands of babies in and around Osaka ; Itai-Itai Disease in Toyama, etc. A number of citizens organizations were created to help and protect the victims and resist careless and reckless industries and the industry-supported government. People gradually became aware of the fact that none of them were free from the danger of environmental pollution. There were many other sorts of problem apart from pollution. The problems raised by the New Tokyo International Airport and by atomic power plants were more than mere pollution problems. There were also people who demanded the right to sunlight in the shadow of high-rise buildings, people who could not sleep because of the noise of airplanes or trains, and people whose houses were subsiding due to the reckless use of underground water by companies. To name these kinds of problem that offend against basic human rights and welfare, the word 'kogai' has been widely used.. Its meaning is close to 'public nuisance' in English, but somewhat broader and more vague. Environmental desruction and pollution were considered as ecological or environmental problems in America, but in Japan they were considered as kogai problems and were often related to the distortions caused by 'kodo seicho', or rapid economic growth.

In the late 1960s and early 1970s, newspapers in Japan were filled with articles about university conflicts, as well as kogai problems. Students resisted against the existed order,

partly for political reasons, partly because of their dissatisfaction with the government's handling of kogai problems, partly because of their dissatisfaction with the nature of university education, and partly for a fear of the huge, irresistible society machine of which they were going to be a part. They asked, "Why do we have to study these subjects ? What are those studies for ? Why do innocent citizens have to be killed or harmed by pollution ? With this kind of environmental destruction and the negligence of human rights, where on earth is Japan going ? Why do we have to see blood-painted tanks from Viet Nam ?" Most of the leading universities went on strike. Students and teachers discussed the problems. Some teachers realised their narrow-mindedness and the irrelevance of their lectures, and started thinking about their responsibilities to society and to young students, but others did not. After a few years of fierce conflicts, there were no big changes in those universities. However, in some universities, such as Tokyo University, Tohoku University, Sinshu University, Hiroshima University, or Hokkaido University, lectures devoted to environmental studies started in one way or another.

In 1971, two years after the fierce conflict, Tokyo University chose 'Man and Environment' as the theme of its traditional public lecture. The lecturers were invited from various dapartments, and there was an evident effort on the part of the university to treat the theme in a broad perspective. The lectures included (a) heredity and environment (by a Prof. of medicine), (b) physiological control and environment (by a Prof. of pharmacology), (c) evolution and environment (by a Prof. of anthropology), (d) environment, from the standpoint of earth chemistry (by a Prof. of chemistry), (e) plants and man in the ecosystem (by a Prof. of biology), (f) the function of plants (by a Prof. of agriculture), (g) ocean and man (by a Prof. of agriculture), (h) problems of residential environment (by a Prof. of urban engineering), (i) the climate of culture (by a Prof. of geography), j) environmental rights as a human right (by a Prof. of law). Although it was impossible for these short lectures to include detailed materials and integrated thought, they at least showed some important aspects of environmental studies, and presented a guideline for structuring the new field.

In Shinshu University, a course of nature conservation was established in the College of General Education in 1971. The contents of the course resembled that for Tokyo University. In both cases, cultural, spiritual and ethical aspects of environmental issues were emphasized. These aspects have been a major dimension of the environmental studies that followed. This is understandable if one knows the historical and cultural backgrounds of the Japanese people.

In 1935 Watsuji Tetsuro's *Fudo*, or philosophical study of climate and culture, was published. Although his geographical knowledge was rather poor, he attempted to establish "the function of climate as a factor within the structure of human existence." His argument was based on his direct observations of several cultural and climatic regions. It has been criticised by many specialists for its over-simplifications of reality and its lack of scientific scrutiny. However, his intention itself was widely appreciated, and since then many authors have attempted a better cultural comparison. Watsuji's work thus made an important direct and indirect contribution to the inclusion of the cultural dimension in environmental studies in Japan.

There has been a steady cultural flow from the West to Japan. Good foreign articles are quickly translated into Japanese, and discursive ones made more compact. Under such circumstances, Japanese people hardly realise their weaknesses in scientific thinking, because they seldom appreciate the necessity of establishing new scientific ideas. They, however, are thus exposed to foreign cultures, and this has made people aware of the importance of the cultural dimension. Furthermore, the philosophy of Buddhism, which still remains in Japanese people's hearts, may well have had some effect on this matter. It is likely that westerners coming to Japan would find a very different climate, culture and philosophy, and would realise the necessity of adding these dimensions to their "scientific" ways of thinking in environmental studies.

There was another change in some Japanese universities after the conflicts. It was the appearance of "Jishu-Koza", or self-study groups. Students and teachers who were unsatisfied with the formal courses made groups to study environmental subjects, such as pollution, population, energy, or conservation. Many of these groups were deeply involved in environmental pollution problems, and they examined these problems carefully and seriously.

The Japanese Government established the Department of the Environment in 1971 in order to check new development plans and conserve a better environment. The Department then established its own Public Nuisance Research Institute two years later. This has played a certain role in environmental conservation, but only after pressure from and with the cooperation of the citizens' organizations. Considerable efforts of some scientists and students were behind them. It is doubtful, however, whether these efforts were accurately appreciated by the universities.

After observing the development of environmental studies in Japan in the 1960s and 70s, there remains a fear that it has not yet grown as a well-balanced interdisciplinary subject. Engineers do their own business, and culturally-minded people hardly apprehend the necessity of a scientific approach ; in any case, the geographical perspective remains a minor fraction of the field. Even in what are supposed to be "interdisciplinary" courses, individual teachers often teach only within narrow fields of interest. They may say that it is students who should integrate the separate subjects. It may be true, but it is also true that teachers themselves must synthesize separate disciplines to establish more interdisciplinary environmental studies.

BRITAIN

The word "survival" seems to have more alarming sound in Britain than in Japan or America. America has wealth, rich resources and a huge land area, and people can rely on some fool-proof security. Japan has no such security, but people tend not to become so anxious about survival for some reason. First, nearly 70 per cent of her land is still forest, and this gives people some relief and a feeling that they are still surrounded by undisturbed nature. Second, their remarkable success in the post-war economic development has given the people much confidence in their capability to cope with the existing and future problems. Thirdly, as Watsuji says, they are passive and receptive. In Britain, on the other hand, there is little sign of optiminm. Her economy has been declining for some time, the unemployment rate is high,

and her land is already almost fully utilised.

The Doomsday Book (1970) by G. R. Taylor called forth a great response from the public. With a tremendous amount of data and by means of broad and careful observations, he showed the danger of various kinds of pollution, environmental destruction, the population explosion, and so on. He found that the cause of such dangerous situations was the vicious circle of population increase and technological development. He was versed in Oriental and Western philosophies as well as modern technology, and attacked Western materialism and man-centred egoism. He stressed the necessity of paying attention to the Oriental philosophies. He says :

> Albert Schweitzer said that the mistake which all the past ethics had made was that they were just concerned with human relations. But this criticism should have been directed only to Western morals, since, among the Oriental religions, there were those which strongly insisted on the animals' and even the insects' rights of existence. This point is still largely neglected in the West.

The involvement of an author in the cultural or philosophical aspects, especially those of the East, varies depending on his personal experiences and values. I. G. Simmons, a geographer, has lived in America and Japan for two years, and his big work *The Ecology of Natural Resources* (1974) spends many pages on the cultural aspects of environmental studies. He says :

> ...this book aims to emphasize the ecological point of view ; but it recognizes that the objective, scientific study demanded by ecology does not portray the totality of man's interaction with the systems of this planet which comprises resource processes ; it allows that many other factors, and in particular those usually designated as cultural, are of considerable importance.

Another example of such work that emphasized cultural aspects was *The Environmental Revolution* (1970) by Max Nicholson. The author was Director General of the Nature Conservancy Board from 1952 to 1966, and had a wide range of activities throughout the world. He had a deep insight into foreign cultures. Talking about Japanese and English traditions. he writes :

> ...for whatever reason, modern Japan is a strange mixture of refined susceptibility and apparent gross insensitivity to the requirements of landscape. We may hope that this will prove to be merely a transition stage, leading to renewed dominance of the great Japanese tradition....In England, by contrast, no native tradition is traceable beyond some three centuries ago.

This clearly shows that his motivation was not limited to domestic conservation movements, and that he recognized the necessity of learning from foreign cultures.

Another type of work may be exemplified by R. Arvill's *Man and Environment* or D. R. Arthur's *Survival.* These authors do not pay much attention to foreign cultures and philosophies in their books, and their arguments are rather materialistic. Arvill's book is very much "practical" and "realistic", and treats only domestic issues. Arthur talks a great deal about man's evolution vs. the environment, and then current issues, such as starvation or pollution. The time scale he is concerned with in his book seems to be too long to recognise the importance of regionality of climate and culture.

There was another type of environmental movement that emerged in the 1960s and 70s. It was concerned with new science and technology. Several active organizations were created, and the participants sought a way to fulfill their responsibilities to society. One example of such a movement is the "Centre for Alternative Technology", which is sponsored by the "Society for Environmental Improvement". It is a working demonstration, independent of mains services, which "aims to show that it is possible for us to live happily with our fair share of the earth's resources, and to cause a minimum of pollution and waste." The centre has various kinds of windmills, solar collectors, a low energy consumption house, a number of waste-recycling systems, organic gardens, fish culture, and other things.

Alice Coleman's works on land use made a unique contribution to the progress of environmental studies. She, as Director of the Second Land Utilisation Survey of Britain, proclaimed that too much of the land was misused. She demonstrated that the major battle field for land conservation was then in rurban fringe areas where sprawl was taking place. She accused planners of their inability to stop land misuse. An interesting point here is that both Coleman, a conservationist, and the planners were well equipped with scientific methodologies and ideas, yet still reached totally different conclusions regarding land use. They, however, shared a common view that the land was there to be fully utilised by man.

The list of the Natural Environment Research Council's Research Studentship 1977 shows that most of the colleges in Britain were then offering these studentships. However, the number of institutions that offer well organised environmental studies courses is limited. One of a few institutions that offer students a wide range of interdisciplinary education is the School of Human Environmental Studies, King's College, University of London, The school was established in 1975 by the effort of the Zoology Department and the Geography Department. It is a small, three-year degree course to "enable an integrated study of human environmental problems, and approaches to their solution, based on a scientific understanding of the inter-relationships of man and his environment." The course contains the following disciplines : ecology ; human ecology and evolution ; data analysis ; environmental geology ; environmental engineering ; population and resources ; economy of the environment ; man's response to the external environment ; land use analysis ; pollution ; plant ecophysiology ; soils ; energy ; renewable biological resources ; the built environment ; the sea ; water resources ; ecology of disease ; landscape and biological conservation ; legal aspects of the environment. The school directory also states that "a human environmental studies degree will not only equip students for careers concerned directly with environmental problems, but will also provide a broad and useful general education likely to be in demand at a time when many employers are looking for broadly educated adaptable people who have learnt how to continue learning throughout their career, and how to communicate their knowledge and skills". Unfortunately there is no cultural or philosophical teaching in the course. However, it is easy to find here a sincere attitude on the part of educators who seek for a better education which tries to meet students' and society's needs. It is interesting to note that such a new and well-organized course of environmental studies was born in the country where there was no notable university conflict. In Japan and America, there did exist severe conflicts, but only a few comparable programs

were born. Although certain things need to be improved and it still lacks a postgraduate course, the course of King's College might be a good challenge to the existing college education.

CONCLUSIONS

The developement of environmental studies in America, Japan and Britain during the 1960s & 70s had very different historical and cultural settings. In America, there were many active conservationists and environmentalists who integrated both scientific and cultural disciplines into their environmental studies. The field now seems to be establishing itself as a scientific field with cultural and ethical dimensions. However, America is a big country, and many Americans still appear to be quite ignorant of foreign or international affairs. Changing their isolationist view might be a difficult, but necessary, task for environmentalists, since without a change of their ways of life there is no environmentally bright future. In Japan there were also moves towards interdisciplinary environmental studies. However, apart from intensive studies of kogai problems, the moves were rather scattered and, at least as an academic field, it was not as successful as desired. There were a lot of arguments about environmental issues, but there were not so many good pieces of research, particularly into environmental education. Geographers, as well as ecologists, should and can play far more important roles in the establishment of more comprehensive and scientific environmental studies. In Britain and America geographers played a major role, but most Japanese geographers kept themselves away from the issue when they were called on to act. Britain established several well-formed environmental courses. "Survival" was a keen issue in Britain, and conservation and other environmental movements, including education, had a well-established background and the wide support of the people. The approaches in Britain were basically scientific in a strict sense, but there were also attempts to integrate cultural and ethical dimensions into environmental studies. Although the confidence of the people in science is still very strong, there is a gradual change towards more comprehensive environmental studies.

We should exchange our experience, knowledge, philosophy and wisdom with each other. There is no true international cooperation without good mutual understanding and respect. True international cooperation is necessary for the progress of environmental studies and for the survival of human beings. Environmental studies should not be a mere study of ecology and pollution, but include the study of man himself, his culture and his many environments.

ACKNOWLEDGEMENT

I would like to thank Dr. A. Coleman for her comments on a earlier draft. I am also indebted to a number of departments and institutes for their letters and other items that have helped me in my writing of this essay.

REFERENCES

America
Boughey, A. S. (1971) : "Man and the Environment"
Carson, R. (1962) : "Silent Spring",
Commoner, B. (1963) : "Science and Survival"
Dasmann, R. F. (1975) : "Environmental Conservation"
Ehrlich, P. R. and A. H. Ehrlich (1970) : "Population, Resources, Environment"
Fritsch, A. J. ed. (1980) : "Environmental Ethics"
Goldberger, M. L. (1970) : "How Physicists can Contribute", Physics Today, 23, (12), pp. 26-30.
Leopold, A. (1949) : "A Sand County Almanac"
Love, G. A. (1970) : "Ecological Crisis"
Marsh, G. P. (1864) : "Man and Nature"
Meadows, D. H. et al. (1972) : "The Limits to Growth"
Odum, E. P. (1963) : "Ecology"
Potter, V. R. (1971) : "Bioethics : bridge to the future"
Rudd, R. (1962) : "Pesticides and the Living Landscape"
Schnaiberg, A. (1980) : "The Environment : from surplus to scarcity"
Strahler, A. N. and A. H. Strahler (1976) : "Elements of Physical Geography"
Van Dyne, G. M. (1969) : "The Ecosystem Concept in Natural Resource Management"
Ward, B. and R. Dubos (1972) : "Only One Earth : the care and maintenance of a small planet"
Japan
Asahi-Shimbun ed. (1973A) : "Chikyu wa Manin (too many people)", in Japanese
Asahi-Shimbun ed. (1973B). "Moetsukiru Chikyu (energy crisis)", in Japanese
Fukuoka, Y. (1980) : "Zusetsu Kankyo Chiri (environmental geography illustrated)", in Japanese
Hogetsu, K. et al. eds. (1972) : "Kankyo no Kagaku (environmental sciences)", in Japanese
Jitsu, H. (1977) : "Jinko Mondai no Jidai (age of population problem)", in Japanese
Murayama, M. (1981) : "Ibunka Rikaieno Michi (way to understanding of foreign culture)", in Japanese
Shimazu, Y. (1974) : "Kokudo Kagaku (science of Japanese islands)" in Japanese
Shimazu, Y. (1977) : "Kankyo Asesumento (environmental assessment)" in Japanese
Shinshu Univ. Env. Inst. ed. (1973) : "Shizen Hogoo Kangaeru (on environmental conservation)", in Japanese
Shinshu univ. Env. Inst. ed. (1980) : "Shizen to Musubu Bunka (nature and culture)", in Japanese
Tokyo Univ. ed. (1971) : "Ningen to Kankyo (man and environment)", in Japanese
Watsuji, T. (1935) : "Fudo (cultural climate)", in Japanese
Britain
Allen, R. (1980) : "How to Save the World"
Arthur, D. R. (1969) : "Survival : man and his environment"
Arvill, R. (1967) : "Man and Environment"
Bennett, R. J. and R. J. Chorley (1978) : "Environmental Systems"
Coleman, A. M. (1977) : "Land Use Planning : success or failure?", Architects' Journal, 165, (3), pp. 91-134.
Dickson, D. (1974) : "Alternative Technology : and the politics of technical change"
Nicholson, M. (1970) : "The Environmental Revolution"
Simmons, I. G. (1974) : "The Ecology of Natural Resources"
Simmons, I. G. (1979) : "Biogeography : natural and cultural"
Taylor, G. R. (1968) : "The Biological Time-Bomb"
Taylor, G. R. (1970) : "The Doomsday Book"
Todd, R. W. et al. eds. (1977) : "An Alternative Energy Strategy for the United Kingdom"

旭川分校助教授地理学教室
氷見山幸夫(ひみやまゆきお)
YUKIO HIMIYAMA, Ph. D. Associate Professor of Geograhpy, Hokkaido University of Education, Asahikawa College