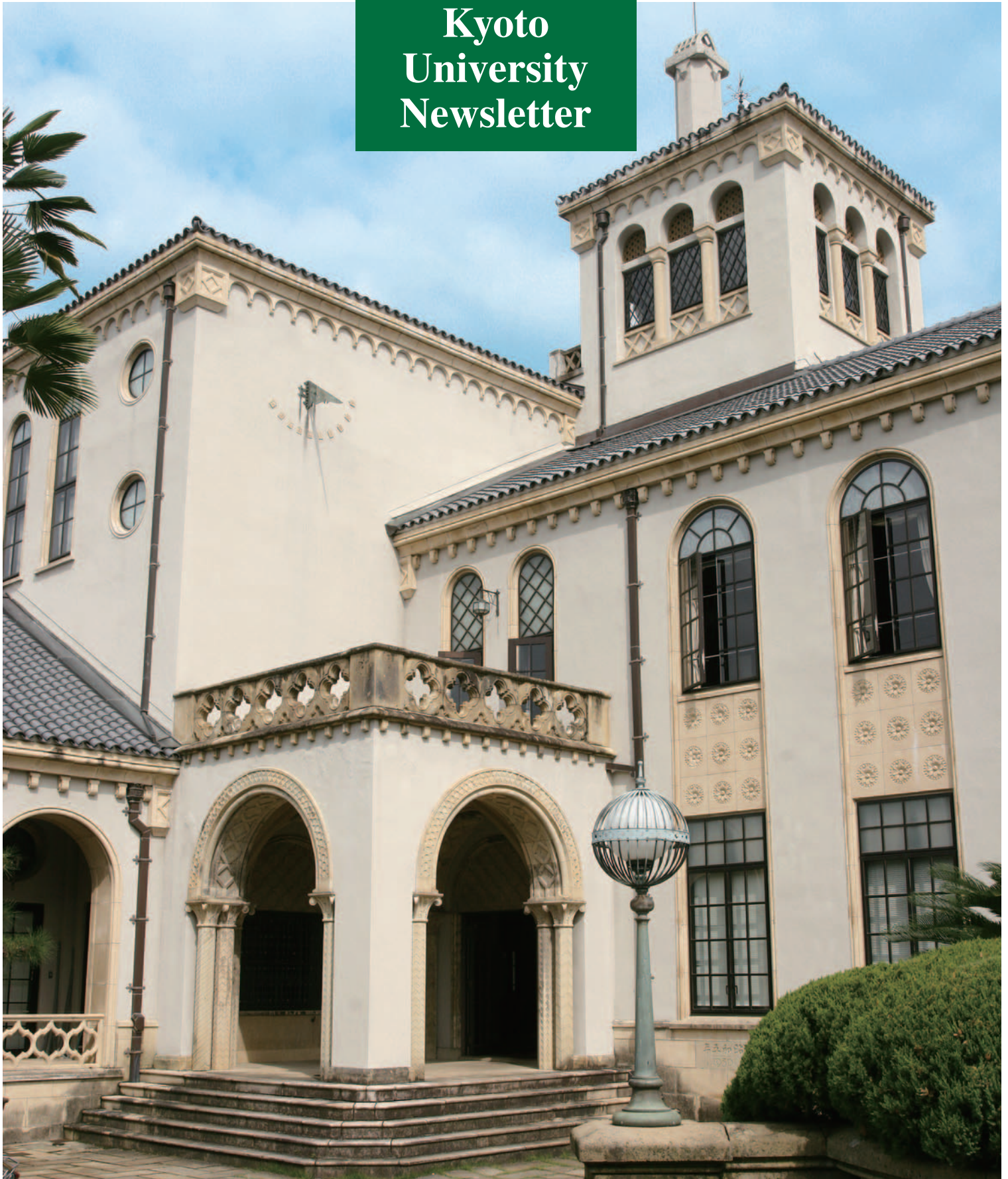


楽友
Raku-Yu

Kyoto
University
Newsletter



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Editor's Notes

Environmental issues are among the most serious concerns that the world faces today, but their solution will never be realized without efforts from each of us in our daily lives. With “Think Globally Act Locally” as our key phrase, this issue of *Raku-yu* introduces various efforts for dealing with global environment issues on the campus of Kyoto University itself. Located in the heart of Kyoto city, well known for the Kyoto Protocol, many unique efforts have been initiated on the campus in various fields and disciplines, involving a variety of people including academics, administrative officers, and students. We hope this issue will also go some way to making the campus a more environmentally friendly place, by bringing into focus a number of important activities in the environmental field, some of which may be less well known to the general public.

The Annex of the Institute for Research in Humanities in Kita-shirakawa

– Completed in 1930

As you walk through the quiet residential district to the east of the Yoshida campus, all of a sudden you come across a white building. It was built in 1929 as premises for the Kyoto research center of the Toho Bunka Gakuin (School of Oriental Culture), as it was then called, with the help of a grant from the Ministry of Foreign affairs. Nowadays it is used for research activities by the Department of Oriental Studies and the Documentation and Information Center for Chinese Studies (DICCS) of the Kyoto University Institute for research in Humanities. The building is in the Romanesque style of a Spanish monastery but with an oriental touch; there are intricate decorations everywhere. The book stacks and the reading room lie on both sides around the central minaret, while the study block is arranged around the central court. This is quite a unique building for a university facility, and was designated for registration as a tangible cultural property by the Agency for Cultural Affairs in 2000.

The instructors’ study rooms are laid out around the central court with its lawn containing a pond and a well. This could be seen to symbolize the joint research and the freedom of discussion which are a special feature of the Institute for Research in Humanities.



The Chinese collection housed here contains more than 300,000 volumes and is one of the world’s leading collections in terms of both quality and quantity. The library is open to all scholars, and is visited by many both from within Japan and overseas.

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A Note on Order of Names

As a general rule, names appearing in *Raku-Yu* are written in given name/family name order.



This name was taken from the assembly hall called “*Raku-Yu Kaikan*” that commemorated the 25th anniversary of the founding of Kyoto University.

Kazuo OIKE Following his graduation from Kyoto University's Faculty of Science in 1963, Dr. Kazuo Oike became a research associate at the university's Disaster Prevention Institute. Following the completion of his doctoral degree in geophysics in 1972, he went on to attain the rank of associate professor in 1973. Dr. Oike became a professor of seismology in the Faculty of Science in 1988 and in the Graduate School of Science in 1995. In 2001 he became a vice-president of Kyoto University, and was elected as president in December 2003. From April 2005, as the first president of the newly incorporated National University Corporation Kyoto University, Dr. Oike introduced a range of reforms to improve and expand the university's education, research and medical facilities. Dr. Oike also focused on improving the university's relationship with the wider world beyond its campus, enhancing the university's dissemination of information to society as part of a campaign to make the university more open and accessible. Dr. Oike has also been involved in many other unique endeavors, such as creating his own dishes for the university's on-campus restaurant and devising a comic-book-style introduction to Kyoto University. Dr. Oike ended his term as president of Kyoto University in September of 2008, entrusting the duties of that office to his successor, President Hiroshi Matsumoto.



Think Globally, Act Locally — Kyoto University's Environmental Charter

The Mission Statement of Kyoto University includes the declaration that the university will 'conduct its administration with regard for the environment and respect for human rights and will be accountable to society at large.' In order to further clarify this aspect of the Mission Statement, an Environmental Charter was drawn up in February 2002. The Environmental Charter was formulated in an effort to encourage all of the students, faculty and staff of Kyoto University to acknowledge the principles of the Mission Statement and make their own individual efforts towards reducing the university's environmental burden.

The Kyoto Protocol to the United Nations Framework Convention on Climate Change was adopted in 1997 and entered into force in 2005. The agreement stipulates that by 2012 Japan must reduce its greenhouse gas emissions by 6% of their 1990 levels. The target reductions for Kyoto City and Kyoto prefecture are even higher at 10% of the 1990 levels. Kyoto University must also play its part in striving to achieve that target reduction. Fossil energy use is a cause of global warming, and Kyoto University is responsible for over 1% of Kyoto City's entire fossil energy use. If we consider the goals laid out in the Kyoto Protocol, it is clear that drastic measures are needed to reduce greenhouse gas emissions.

These issues are being addressed by Kyoto University through the implementation of an environmental tax, a system which aims to encourage energy conservation and the reduction of greenhouse gas emissions. The tax was devised in January 2008, together with the Kyoto University Environmental Program, an effort to raise environmental awareness. The Environmental Program was formulated to provide concrete measures to tackle five of the university's priority environmental issues. The Environmental Tax was introduced this April, and Kyoto University was the first and only university in Japan to take such an initiative. In Feature 1 of this volume, Dr. Koichiro Oshima, former Director-General of the Office of Society-Academia Collaboration for Innovation explains the system in greater detail. Also, other faculty members and students present their own activities relating to environmental issues. I hope you will enjoy reading about them.

Kazuo OIKE
Former President, Kyoto University

A handwritten signature in black ink, appearing to read 'K. Oike', written in a cursive style.

Biodiversity created by mutualism: From the sea and the forests of the Amami Islands

Networks of mutualism

There are many cases of different organisms living closely together, where their relationship, which must have originally been one of conflicting interests, has developed over time into a mutualistic one. The same kind of symbiosis often develops between parasites and their hosts. This is clear evidence that this sort of mutualistic relationship plays an extremely important role in stabilizing the ecosystem and in creating biodiversity. This article describes the astonishing networks of mutualism which can be found in the rich marine and land ecosystems of Amami Oshima, an island in southern Japan.

Marine mutualism

The sea is the habitat of organisms known as pelagic microalgae, filter feeders and detritus feeders, which have patterns of life that cannot be found in the terrestrial ecosystems. Two characteristic features of marine ecosystems are photosynthesis symbiosis, which allows algae to live inside a body, and inhabitation chains, in which a variety of organisms live both inside and on the surface of filter feeders and detritus feeders.

The beaches in Japan have been ruined as a result of human interference along the shoreline, but the Amami Islands still have some superb mud flats, coral reefs, mangroves and beds of sea grass. There are many sea cucumbers to be found under the rocks on the beaches which lie between the sea and the forest, and a new



Fig.1. An untouched beach on Kakeromajima island

species of bivalve has been discovered living in their alimentary tracts. In general, bivalves are filter feeders, but this type of bivalve lives inside the bodies of sea cucumbers. They are also the first known example of a bivalve which lives together as a pair, with one large female and one small male. The pallium protrudes out of the shell and wraps round it, while the legs and the gonads also protrude out of the shell. Living inside another organism in this way is a remarkable example of biological diversity.

Mutualism in the forest

At the same time, terrestrial ecosystems bring plants together with a variety of animals and fungi in 4 types of mutualistic relations: pollination mutualism, seed dispersal mutualism, mycorrhizal mutualism and defense mutualism. For example, most angiosperms are pollinated by animals such as bees, and their seeds are dispersed by birds or monkeys. Many plants form mycorrhizae, and are helped in the absorption of nutrients by mycorrhizal fungi. They also use ants to eliminate herbivores. This type of mutualistic network is a main feature of the terrestrial ecosystem.

So what kind of mutualistic systems can we see in the forests of Amami? Amami has many indigenous species such as the Amami rabbit (*Pentalagus furnessi*) and Amami jay (*Garrulus lidthi*), which also doubtless form part of the distinctive mutualistic system of these forests. Recently, a new species of tree (of the family *Icacinaceae*, genus *Nothapodites*, which is known to include constituents

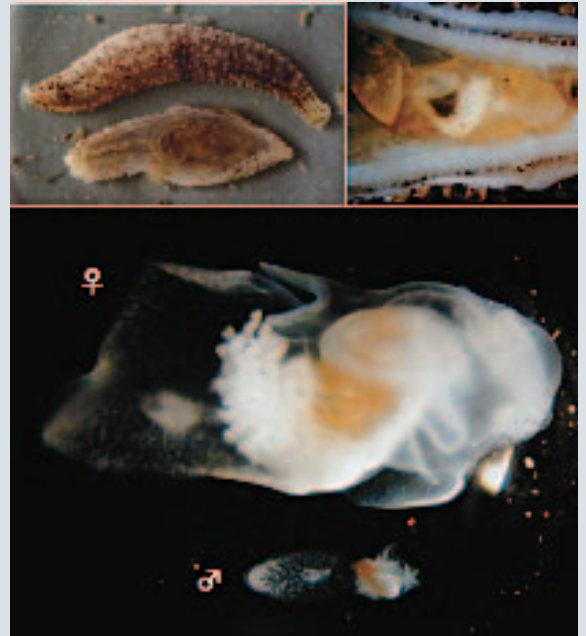


Fig.2. *Holothuria pardalis* and its oesophagus, together with the bivalve (*Entovalva lessonothuriae*) which lives inside the oesophagus.



Fig.3. The new species of tree (*Nothapodites amamianus*) discovered on Amami Oshima.

with anticancer properties) has been discovered in the forest of Amami Oshima. The particular characteristics of the biota of the Amami Islands, and their value, are immeasurable.

A third case of obligate pollination mutualism

In this forest, there is known to be a tree of the *Glochidion* genus, which bears an inconspicuous flower whose system of pollination is beyond our imagination. This plant bears male and female flowers, neither of which have petals, and which no animal comes to during the day time. What is special about it was that the

ripe fruit it bears is always fed on by gracillariid moths, and it thereby loses a part of its seeds. We thought that this might perhaps be another example of obligate pollination mutualism, known to operate in the fig and the yucca.

One night in May of the 7th year of our study, we checked that moth alighted on that flower, pollinated it, and it had laid its eggs there. The gracillariid moth collected pollen from the male flower and pollinated the female flower with it when it settled there. It then immediately laid eggs on the pistils. When they hatch, the moth larvae grow by feeding on the seeds as they develop, but they never fail to leave one part of the seeds uneaten.

Later on in the study, it was established that *Glochidion* plants of every species were pairing up with specific gracillariid moths in mutualistic relations for pollination purposes. Just as in the cases of fig–fig wasp mutualism and yucca–yucca moth mutualism, the relation between the *Glochidion* plants and the gracillariid moths is a third case of obligate pollination mutualism, with synergistic diversification among the

plants and the pollinators. How and when did obligate pollination mutualism come about? How could the evolution from parasitism to mutualism have occurred? How did plants and pollinators co-evolve, and how did their cospeciation happen? Why has the evolution of behavior which would circumvent the need for a mutualistic partner, such as multiple oviposition, been suppressed? Does obligate pollination mutualism lead to synergistic diversification? This model system is helping us to find the answers to questions such as these.

The nature of the Amami Islands, both in the sea and the forests, is woven into a network of mutualism. The complexity of these networks not only reflects the long history of the relationships between species, but without doubt also contributes in itself to the creation of diversity. With the biological diversity of both the marine and forest environments being lost at an alarming rate, the importance of mutualistic systems is becoming ever greater.

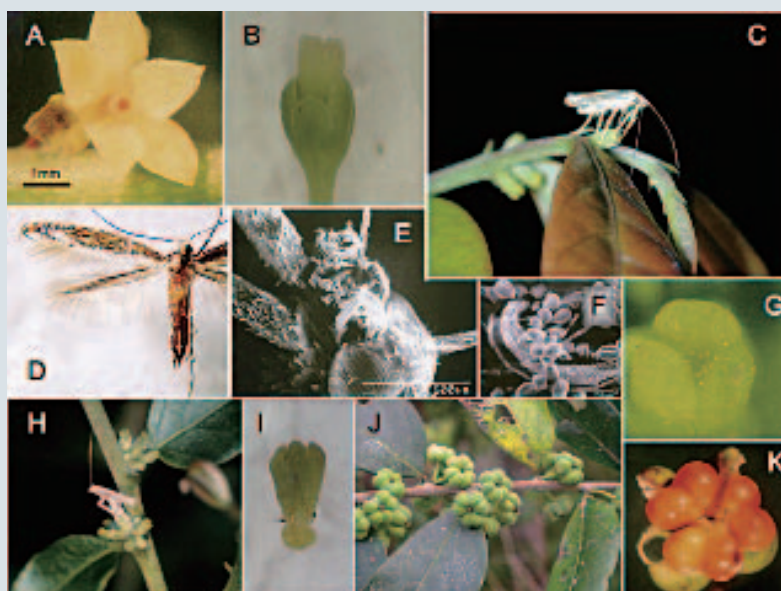
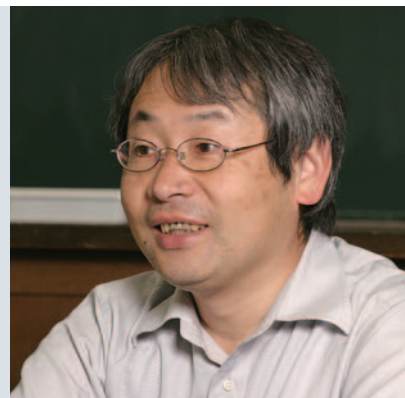


Fig.4. The obligate pollination mutualism of the *Glochidion* plant and gracillariid moth. A, male flower; B, female flower; C, pollinating female moth; D, adult moth; E, moth's proboscis; F, pollen attached to the proboscis; G, pollinated female flower; H, female moth ovipositing; I, cross section of female flower with oviposition on it arrow pointing at eggs; J, ripe fruit; K, fruit a part of whose seeds have been eaten by a moth larva.



Makoto KATO

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It is the network of mutualistic relations among living organisms that supports biological diversity. Protecting this network is vital in order to conserve the natural environment.

Prof. Kato has been an avid collector of insects and shells ever since he was a child, and his dream was to become a researcher in the field of entomology. Thus he entered the Faculty of Agriculture at Kyoto University.

On entering as an undergraduate, he immediately began to mix with graduate students, helping out in field studies which dealt with the laborious investigation and analysis of insects. This was his initiation into the real world of research. At the time, there was a strong image of ecology as a field which was concerned mainly with population figures, but Prof. Kato's interest is more focused on individual organisms.

From the time of his doctoral studies, he began research into the relationships between flowers and insects, looking into how co-evolution was achieved as the organisms maintained their various mutualistic relationships, such as pollination mutualism and defense mutualism. Recently, he discovered one to one obligate pollination mutualism, which exists between the *Glochidion* tree and the gracillariid moth. This is the third example of this mutualism known so far throughout the world, and is all the more valuable for being the first such discovery in the last hundred years.

"I was able to make this discovery because having studied both plants and insects, I was able to look at nature from a wide perspective. I am proud to say that with plants, I am the second most knowledgeable person in the University," laughs Prof. Kato. He also encourages his students to collect specimens and observe them, and understand their natural history and how they live, and use that to grasp how nature works from a wide perspective, rather than just picking up information from the internet and claiming they understand.

Given his research and publications over a wide range of environments, including forests, river and tidal wetlands, Prof. Kato is regularly invited to give lectures on conserving nature. People tend to look on nature conservation as protecting individual organisms such as beeches or eagles, but actually it is important to know about the mutualistic relations between organisms and to protect those networks, he insists. And the number of supporters of his ideas is steadily growing.

Environmental economics for sustainable development

One of the most frequently asked questions about environmental issues and policies is “which is more important, environmental conservation or economic growth?” This question has been repeated often, because an answer has not been found that is acceptable to everyone. Behind this situation is the fact that people have tended to think that environmental conservation suppresses economic growth, and that economic growth always damages the environment. This concept is known as a “trade-off between the environment and growth (two elements which cannot be enhanced simultaneously).”

However, as people place greater importance on nonmarket social, cultural and ethical values, environmental policy has been established as an independent field of public policy, with environmental conservation institutionalized into the legal system, corporate social responsibility positioned clearly in business administration, and people increasingly stressing the importance of environment-friendliness in many economic activities and various decision-making pursuits.

However, the trade-off theory between environmental conservation and economic growth is still persistent and has become a prevailing notion. Of course, more and more people have the opinion that the economic growth rate cannot be an indicator of quality-of-life and/or well-being. People started questioning how economic development is different from economic growth, and what should be aimed at and pursued. They are also conducting vigorous discussions to investigate an ideal state of development that is different from conventional growth patterns in which the improvement of the economic growth rates is autotelic. The typical and influential issues include ideas such as sustainable development.

If we recognize the need for economic growth because we consider economic

growth to be closely related to job growth and social welfare, and if we also recognize the need for the environmental conservation, we should investigate a way to break away from the trade-off between environmental conservation and economic growth in order to satisfy both the environment and employment, or the environment and welfare. Environmental economics is a relatively new field of study. One of the major subjects of my research is an investigation of ways to break away from the trade-off between the environment and growth for sustainable development. Some ideas to avoid the trade-off have been proposed based on the progress of research in environmental economics during the last two decades. We should keep in mind that some ideas have appeared in the concrete form of policies. I will now introduce some of the major ideas.

One idea is the so-called decoupling of environmental conservation and economic growth in which relationships between fluctuations of the economic growth rate and environmental burdens arising from economic growth are dissolved by technological progress and technological innovation. As a result, economic growth does not increase the environmental burden. This idea has several variants.

One is the dematerialization theory. The dematerialization theory is based on the concept of ecological economics that the amount of materials used in the economic process increases the environmental burden in the long run. This theory requires the investigation of an economic society in which the amount of materials required for economic growth is as small as possible. Similar theories include Factor 4 proposed by Ernst Ulrich von Weizsäcker and his colleagues. Factor 4 aims at fourfold eco-efficiency compared to the current situation by simultaneously doubling wealth and reducing the resource use to half. As seen from discussions about

Factor 4, a new index of the relationship between “economic growth or wealth” and “environmental burden or resource use” has been created in a series of discussions, and terms pointing the way for technological progress to improve these relationships have been developed. Examples of the former include eco-efficiency and resource productivity. Examples of the latter include cleaner production, zero emission and inverse manufacturing. The question is what kind of policies and institutional reforms should be introduced to realize an ideal state of economy and society to create such innovation.

Another interesting discussion emphasizing technological innovations in connection with environment-related issues is the so-called Porter Hypothesis. The Porter Hypothesis formulated by economist Michael Porter focuses on the mechanism by which environmental policy accelerates technological innovation, and as a result the competitive power of products and companies is enhanced. According to this theory, environmental policy should not have negative implications for the economy and management, but instead, the fundamentals of economy and management are strengthened from a strategic standpoint by using environmental policy to create innovation and to enhance technical development capabilities. This idea is not a fantasy but is based on the analysis of many cases. One major case study is the analysis and evaluation of the effects of Japanese motor vehicle emission controls on industry and the economy in the 1970s.

Porter focused attention on the mechanism by which the environmental regulations exposed a latent social need for the reduction of automobile emissions, inducing the technological innovation, which in turn enhanced product competitiveness. He then compared and analyzed the severity

of environmental regulations and productivity growth rates for the 15 years from 1970 to 1985 in West Germany, Japan and the U.S. He found that the productivity growth rates in Japan and West Germany, where environmental regulations were more stringent at that time, was higher than in the U.S. This fact also reinforced his theory describing how environmental policy used in a strategic way, could accelerate technological innovation.

An idea more closely related to socio-economic structural reform was the ecological tax reform proposed by the German economist Hans Christoph Binswanger. Specifically, he proposed a reform of the taxation system to impose higher tax rates on energy, and that the tax revenue should be used to fund job growth. He proposed this idea for the first time in 1983. At the beginning of the 1980s, ecological problems were an important political issue in Germany. Binswanger did not have any objection to the establishment of ecological values in public policy. However, Binswanger and his colleagues requested an end to unemployment, which was another critical challenge faced by European society. If employment is proportional to the economic growth rate, and if environmental policy reduces that growth rate, execution of environmental policy inevitably increases unemployment. Binswanger et al. did not seek a compromise between the environment and employment because they were incompatible. They designed a policy to accomplish both goals at the same time from the standpoint the environment and employment were both important. The result was an ecological tax reform.

Under this tax reform, people could receive not only dividends for such things as environmental conservation and energy saving through taxation, but also other dividends such as those to encourage for job growth, using tax revenue. Therefore, this is known as a

“double dividend.” This is now actually executed in Germany through a system similar to the idea proposed by von Binswanger and his colleagues. Many countries have officially discussed the double dividend since the end of the 1980s in as a way to prevent global warming by introducing an environmental tax. At the same time, many countries started casting a spotlight on the potential amount of the tax revenue. Countries all over the world have actively discussed the use and role of these tax revenues. A considerable number of countries have executed this tax reform, though not on such a large scale.

The double dividend and Porter hypothesis have been discussed from an academic point of view since the early 1980s. Some people point out that execution of these ideas is not always so easy. However, perhaps more people involved in policies and policy making should pay attention to these ideas because they provide specific institutions and policies that counter the conventional wisdom that there must be a trade-off between environmental conservation and economic growth. In this regard, however, we should take note that these discussions relate mainly to the economies of industrialized countries, and only taking the national economy into consideration within any given country.

One of the most fundamental questions for social science in our age is how to implement the concept of sustainable development. Environmental economics can contribute to answering this question through constructing public policy which overcomes the trade-off between the environmental conservation and economic growth.



Kazuhiro UETA

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We have only one Earth. In order to create a sustainable society on it, I realize only too well the importance of going back to be Adam Smith's so-called 'Impartial Spectator', someone who can understand and empathize with other people's point of view.

Prof. Ueta is now active as an environmental economist, whose career began when he entered the Faculty of Engineering at Kyoto University in 1971. At that time pollution was a major social problem facing Japan. Through his research work into water quality, Prof. Ueta realized that the pollution problems had not come about through a lack of technology, but rather as a result of economic and social factors such as businesses failing to use the technology which was available. Before long he shifted his field of research towards economics, in the belief that the problems besetting the environment were fundamentally economic in nature, such as with the issue of garbage, where it is not so much a matter of developing better technology for its disposal, but rather of considering the social and economic aspects of a society which does not produce so much garbage.

The sustainable society which Prof. Ueta has sought to make a reality over the 30-odd years since then has nowadays become a global aspiration. He travels all around the world expanding his research activities, lecturing and reporting his idea, taking it upon himself as a specialist in the field to set out strategies to achieve this goal. Prof. Ueta explains about the need for dialogue with the third players such as future generations, other forms of life, and the present global situation. He stresses the need to understand and empathize with the points of view of each of these players. He notes that Japan has been faced with issues such as pollution, and the country has solved those problems while developing its economy at the same time, and believes that we should now share the knowledge we have gained from that experience with the rest of the world, and assume a leadership role in the international community. His feels frustrated at Japan's current introverted and negative attitude.

At the age of 18, Prof. Ueta left his home for the first time to go to Kyoto University, not only with a sense of liberty, but also with the feeling of responsibility which all freedom brings. He wanted to be of some use to society and to the Earth. Those same strong feelings still motivate Prof. Ueta today.

The Kyoto University Environmental Tax and the Environmental

I had served as director-general of the Environment, Safety, and Health Organization of Kyoto University until this March. As part of its activities, the organization has implemented the “Kyoto University Environmental Tax” as a voluntary attempt to reduce the emission of greenhouse gases within Kyoto University. I would like to discuss how the system has been put into practice.

The Kyoto Protocol was adopted in 1997 with targets set for reduction in greenhouse gas emissions, and went into effect in 2005. Under the Kyoto Protocol, Japan is required to reduce its greenhouse gas emissions by 6% relative to the base year (1990) during the first commitment period (2008-2012). The current situation in Japan, however, is that the figure shows a 6 to 8% increase above the 1990 level. Within Kyoto University, the figure for 2006 was 130,000 tons, 1.93 times that of the 1990 baseline. The emission amount per floor area was 1.41 times that of the 1990 baseline. As Japan’s total CO₂ emission amount was 1.3 billion tons, Kyoto University’s emission amount accounted for just a millionth that of the entire Japan.

We think that Kyoto University should serve as a model as it is based in Kyoto, the venue of the Kyoto Protocol. We at Kyoto University agreed with the idea and decided that we should do something to improve the situation. We then established a dedicated committee to discuss the environmental issues from the viewpoint of both facility-related and activity-related tasks. As facility-related solutions, we suggested the introduction of sensor-operated switches of lights in corridors and washrooms, and replacement of old, inefficient devices with new, efficient ones (old-type transformers with new, energy-saving types, for instance). We calculated how much money is required

to reduce the amount of CO₂ by 1% per unit area. The result was 240 million yen. As to the activity-related measures, our discussion mainly covered how to raise awareness of the teachers and students concerning reduction of CO₂ emissions. We proposed specific measures such as personal computer settings and turning off classroom/lecture-room lights as often as possible when the room is not in use. We set our environmental target at a 10% emission reduction in five years, reducing 2% annually, or 1% each for facility-related and activity-related tasks.

The next point to discuss was how to find sources for the 240 million yen. Where can we get them? Then the idea of an environmental tax came up. Each section of Kyoto University, such as the Faculty of Engineering, Faculty of Science, Faculty of Agriculture, or University Hospital is requested to pay environmental tax in proportion to the utilities paid in the previous year. We thought it very hard to convince all university sections of the plan unless some special measures are taken. We requested the university headquarters to pay half the amount. The University President and the Board of Executive Directors readily agreed to this request. Thanks to their positive attitude, no major objections came about the adoption of the environmental tax. We also suggested that the environmental tax collected this way should be used for earmarked purposes and that the amount paid by each division should be used for its energy-saving measures. In addition, if such measures prove to be efficient, an additional amount would be paid from the university’s 120 million yen for energy-saving work. The energy-saving work implemented will pay off in several years, so the plan is also beneficial to major division itself. As a result, everybody agreed to the proposal.

Thus the environmental tax started this year. Since this April my position has changed from director-general of the Environment, Safety, and Health Organization to dean of the Faculty of Engineering and the Graduate School of Engineering. So I am now on the side to pay this tax. As the Faculty of Engineering’s utilities were approximately 500 million yen last year, we have to pay about 20 million yen in tax this year. So I have asked each member of the Faculty of Engineering and the Graduate School of Engineering to always keep in mind the reduction of CO₂ emission.

As another great environment-related effort, I would like to touch on the topic of the publication of the environmental report. In 2004 “the Law Concerning the Promotion of Business Activities with Environmental Consideration” was enacted and 65 universities, including Kyoto University, were to prepare and publish an environmental report starting in 2005. Kyoto University prepared and published the first issue “Environmental Report 2006” at the end of September 2006. In commemoration of the publication of this report, a symposium “A Step toward the Post-Global Warming Declaration,” was held in the Clock Tower Centennial Hall on January 31, 2007. The First Part of the symposium announced how the issuance of the environmental report had been brought about and outlined the report’s key points. The Second Part consisted of a keynote speech by Prof. Emer. Makoto Ikegami entitled “The Use of Biomass to Prevent Global Warming” followed by a panel discussion with active participation from the audience.

Kyoto University Environmental Report 2006 received the Award for an Organization Designated under the Law Concerning the Promotion of

Business Activities with Environmental Consideration out of “The 10th Environmental Communication Awards” sponsored by the Ministry of Environment etc. The report was also granted the Public Sector Award out of “The 10th Green Reporting Award” sponsored by Toyo Keizai Inc. etc. These two awards accompanied laudatory comments such as “Sincere attitude toward information disclose is observed in detailed reports on measures against asbestos and excess of criteria for drainage” and “The report makes us feel the entire university’s determination to tackle the environmental issues together.” On the other hand, we received constructive comments such as “Future efforts are expected for concrete, numeric objectives and action plans, and the construction of an organization-wide

management system.” In “Environmental Report 2007,” we tried to enhance reliability of data reflecting experience in preparing the preceding year’s report. We expanded the target by adding facilities at Inuyama and Otsu. “(1) Kyoto University’s Environmental Activities’ Manual: To Prevent Global Warming” and “(2) Toward Safe and Proper Management of Chemical Substances.” were chosen as the featured stories in the report. We hope our environmental report to become more and more substantial in the future.



Many children of the Daiyon Kinrin Elementary School entered for the painting of the front cover of Environmental Report 2006. Prof. Oshima presented a testimonial to them at the symposium.



Prof. Oshima making a speech at the commemorative symposium “A Step toward the Post-Global Warming Declaration” held on January 31, 2007.



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Our life is influenced by the people we meet. I always hope I can have positive influence on the students I meet.

Prof. Oshima, appointed vice-president in April of this year, apparently was not a very enthusiastic student from the time he was at junior high school through to university. He spent his junior and senior high school days immersed in table tennis practice, and at university he was more interested in hanging out with his friends. But in his 4th year he set his mind to study, and under the guidance of a rather strict teacher, started to pull himself together. He was accepted into Prof. Hitosi Nozaki’s laboratory, a research group which has trained many first-rate chemists, including Dr. Ryoji Noyori who went on to win the Nobel Prize for Chemistry. Since then, Prof. Oshima has had many achievements as a researcher, and in 2007 received the Chemical Society of Japan Award for his work on organic synthesis reactions.

Recently Prof. Oshima has been concerned that of the two great missions of a university, research and education, the focus has been exclusively on getting research results and their evaluation, while the education side has been somewhat neglected. He speaks passionately, “The Faculty of Engineering has to play a pivotal role in finding solutions for environmental problems, which are the big issue of the 21st century. Japan, being poor in natural resources, has to rely on its human resources, and educating its people is one of the duties of a university. Both the university and the teaching staff must again tackle head on this great mission which we call education. In the United States of America, university classes are done in earnest. Even Nobel laureates do not begrudge giving their time for lesson preparation.” Those teachers who influenced Prof. Oshima in his elementary and junior high school days were always happy to give up many hours for teaching the children in their charge. That attitude of his teachers is his starting point as an educator and their passion is still cursing through Prof. Oshima’s veins today.

The Outlook for Wild Animal Research

At present around 4,500 species of mammal have been identified throughout the world, but about 20% of them are listed as endangered species in the Red List of Threatened Species (the 'red data book') of the International Union for Conservation of Nature and Natural Resources (IUCN). Furthermore, the tropical rainforests of Asia, Africa, Central and South America, which are treasure houses of wild animals, were reduced in area by almost four times the size of Japan during the final decade of the last century. Not only the tropical rainforests, but also mountain ranges, savannas, arid zones and polar regions, which are habitats for all kinds of wild animals, have been gradually deteriorating. In addition, poaching, bushmeat trading, wars, infectious diseases and other vibrant human activities are all precipitating the extinction of wild animals.

Japanese primatology which began 60 years ago with research into the wild Japanese Monkey, together with a wide variety of research carried out overseas, has constantly been in the global front line in the field. However, outside the field of primates, we cannot say that Japan has done very notable research into wild animals. If wild animals continue to decrease at the present rate, then far from developing in the future, such research

will become impossible to undertake at all. Now is the time for Japan to get moving on research into wild animals, bringing to bear the country's experience and achievements gained in primatology research.

The Wildlife Research Center of Kyoto University was inaugurated on April 1, 2008. The centre aims to fulfill the ideals of the university, namely contributing to the harmonious coexistence of the global community, through its research and educational programs into wild animals.

In order to achieve this, two field stations have been brought under the control of this centre: the Kojima Field Station, the home of primatology in Japan, and the Yakushima Field Station, which is located in a World Natural Heritage site. In addition, we have established links with regional zoos, the Kyoto City Zoo where they breed a wide range of scarce wild animals, and the Higashiyama Zoo in Nagoya. Similar links have also been forged with private research institutes, such as the Chimpanzee Sanctuary Uto, owned by the Sanwa Kagaku Kenkyusho Co., Ltd. in Kumamoto prefecture, and the Great Ape Research Institute run by the Hayashibara Biochemical Laboratories, Inc. in Okayama prefecture. In addition to these research bases in Japan, there are overseas research bases in places such as



Gen'ichi IDANI
Director of the Wildlife Research Center of Kyoto University

Africa, South East Asia, South America and Antarctica, which together cover every continent. We can indeed carry out field work in nature anywhere, from the tropical rainforests to the Antarctic, from the oceans to the Himalaya, on land, in the sea, and in the air.

At the Wildlife Research Center, we carry on the field work tradition cultivated by Kyoto University, using the latest techniques in the life sciences to study the natural habitats of wild animals, as well as acting as a bridge to the environmental education in zoos. At the same time, we aim to create new fields of academic study in 'Conservation Biology', 'Zoo Science' and 'Natural World Studies'.



The Lecture by the Honorable Mr. Kevin Rudd, Prime Minister of Australia

June 9, 2008

The Prime Minister of Australia, Hon. Mr. Kevin Rudd spoke at Inamori Hall of the Shiran Kaikan today. The lecture was hosted by the Australian Embassy and Kyoto University, and supported by the Ministry of Foreign Affairs.

Upon arriving, Prime Minister Kevin Rudd firmly shook hands with President Kazuo Oike, and after moving to Inamori Hall, spoke to an audience of over 400 under the topic of “Australia and Japan – Working Together on the Global

Challenges of Climate Change and Disarmament”.

Prime Minister Kevin Rudd, who had signed the Kyoto Protocol on the day he was inaugurated, appeared to be extremely pleased to be in this city. During his lecture, he spoke of his visions to work with Japan on such global issues as energy and climate change, impressing the audience. The Prime Minister carefully answered questions from the audience one by



one, and the session came to a close with appreciative applause filling the auditorium.

International Forum: "The Formation of a Multipolar World-view and Foreign Language Education – The Challenge of Cultural and Linguistic Diversity"

June 20, 2008



An international forum entitled “The Formation of a Multipolar World-view and Foreign Language Education – The Challenge of Cultural and Linguistic Diversity” was held at the Kyoto University Clock Tower Centennial Hall on June 20, 2008. The forum was sponsored by the Institute for the Promotion of Excellence in Higher Education. The forum was designed

to send a message of inspiration to undergraduate students and promote the internationalization of Kyoto University’s education and research. The event drew over 500 participants from both within and outside the university, including students, faculty and staff members as well as citizens from diverse sections of society.

The first section of the forum, entitled “The Challenge of Multilingualism and Cultural Diversity,” featured a keynote speech by the former Prime Minister of France, Mr. Dominique de Villepin (photo). The second section featured presentations entitled “The World in Turmoil – From American

Unipolarism to a Multipolar World” and “Multilingualism as National Policy,” presented by Prof. Keishi Saeki of Kyoto University’s Graduate School of Human and Environmental Studies and Prof. Nobutaka Miura of Chuo University respectively. The presentations were followed by a symposium hosted by Associate Prof. Kizou Ogura of the Graduate School of Human and Environmental Studies. The symposium, which featured contributions from all three presenters, reaffirmed the value of studying foreign languages other than English and provided insight into the importance of forming a multipolar world-view.

Town Hall Meeting on Climate Change with the UN Secretary-General

June 29, 2008



“Town Hall Meeting in Kyoto on Climate Change: A dialogue with the UN Secretary-General Ban Ki-moon” was held in Inamori Hall, hosted by

Kyoto University and supported by the Japanese Foreign Ministry. This event attracted more than 200 participants and was attended by major domestic and foreign presses.

After the opening speech by Dr. Hiroshi Matsumoto, Executive Vice-President, the Secretary-General delivered his enthusiastic statement on climate change. Then, various messages were conveyed from academia, NGO

community, business areas and students as well as from general public in the auditorium. Mr. Ban Ki-moon, UNSG, responding to each one of the comments and questions, expressed a firm commitment of the United Nations to tackle the issue of climate change. The event came to an end with highly encouraging and appreciative applause from the participants to the UN and its Secretary-General Ban Ki-moon.

Dr. Hiroshi Matsumoto Assumes Office as 25th President of Kyoto University

Dr. Hiroshi Matsumoto, former executive vice-president for research and finance assumed office as president of Kyoto University on October 1, 2008.

Dr. Matsumoto was elected to be the next president of Kyoto University on May 23 by a President Selection Committee composed of representatives from university departments and other members from within and outside the university. The term of Dr. Matsumoto's presidency will be six years beginning October 1, 2008.

Dr. Matsumoto graduated from the Faculty of Engineering in 1965. Following his graduation, he was employed by the same Faculty as an assistant professor. In 1987 he became a professor at the Radio Atmospheric Science Center, specializing in space science, and later went on to serve as the director of that research center as well as that of the Research Institute for Sustainable Humanosphere, both of Kyoto

University. In 2005 Dr. Matsumoto began a very active term as executive vice-president for research and finance under the former president, Dr. Kazuo Oike. Last year Dr. Matsumoto played a major role in the formation of the Center for iPS Cell Research and Application (CiRA), a research center under the direction of Prof. Shinya Yamanaka. Dr. Matsumoto has said that there are many outstanding research groups in Kyoto University, and he wants to show young researchers that they will be supported by the university.

At a press conference held on May 23, Dr. Matsumoto told reporters, "I am aware of Kyoto University's social responsibility as a center of learning and scholarship,

and I hope to promote high-level academic research of the standard and character expected of Kyoto University, under our banner of academic freedom, without following fashions or fads. Maintaining a forward-looking, positive attitude, we will endeavor to foster diversely talented individuals while refining and enriching the education necessary to achieve such aims."



Kyoto University's First Global Environment Forum "Toward a Low Carbon Society"

On April 19, 2008, the Kyoto University First Global Environment Forum was held at the Clock Tower Centennial Hall. This forum was organized by the Graduate School of Global Environmental Studies (GSGES) and Kyoto Sustainability Initiative (KSI) to present the current research on the global environment at Kyoto University and discuss what society should do to preserve the global environment.

Prof. Masashi Kamon, Dean of the GSGES, and Dr. Hiroshi Matsumoto, Vice-President, opened the forum by introducing the background and objective of this forum. Afterwards, four lectures were delivered by professors from various academic fields; Prof. Kazuo Matsushita (GSGES): "Summary of the COP13 (13th Conference of the Parties to the U.N. Framework Convention on Climate Change) in Bali with the perspective on the G8 Summit

at Lake Toya", Prof. Yuzuru Matsuoka (Graduate School of Engineering): "How to realize a low carbon society", Prof. Keiichi Ishihara (Graduate School of Energy Science): "Resource recycling society and energy conservation", and Prof. Hiroyuki Yano (Research Institute for Sustainable Humanosphere): "Utilization of Biomass source — Development of the new biomaterial.

A lively Q&A and discussion session was organized by contribution of four lecturers and the audience. Prof. Susumu Iai, Executive Director of KSI, closed the forum with the announcement of the next forum. Approximately four hundred par-

ticipants joined the forum and many of them kindly replied to a questionnaire after the forum. In the academic year of 2008, another two Global Environment Forums will be organized (Second forum on September 13, 2008 and third on January 10, 2009) to provide opportunities to the public to know about global environment studies conducted at Kyoto University and how they contribute to the improvement of the global environment.



G8 University Summit in Sapporo

As Kyoto University President, Dr. Kazuo Oike participated in the G8 University Summit on the theme of 'Global Sustainability and the Role of Universities,' which was held in Sapporo, Hokkaido from June 29 to July 1, 2008.

The University Summit was held in advance of the G8 Hokkaido Toyako Summit, in order to provide a platform for proposals from the academic world towards finding solutions to global problems. The Summit was chaired by Dr. Hiroshi Komiyama, president of the University of Tokyo. The vice-chairpersons were Dr. Hiroshi Saeki, president of Hokkaido University and Dr. Yuichiro Anzai, president of Keio University. The summit was

attended by participants from thirty-seven universities worldwide, including fourteen universities from Japan, fourteen universities from other G8 countries (including Cambridge University, University of Paris IV, Ludwig Maximilian University of Munich and Yale University), and nine universities from non-G8 countries (including Australian National University, Peking University, Tsinghua University and Seoul National University).

Following a plenary session, the summit was divided into two parallel sessions on the topics of 'New Scientific Knowledge and International Network to Support Global Sustainability' (Session A) and 'Knowledge Innovation towards Global Sustainability and Education' (Session B). President Oike participated in Parallel Session B, speaking about the need for a global sharing of new knowledge about earthquakes.

Throughout the confer-



ence, opinions were exchanged on topics such as how scientific knowledge can be effectively incorporated into international policy making, how ideas regarding sustainability for human society vary in accordance with the diverse cultures of the world, the increasing need for universities to transmit new knowledge to society and the urgent need to form a network to promote such social contribution by universities. On the final day of the summit, the participating university presidents signed the Sapporo Sustainability Declaration, a proposal to the G8 Hokkaido Toyako Summit.



APRU 12th Annual Presidents Meeting at Keio University

The Association of Pacific Rim Universities (APRU) 12th Annual Presidents Meeting was held from June 26 to 28, 2008 at Keio University. Over seventy people attended the meeting, including the presidents of twenty member universities. The meeting was attended by a party from Kyoto University including President Kazuo Oike, Executive Vice-President Shuzo Nishimura, Vice-President Toshio Yokoyama and Mr. Masao Tsukamoto, director of the International Affairs Division.

The second day of the meeting (June 27) featured the APRU Forum, which included presentations by government and industry leaders from within and outside Japan, including a keynote speech on internationalization by Mr. Isao Kiso, director-general for international affairs of the Japanese Ministry of Education,

Culture, Sports, Science and Technology (MEXT). The forum also included an opportunity for the participating university presidents to exchange views and ideas in three sub-group discussions. Dr. Oike participated in a discussion on the theme of "Environmental and Global Challenges; University Initiatives Directed towards a Sustainable Asia-Pacific," which focused on the issues surrounding collaborative research undertakings to address global-scale problems.



On the third day (June 28), at the APRU Business Meeting, discussions were held regarding the association's fee structure and new members. The meeting also included reports of activities held, as well as deliberations about those planned for the future. Kyoto University will continue to be actively involved in APRU's activities as a member of the Governing Board of the APRU World Institute (AWI) and as the host of the 10th APRU Doctoral Students Conference in July 2009.





Misuzu ASARI

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- Completed doctoral program, Graduate School of Engineering, Kyoto University
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The most important thing is ones ties with others. If one embraces thoughts full of sincerity and passion, then others with the same thoughts will come together, and energy will pass among them.

Kyoto University was a slow starter when it comes to conservation of the environment, but its Environmental Report, which first started only 3 years ago, has received a number of awards for its 2006 issue: the Award for an Organization Designated under the Law Concerning the Promotion of Business Activities with Environmental Consideration (at the 10th Environmental Communication Awards, sponsored by the Ministry of Environment, et al.), and the Public Sector Award (at the 10th Green Reporting Awards, sponsored by Toyo Keizai Inc., etc.). In one leap, they have become the front runner of all the universities in this field. At the heart of this rise is the Environment Preservation Center, and in particular the energy and momentum of Assistant Prof. Misuzu Asari's 'thoughts full of passion' and 'light footwork' set in motion.

Assistant Prof. Asari was born in the suburbs of Kyoto, and played as a small child in woodlands close to the city yet teeming with nature. The family later moved to Nara to live in a burgeoning residential district, where she felt saddened by the gradual destruction of nature. Her interest in the environment was awoken in the third year of elementary school, when she won a prize in a writing contest on the theme of water. Her composition told of her joy at finding a water spring, and the importance of water. The little girl, who had said she felt a great responsibility when she received her prize, went on to pursue her study of the environment with her firm choice to enter the Department of Global-Engineering in the Faculty of Engineering at Kyoto University. However, after entering the university, maybe preferring to regress into nature more than to conserve it, she devoted her energies to competitive skiing. Only in her fourth year did she return to her former passion.

However, as soon as she got into gear, she immediately stamped on the accelerator. She founded the 'Rubbish Club of Kyoto University', and carried out a questionnaire on the environment throughout the entire university. She proposed that the university produce an environmental management system, and served as director of the executive committee for a variety of extramural events such as the 'Kyoto Rubbish Festival, 2003'. Both on campus and outside, Assistant Prof. Asari is involved in a variety of projects. She is currently working to make Kyoto University campus into an 'eco-campus', using her energies to abolish carrier bags at checkouts, and introduce an environmental surcharge. She is also involved in a campaign to raise awareness of the 3R (reduce, reuse and recycle).

Where there is smell, there is our way

My research target is "garbage." When I say that to others, most of them say "Oh, garbage," and seem to remember the trash bag they took out from home in the morning. Their knowing look, however, soon changes to a perplexed one, unable to imagine specific details of our research. But, I dare say that "garbage" is quite interesting as a research target and I would like to show you how attractive it can be through some examples:

[1] "Garbage" is the mirror that reflects people's lifestyle.

Our lab has conducted a "Household Waste Detailed Composition Survey" for nearly 30 years. As the name suggests, we conduct the survey by collecting, storing, and sorting household garbage, and then checking its composition. There are over 300 classification categories in terms of flammability, recyclability, material, etc. It is this detailed classification that makes the task deserve to be called research (and perhaps torment as well?). And as a result of the classification, we can see a deluge of disposable products and "mottainai" (still-eatable) food waste, "mottainai" (still-usable) products, and so on ---- these are the very problems with lifestyle of the present-day society.

[2] "Garbage" provides some aspects that show us our connection with the world in a realistic manner.

Garbage hides nothing. It tells us dynamic movement that we cannot otherwise know. Let's take a look at the case of batteries. Our research begins with used batteries; in other words, batteries in incineration and landfill processes and emission of heavy metals into the environment. To think of how to control it, we need to grasp details of the products, the flow of

their materials, and conversely, the flow of used household appliances (batteries are often contained there). In this way, it has come to light that cadmium (Cd) moves dynamically in the Pacific-rim areas, mainly in the form of nickel-cadmium (Ni-Cd) batteries.

[3] "Garbage" holds the undiscovered possibilities in future society.

Recently price hikes in various resources have been reported, and "garbage" cannot be independent of that trend. Did you know some of the city buses and garbage trucks in Kyoto City run on used tempura oil (edible oil for fried food) supplied by Kyoto citizens? To be more exact, the fuel is bio-diesel fuel made of used tempura oil. This sort of movement for the use of garbage as resources has been carried out with the involvement of many researchers from Kyoto University.

Having read so far, have you taken even a little interest in "garbage" now?

Finally I would like to introduce to you another term with impact --- 3R (three Rs), initials of the words Reduce, Reuse, and Recycle. In the past I loved the term "garbage" and constantly used it in every possible opportunity. Recently, however, I have come to regularly use "3R" instead. "3R" clearly shows action. I hope to be a researcher who promotes action and continues to take action on his/her own.



I want to give people the chance to enjoy being environmentally aware

There are many groups involved with environmental activities at Kyoto University. Among them, one known as 'Kyoto R' is very active in carrying out various campaigns, putting forward proposals and engaging in research aimed at bringing about a sustainable recycling society, and rejects current lifestyles in which mass production and mass consumption are equated with waste. Mr. Marukawa, a fourth year student in the Global Engineering Department of the Faculty of Engineering, has been involved in these activities for four years and is now a pivotal member of the group. Under the motto of 'Tanoshiku Eco' (It's Fun to be Environmentally Aware), he has taken charge of a wide range of activities from activity planning to administration, and the collection and production of materials for the group's homepage. We asked him about his activities, which far from being limited to the campus, have spread throughout the whole town and involve the local community.

■ How did you first get involved with Kyoto R?

Kyoto University has around 15 groups which are interested in the environment, and they hold a joint introductory meeting for first year students in April. At high school, I was in the tennis club and wasn't especially interested in environmental problems, but when I came to university, I wanted to join a club which did some kind of society-oriented activity, and so I went along to listen to their talk. What I heard there, I found fresh, and rather alarming.

■ What was fresh about it?

Many of the environmental groups focused on



The homepage of 'Kyoto R' (<http://miyacology.com>)

studying about the environment, or on activities for the school festival, which seemed rather limiting, and the Kyoto R group was the only one which operated throughout the whole city and involved not just university students and staff but also brought in people from outside, from shops and businesses in the town, and that is what I found attractive. Also, there's somehow a feeling of doing your duty, a kind of stoicism in the image of environmentalism, but I really liked the idea of plugging businesses which offer goods or services which are enjoyable to use, and yet are good for the environment as well. And their homepage was well put together too, which impressed me.

■ What criteria do you use for deciding which businesses to list?

We have put forward the concept of what we call 'miyacology'. This is a portmanteau word of 'miyako' which means 'capital', since Kyoto was the old capital of Japan, together with 'ecology', thus linking the city and the environment. In concrete terms, we advocate the 2R lifestyle, that is 'reuse' and 'reduce', and introduce businesses on our homepage which meet those criteria. For instance, we list a company which started selling jeans that were meant as samples, and until now have always been incinerated rather than sold. That is not just good for the environment, it also means you can buy high quality jeans cheaply. Broadly speaking, we use these two ideas as our points of reference, and plug businesses that help to reduce waste.

■ Have you noticed any changes in yourself over the 4 years that you've been involved in this?

Well, as I've gone about collecting materials for our homepage I've had lots of opportunities to hear from the business owners about how they live and think. That side of things is fun, and I feel it's brought about a new set of values in myself. Just lately, there's someone who restores furniture and clothing, and she has some great ideas. She makes things with a freedom which I couldn't even imagine with my engineer's brain. They're really chic. Another example is a craftsman who does furniture repairs at a shop, who told me that sometimes the wood used in old furniture is not very good.



Jun MARUKAWA

- Born in 1985
- Currently in the fourth year of the Faculty of Engineering, Kyoto University

He taught me that you can't think just because something is old, it always has to be good.

■ And where do you move on from here?

In February of this year, we set up a homepage called MOPPEN (meaning 'one more time around' in the local slang), which lists businesses which do repairs and refurbishments, and now we're thinking of making that into a publication. We're also thinking of an event we're calling IPPEN (which means 'one time'). It'll be something like a workshop where we have people come in and try just one time having something repaired, to see how they feel about it. Apart from those things, we're also pressing ahead with a 3R (reduce, reuse and recycle) educational campaign.

■ Well, you certainly seem to be enjoying your activities. What are your plans for after you graduate?

It's really interesting for me both making plans inside my head, and also the process by which they are gradually taking shape. Still, I love engineering. Next year I intend to go on to graduate school, and indeed in the future I want to be a researcher. At the moment, my research topic is about cathode ray tubes in televisions. TVs now have LCD screens and soon a large number of cathode ray tubes will be discarded for sure. The tube's glass contains lead, which is harmful, and until now that glass has been recycled into new tubes. But in the future, this harmful glass will accumulate as there is no way to use it. I want to conduct research into suitable ways to dispose of it, through surveys of the distribution channels and suchlike.



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P R O M E N A D E
京都逍遙



Shisendo — where you can encounter Japanese beauty with a world view

Shisendo stands unobtrusively on a slope running through a residential district, about 2 kilometers to the northeast of Kyoto University's Yoshida campus. It was originally built in 1641 by Jozan Ishikawa, a samurai of heroic renown and vassal of the Ieyasu Tokugawa, the first shogun of the Tokugawa era. Ishikawa built the villa as a mountain retreat where he could enjoy its secluded location. The origin of the name Shisendo (Shisen meaning 'outstanding poet') comes from the 'Shisen no Ma' room, where images of the thirty six poets from China from the Han dynasty to the Sung dynasty are on show. All of these images are from the brush of the leading Edo period artist Tan'yū Kanou, and Jozan himself has written the poems in Japanese ink. Jozan was also a master of Chinese poetry, calligraphy and the tea ceremony, and he spent 30 or more years here leading a simple and meager life filled with refined estheticism, before he passed away at the ripe old age of 90 in the year 1672.

The place is now used as a temple of the Soto Zen sect, but it still has a strong feel about it of a hermitage, with its snug little gate and low ceilinged buildings. Jozan, who was also a master at landscape gardening ranking alongside Edo period virtuoso, Enshu Kobori, made the circuit style gardens at Shisendo. Here, we can enjoy the beauties of the four seasons, with azaleas in spring, autumn maples, and in winter, camellias. It is all the more attractive since visitors in large groups do not come here, and so it is seldom packed with people. You can spend the whole day gently perusing the gardens. At Shisendo, you can experience the taste for the simple and quiet atmosphere (*wabi* and *sabi*) which constitutes traditional Japanese beauty, together with a view of the world. Many come back for repeat visits, and students can be seen lost in their thoughts.



The Imperial Palace and other buildings in the heart of Kyoto, seen from the upstairs window of the Shogetsuro watchtower (Shogetsuro means 'the watchtower where one cites poetry under the moonlight'). Perhaps poems were recited here, inspired by the moon shining over the silhouetted town below.



The gardens, redolent of the period in which they were built, with a tea room, the Zanzetsuken (Zanzetsuken means the small room where one can admire the moon at dawn).



The Shisen no Ma room, lined with the images of the Chinese poets.



Looking out over the gardens from the room. You can have a quiet moment listening to the sounds of the birds and insects, and the rustling of the wind.