Flexibility, Endurability, and Peace

HIROSHIMA UNIVERSITY TAOYAKA たおやか

TAOYAKA Newsletter

Vol. 7 Summer 2017

Participants and community members in front of the Rammed Earth/Bamboo House: Onsite Training in Nepal, March 2017

Message from Professional Mentor

Texas Participation in TAOYAKA

David J. Eaton, Ph.D.

Bess Harris Jones Centennial Professor of Natural Resource Policy Studies; Lyndon B. Johnson School of Public Affairs, The University of Texas at Austin

It is a pleasure to write this note for the TAOYAKA Newsletter, as I have been involved with Hiroshima University's TAOYAKA Program from the beginning. TAOYAKA is unique among doctoral programs for two reasons: its inter-disciplinary design and leadership focus.

Dr. David J. Eaton

TAOYAKA accepts students/ Fellows from diverse fields such as engineering, natural science, social science and humanities. As Ph.D. candidates typically learn as much from fellow students as from faculty, this TAOYAKA design enables Fellows to develop a broad perspective about contributions to human knowledge from many fields. Fellows have to describe

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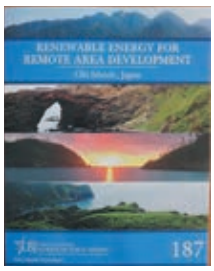
and defend their own projects to persons both within and outside their disciplinary fields. TAOYAKA asks each Fellow to excel not only in her or his field of academic excellence, but also to develop and demonstrate leadership skills in seeking to accomplish practical outcomes through group and individual field projects.

The Lyndon B. Johnson School of Public Affairs (LBJ School) at The University of Texas at Austin (U. Texas) has been able to send groups of students to participate within three TAOYAKA field studies since 2015, a first one in the Oki Islands during August 2015, a second in Nijo in Shimane in August 2016, and a third in Nepal in March 2017.

The Oki Island project sought to examine whether all of Oki Island's electricity could be generated on a cost-effective basis by renewable energy sources replacing or supplementing existing heavy oil-fired power plants. The U. Texas group joined TAOYAKA Fellows as well as students from two other Japanese universities in August 2015 to work with government and private-sector representatives to examine the potential for solar, wind, micro-hydro, biofuels, and energy storage to supplement existing energy sources. The results, as reported in a joint report, documented how wind energy could provide a cost-effective and less expensive supplement to existing energy sources and storage to replace oil-fired electricity production.



A report on Oki-Island study published by LBJ School

In August in 2016, two LBJ School students also participated in a second TAOYAKA program in Nijo on the potential creation of a community services center in rural Shimane prefecture. That project also has led to a joint report. As a result of the experience with TAOYAKA Fellows and faculty, these two LBJ School master degree students have applied for consideration for admission to enter the TAOYAKA Ph.D. program.


A joint filed study in Nijo, Shimane 2016

A different set of U. Texas students joined TAOYAKA and Tribhuvan University students in the March 2017 study of post-earthquake reconstruction of rural housing in Nepal. Participants in that study examined engineering options, including five appropriate housing technologies, to facilitate more rapid home reconstruction in rural Nepal. The students visited villagers in the field and conducted interviews of local citizens as well as governmental officials and staff of non-profit organizations committed to home reconstruction, so as to identify barriers to increased momentum in rural housing reconstruction. Field observations from that research are being collated into a report that should be of value to international donors, the Nepali government, the housing non-profits, as well as to rural residents seeking to reconstruct their own homes.


Giving a lecture in Nepal 2017

Students from U Texas who participated in these programs with Hiroshima University's TAOYAKA Program report that the fieldwork has been a life-changing experience. Many have reported that their career plans have been influenced by the TAOYAKA field experiences. The opportunity to interact with TAOYAKA Fellows from around the world has helped them visualize development challenges through their TAOYAKA colleagues. The two programs in which I have taught have been high points in my teaching experience, as the projects required both intensive field focus as well as helping students to learn diverse skills in order to make effective use of the field opportunities. Being asked to teach the TAOYAKA course on Leadership in Higashi-Hiroshima every two years also has been an opportunity, enabling me to modify materials I teach in Texas for a TAOYAKA class that focuses on development for underserved communities.


A joint filed study in Oki-island 2015


A joint filed study in Nepal 2017

Welcome to TAOYAKA Program!

Opening Ceremony: April 06, 2017

New TAOYAKA Students in the front row

The TAOYAKA Program entered to the fourth year. Its seventh opening ceremony was held on 6 April 2017. The Program members and students warmly welcomed newly admitted six students from India, Indonesia, Korea, and Japan. TAOYAKA program has now 51 students from 17 countries with various academic, professional, and cultural backgrounds.

Program Director Makoto Miyatani (Executive and Vice President of Hiroshima University), opened the ceremony, gave a congratulatory address, and expressed the hopes and expectations for the newly admitted students.

Although the new students belong to different graduate schools and courses, they will learn together and gain knowledge from different academic disciplines through the Program's multidisciplinary courses and activities.

The students are expected to gain global perspectives, skills, and insights through the Program, and become innovative leaders to solve issues for people in disadvantaged areas.

Introduction of New Students

Cultural Creation Course

Tomoko OISHI (M1: Graduate School for International Development and Cooperation, Program in Educational Development and Cultural and Regional)

From: Japan

I am Tomoko Oishi from Shizuoka, Japan. I graduated from Nihon Fukushi University in Aichi. During my bachelor degree, I majored in international social development. I was especially interested in relations between culture and development in the elephant village of Surin, Thailand. Subsequently, I studied Thai language and society in Chulalongkorn University, Thailand. Then, I worked at the prefectural federation of small business associations. I supported local cooperatives to revitalize their community.

Through these experiences, I focused on the ways to support the local people to develop their community by following the directions of development that they really hope. Therefore, my research focuses on endogenous development of a rural area in Thailand and Japan. Endogenous development attaches greater importance to the process of actions and decisions, following the direction of development based on local people's culture and sense of values. I would like to verify the process of the development from the perspective of cultural anthropology. In addition, I will consider the role of the direction of development and how an outsider can assist the development.

Technical Creation Course

Nikhil DEO (M1: Graduate School of Engineering, Program in System Cybernetics)

From: India

I am Nikhil Deo from India. I graduated from the Department of Electronics and Communication Engineering of North Eastern Regional Institute of Science and Technology (NERIST). My initial research focused on designing high-performance and low-power electronic circuits. Gradually, I became interested in image processing and deep learning. I am grateful for the opportunity to fulfil my dream at Hiroshima University.

My plan is to develop computer vision and deep learning algorithms for real-time and high-speed vision systems, which can be used for various applications, such as pedestrian detection for traffic management. Traffic congestion has become a challenging issue with the increase in number of vehicles on the road. Driver-less cars, which will use computer vision and deep learning for automated driving, are the future.

After graduating as a student of Taoyaka Program, my approach is to develop solutions for disadvantaged regions. Although I would like carry on my research in my home country, I also intend to be part of an international research group working for disadvantaged regions around the globe, especially in Asia.

Social Implementation Course

Htwe NYI NYI (D1: Graduate School for International Development and Cooperation, Program in Development Science)

★Transfer student into the 3rd year of the Program

From: Myanmar

I am Nyi Nyi from Myanmar. I obtained my Masters in Economics from the International University of Japan (IUJ), Niigata, in 2015. After graduation, I went back to work for two years. I believed that I have worked effectively since my graduation as I could merge the academic concepts I learned in Japan with real-world situations.

My research focuses on the international trade trend from a network approach. As globalization shapes the world, international trade becomes more complex and connected to a person's daily life. In this case, analysing international trade from a network approach will enable a new perception and clearer understanding of modern international trade structure.

Taoyaka Program is a combination of different fields, cultural and technical creation, and social implementation, thereby providing opportunities to approach a single

situation from different perspectives. By efficiently utilizing the support of Taoyaka Program, I can surely achieve my goal.

Miyu SAKAMOTO (M1: Graduate School for International Development and Cooperation, Program in Development Science)

From: Japan

My name is Miyu Sakamoto. It is my honour to be welcomed at the Graduate School for International Development and Corporation as a TAOYAKA Program student.

I graduated from Hiroshima University in 2017, and entered a postgraduate program in the same university. Then, I joined TAOYAKA Program. I studied social science in my undergraduate

degree. As I am interested in economics and education, my thesis focused on the impacts of Japanese degree for foreign students on their income and career after they went back their countries.

In TAOYAKA Program, I plan to conduct a comparative study of education returns on income in a developing country, comparing the differences of students' future careers and income between students who receive scholarships and those who do not receive one for junior high schools in Lao rural areas, which is supported by the Public Foundation Civil Centre. By analysing the effect of poverty reduction on scholarship support, I would like to propose a more effective educational support policy for poverty reduction.

In the future, I would like to contribute to child welfare worldwide. To achieve this goal, I plan to play a role in planning and implementing policies that would solve the structure of the circle of poverty. Though this program, I would like to learn how to integrate solutions from different fields and create one initiative solution. Through the exchange of ideas, I can obtain a more diversified and flexible perspective.

Setyo NUGROHO (M1: Graduate School for International Development and Cooperation, Program in Development Science)

From: Indonesia

I am Setyo Nugroho from Indonesia. I completed my bachelor's degree in architecture and master's degree in urban design at the Institut Teknologi Sepuluh Nopember. After obtaining the latter, I was involved in research projects related to urban design guideline and conservation planning.

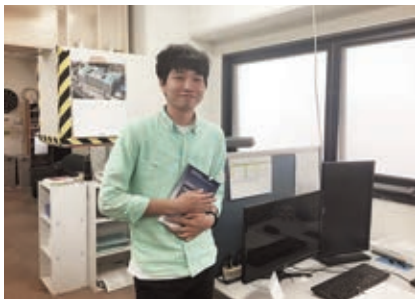
My recent research interest concerns connecting architecture and urban design to mobility as part of a transportation study. I chose this topic because most cities in developing countries nowadays are improving their rail-based public transportation.

After completing my PhD in Taoyaka Program, I hope to work as a faculty member in the field of urban design concerning the railway station area development, with a focus on Southeast Asia.

To obtain a deeper understanding of cityscape, I actively participate in recording the city through sketches. If you have free time and the same interest in sketching, let's explore the city's uniqueness and sketch together!

Daeyong SHIN (M1: Graduate School for International Development and Cooperation, Program in Development Science)

From: Korea



I am Shin, from Korea. My academic background is related to geography education. After completing my master's course, I worked at the Safety Research Institute as a researcher. As a researcher, I found that although disaster can occur everywhere, in developing and developed countries. The disaster management gap between the two is salient when a disaster strikes. Among other reasons is the lack of studies on an optimized evacuation plan and decision support system under severe disaster conditions in developing countries. Therefore, I decided to study natural hazards and disaster mitigation in these countries.

The purpose of this research is the development and application of the Agent-Based Evacuation Model for decision making regarding disaster management in coastal regions. A research that employs ABM can help establish an optimized evacuation plan for disaster management policy.

After completing the Taoyaka Program, I intend to visit other countries and gain experiences as a researcher to assist in the decision making on and assessment of disaster management.

Onsite Course Rotation: Fall 2016

The first level of the onsite education which consists of six classes including a one-day onsite visit

1. Participatory forest resource management for local revitalization

<2016/10/07~2016/11/25> One day visit to **Kita-Hiroshima** on October 21, 2016

By **Toshiaki Kondo**, *Special-Appointment Associate Professor, Graduate School for International Development and Cooperation*

Sedoyama timber market

To learn the participatory forest resource management for local revitalization, a total of 19 members from Taoyaka Program (13 students, five professors, and one staff member) visited Kita-Hiroshima town in Hiroshima Prefecture on 21 October 2016, and inspected the Sedoyama Forest Regeneration Project implemented by the local NPO (Natural History's Collegium of the Western Chugoku Mountains), in collaboration with the local people.

The Sedoyama Forest Regeneration Project is the participatory forest resource management for nature and culture conservation, and sustainable biological resources production. The goal of this project is to promote the management of unused areas known as sedoyama (a hill at the back of one's home or one's village) and satoyama (a semi-natural area that coexists with a nearby populated area), by promoting the use of woody biomass (mostly deciduous trees such as konara oaks) and realize the conservation of the region's landscape and environment. This project also aims to revitalize the local economy using a local currency that can only be used in Geihoku region of Kita-Hiroshima in the distribution process of woody biomass.

Dr. Katsunobu Shirakawa from the Natural History Museum of Geihoku explains the characteristics of mountainous ecosystems.

During our visit to Kita-Hiroshima, we received a clear explanation on the project from Dr. Katsunobu Shirakawa, a chief curator of the Natural History Museum of Geihoku and a founder of the project. We also inspected several facilities and sites related to the project, including the following: (1) Natural History Museum of Geihoku and its surrounding forest and wetland, (2) Sedoyama timber market, and (3) Geihoku Auk Garden, spa, and health resort in Kita-Hiroshima.

At the Natural History Museum of Geihoku, we learned the characteristics of mountainous ecosystems in Japan and their current situations. In the Geihoku Auk Garden, which is the biggest customer of firewood, the economic benefits of using firewood for heating a bath were explained to us. We witnessed the processing of wood in the Sedoyama timber market, which purchases timbers of broad-leaf trees produced in Satoyama from the local people and then sells wood products (e.g. firewood) to companies and individual consumers.

The final team presentation was held on 18 November in Hiroshima University. Four local people, including Dr. Shirakawa, joined the team presentation; the students from Taoyaka Program and the local people discussed local revitalization through the participatory forest resource management.

A group discussion with local people

2. Bridge Inspection: Akinada and Mituta Bridges

<2016/12/09~2017/01/27> One day visit to **Kure** on December 16, 2016

By **Fengwai An**, *Special-Appointment Associate Professor &*
Sushil Raut, *University Research Administrator,*
Graduate School of Engineering

Akinada Bridge

In recent years, various technologies for structural health monitoring have been developed to detect and localize damages in aging infrastructures (e.g. bridge, road, port, and harbor). To learn the cutting-edge infrastructure health monitoring and maintenance technologies in Japan, 11 Taoyaka Program students visited Akinada and Mitsuta Bridges in Kure City, Hiroshima Prefecture on 16 December 2016. Mitsuta Bridge, an old bridge, is located inside the Kure City, whereas Akinada Bridge, a modern bridge, is a seaside-highway bridge. During this visit, Kure City officials and staff members of the bridge maintenance company introduced the technologies employed for structural monitoring of these bridges.

Group Presentations

Group works were conducted on 6 and 13 January 2017. Taoyaka Program students discussed and summarized what they have learned during the one-day visit. Then, during the final presentation on 20 January, three groups discussed feasible solutions from technical, social, and cultural perspectives.

Acknowledgements:

We thank the efforts of the staff of Taoyaka Program, Kure City, and the maintenance company in conducting a successful technical onsite visit.

The top of the main tower of Akinada Bridge

Bridge inspection using a multicopter

Schedule

8:30-9:30	Move to Kure City, Hiroshima Prefecture (from Bus stop of Daigaku Kaikan Mae)
9:30-10:30	Lecture: Bridge asset maintenance in Hiroshima Prefecture Presenter: Staff of Hiroshima Association of Civil Engineering Classroom: Meeting room in Culture Hall of Kure City
10:30-10:40	Walk to a bridge (Mitsutabashi) maintained by Kure City
10:40-11:20	Introduction of the bridge maintenance & Interview
11:20-12:00	Move to the bus & go for lunch by bus
12:00-13:00	Lunch time at Michi-no Eki “Deai-no Yakata”
13:00-13:30	Move to Akinada Bridge
13:30-16:30	1. Obtain experience of bridge inspection (move to the top of the main tower of the bridge) 2. Study and observation of bridge inspection by using drone system
16:30-17:15	Return to Hiroshima University

Onsite Training in Overseas: Spring 2017

The second level of the onsite education involving a short stay in the mountainous area in Japan or overseas such as India, Nepal and Bangladesh

1. Rural Development in Mountain Regions: India

<2017/03/04~2017/03/14>

By **Nao Ishikawa**, *Special-Appointment Associate Professor &*
Lin Chen, *Special-Appointment Assistant Professor, Graduate School of Letters*

1. Overview

Aim of the training

Taoyaka Program provided two overseas onsite training sessions for students in FY 2016. One of the training, which was mainly organized by the Cultural Creation Course, was held in the Himalayan State of India from 4 to 13 March. It aims to study on rural development in Uttarakhand, Himalayan State of India, which is less developed because of its mountainous landscapes. To help the students grasp the actual conditions of the villagers' life and understand their development challenges in India, we planned a deep survey in one village where a research project of Hiroshima University was conducted and produced affluent research results.

All participants in a field survey

Uttarakhand, India and the surveyed village

Uttarakhand state is a mountainous province in northern India in the central part of the Himalayas. The eastern half is called the Kumaon region, and the western half, the Garhwal region. As most areas in the region are characterized by the practice of subsistence agriculture and low economic development, the region has historically witnessed a steady outflow of people seeking employment opportunities, especially head of households and family members seeking migrant-specific employment outside the region. As a result, a type of economic dependency known as a 'money order economy' is a prominent aspect of the region's economy.

K village

The surveyed village (hereinafter referred to as 'K Village') is around 12 kilometres (7.46 miles) by road from Nainital, which is about 30 minutes by car. As access has improved in recent years, it exhibited the characteristics of a suburban farm village. K Village is located on a gently sloping hill, with a central elevation of around 1,635 metres. A small lake in the centre of the village attracts tourists to this small village.

2. Onsite-Training activities

Activities before going to the field

Students were required to know the conditions of the field and set up their own research themes. Therefore, we provided several prior learning activities and materials for the students before going to the field. On 22 December, Prof. Hidenori Okahasi had a brief introduction of the onsite training in India.

In front of K village mayor's house

In January, we held three seminars that focused on providing them with an overview of Uttarakhand and K Village, field surveys in India, and field survey preparations. In February, we required them to prepare an individual and a team proposal. On 23 February, we invited our local partner, Prakash C. Tiwari, professor of the Department of Geography in Kumaon University, to deliver a preparation lecture on Kumaon

Nainital Lake

region. Then, the students were grouped into four teams according to their individual interests.

Activities on the field

The field activities consisted of an excursion around Nainital, interview with the village mayor, excursion around K Village, and general field and team survey. After arriving at Nainital on 6 March, Prof. Tiwari organized a field excursion in the downtown of Nainital district. It is helpful for students to be familiar with the history, religion, tourism development, and agricultural commercialization of the area. The next day, we moved to K Village in the morning, and conducted an interview with the village mayor to obtain a detailed information of the village. In the afternoon, Prof. Okahasi carried out a field excursion for the students to learn the realities in the village.

From 7 to 11 March, we conducted a general household and a team survey. In the first two days, the participants, including the staff and students, were divided into six teams that would conduct a general survey. In the next two days, students formed four teams to conduct their own survey. The details of the two surveys are as follows.

Household Survey

i. General household survey

We conducted two kinds of survey, namely, household and team survey. For the first survey, we prepared and shared common survey sheets for all the participants. Based on the survey sheets, we visited each household and obtained general data on their agricultural operation, facilities at home, experiences of migration, and family members. In total, we obtained the data from 75 households in the village.

ii. Team survey

The general household survey was followed by the students' team survey. There were four teams that surveyed the following topics.

1) Team for agriculture (two students)

Their main interests were in the local cultural landscape and organic farming. They compared the past and present farming methods, which created the local landscape. As Uttarakhand state is promoting organic farming, they asked the villagers regarding this topic.

2) Team for tourism (two students)

They were interested in the tourism benefits to community in economic, social and environmental way. They collected information on cultural properties, such as local festivals and foods. They also interviewed not only people who work for the tourism industry but also the residents. They found a kind of conflict between tourism and the residents.

3) Team water boys (two students)

Their main interest was in water for drinking and irrigation. First, they tracked from where the drinking water comes, and found certain routes for water through pipes that were connected to different water souses. Second, they pointed out the major source of water pollution and suggested desirable water governance.

4) Team for migration (one student)

She focused on the migration experience as an influential factor to rural development. She interviewed returned migrants, immigrants, left behind family members, and young people who are potential emigrants. She found the diverse experiences of local people because of immigration.

A TAOYAKA student dancing at a festival

3. Overall impression and plans

During the onsite training, students were required to set up their own plan based on their academic backgrounds and experiences. This learning process is important for the students' self-learning and practice of conducting a real survey. We are grateful to Prof. Tiwari, who kindly assisted us throughout the training; the students from Kumaon University, who served as translators; the hotel staff of the hotel where we stayed; and the villagers who were willing to help us with the interviews.

The onsite training continued upon the students' return to Japan. We invited Prof. Tiwari from Kumaon University to Hiroshima University and conducted a follow-up learning seminar on June 21, 2017. Participants discussed the lessons learned from the onsite training in India, received constructive advice from Professors, and we concluded the Training.

Final session at Hiroshima University

2. Post-earthquake 2015 housing reconstruction in rural Nepal through alternative building technology: Nepal

<2017/03/11~2017/03/21>

By **NIRAJ PRAKASH JOSHI**,
Special-Appointment Associate Professor,
Graduate School for International Development and Cooperation

A massive 7.8 magnitude earthquake struck Nepal in April 2015, causing the destruction of nearly a million houses. Thus, housing reconstruction remains a considerable challenge for the government of Nepal. It has prioritized post-earthquake housing reconstruction through the establishment of the National Reconstruction Authority (NRA). It is extensively engaged in enforcing building codes by promoting 17 building designs as an important strategy of housing reconstruction. The adoption of a design and the National Building codes are major eligibility criteria for the affected households to receive housing reconstruction subsidy provided by the NRA. The designs mainly rely on the use of conventional construction materials and methods, which are not locally available in most instances. This has constrained a pace of the overall reconstruction process.

Participants of the onsite training in Nepal 2017

Many initiatives are being carried out by non-government organizations (NGOs) at the grassroots level, to promote housing reconstruction by using local resources and alternative building technologies. Realizing the importance of locally available resources and their effective contribution to housing reconstruction, the NRA also acknowledged the importance of these technologies. NRA is in the process of completing the second volume of the building catalogue in which these technologies are recognized as part of the reconstruction process, making the alternative building technologies eligible to receive subsidy. Therefore, the Taoyaka Program, in collaboration with the University of Texas, Austin and Institute of Engineering Tribhuvan University, organized an onsite training program in Nepal under the theme of 'Post-earthquake 2015 housing reconstruction in rural Nepal through an alternative building technology'. The training was organized from 13 to 19 March 2017 at the Center for Energy Studies, Institute of Engineering, Tribhuvan University.

This training aimed at familiarizing participants with the process and progress of ongoing housing reconstruction initiatives undertaken by the government and NGOs. A systematic assessment of five alternative and a conventional building technologies was conducted by the participants as their group work. The learning approaches adopted in the training were:

i. A pre-lecture by experts/ practitioners
ii. Formulation of a draft report by groups
iii. Lecture and interaction sessions with experts/practitioners.
iv. Field visits, including a briefing of the pilot project on alternative building technologies, observation, and interaction with affected locals
v. Group presentations based on the field scenario and refined report

The detailed structure of the training is as follows:


A lecture by the executive member of NRA

Day 1. (13 March 2017): A lecture/interaction session with the executive member of NRA was organized to provide a general

overview of losses caused by the earthquake, initiatives taken, and challenges in housing reconstruction. Similarly, a lecture/ interaction sessions on labor management and prospects of renewable energy in post-disaster housing reconstruction were organized.

Day 2. (14 March 2017): The whole day was dedicated to conduct interactive sessions with experts/practitioners working on specific building technologies. The session was also helpful in orienting the participants of the field they were visiting.

Day 3.* (15 March 2017): A field study was conducted at Kaule. It included a briefing of earthbag housing, which is promoted by GoodEarth Nepal.

A discussion with the locals at Kotdanda

Day 4.* (16 March 2017): A field study was conducted at Kotdanda. It included a briefing of Compressed Stabilized Earth Brick (CSEB) housing, which is promoted by Buildup Nepal. Participants moved to Simpokhari in Kavre district, where they had homestay.

Day 5.* (17 March 2017): A field study was conducted at Simpokhari. It included a briefing of rammed/ compressed earth block and bamboo as important resources for housing, which was promoted by Abari.

*Observation and discussion with the locals regarding problems and prospects of their housing reconstruction were conducted in all three field studies.

Day 6. (18 March 2017): Group work and individual group consultations with the professors.

Day 7. (19 March 2017): Six groups presented their findings and suggestions on assigned building technologies.

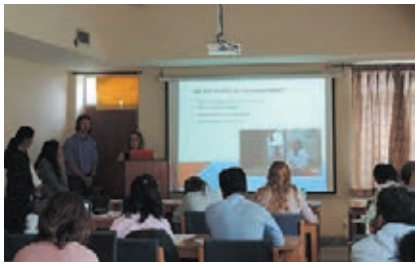
A briefing on earthbag housing at Kaule

The first group presented the situation of the village and discussed the advantages and disadvantages of Bamboo housing in the villages where field studies were conducted. They presented the villagers' perceptions of bamboo housing. Similarly, the second group presented the overall findings from the field study and provided suggestions to make the government process of housing reconstruction more effective. This group suggested certain measures for widespread applicability of CSEB in rural Nepal. The third group highlighted the hardship faced by the community because of the loss caused by the earthquake, their hope, and future barriers. The group showed important elements of the community that signify optimism about the future. They presented their assessment of the earthbag housing, with important suggestions for scaling-up.

The fourth group presented the economy of the villages, the resources they possess, and housing situation previously and at the present. The group discussed the locals' perception of NRA. They saw the possibility of spreading the rammed earth technologies in the villages, but suggested that the government's approval of the design is critical. The fifth group presented the comparative situations of the villages in terms of priority, preference, present condition, and future barriers. Financial issues were common among the residents. This group showed prospects of Hempcrete by overcoming the underlying challenges. The sixth group presented important issues, such as use of lightweight materials, bracing systems, and design simplification, which were related to a conventional house, in making houses earthquake resistant. The group suggested ways to make the government initiatives in housing reconstruction more effective. All these groups adopted the common approach to assess these alternative technologies. This provided an opportunity to form a synthesis table illustrating the strengths and weaknesses of these building technologies in given circumstances.

Consultation with professors for a group work

We would like to express our gratitude to GoodEarth Nepal, Buildup Nepal, Abari, and Shah Hemp Inno-Ventures for their support. Similarly, we are grateful to Mr. Krishna Bahadur Adhikari and Mr. Tilak Lama for their kind assistance in arranging the locals to interact with the students for a field study.



Groups' presentation of their findings and suggestions

Onsite Team Project: Fall/Winter 2016

The final level of the onsite education. The third year (D1) of TAOYAKA program students team-up with multidisciplinary course members and challenge a real-world problem.

Revitalization of Kita Hiroshima Town by Eco-Tourism

<2016/05~2017/02>

The Team Members:

1. **Novi Syaftika** (D1), *Graduate School for Engineering, Department of Mechanical Science and Engineering, Technical Creation Course*
2. **Teguh Nur Rohman** (D1), *Graduate School of Biosphere Science Department of Environmental Dynamics and Management, Technical Creation Course*
3. **Nguyen Thanh Quan** (D1), *Graduate School for International Development and Cooperation, Program in Development Science, Social Implementation Course*

We choose the location in Kita-Hiroshima, Japan to implement an onsite project with the theme of 'Revitalization of Kita-Hiroshima Town by Eco-Tourism'. Kita-Hiroshima is famous for its beautiful nature and unique culture. Nevertheless, this town is facing a serious problem of depopulation. We believe that tourism is among the important tools for its rural revitalization. Although tourism in rural areas is not novel, the eco-tourism concept is not yet popular among the local people and tourists, especially foreigners who can be the target customers.

The onsite project's concept was developed with tourism as the focus, corresponding to the local people's interest. As agriculture is among the major economic activities in Kita-Hiroshima, it was included to support tourism.

Eco-homestay's poster

Rice is Kita Hiroshima's major agricultural product, but an excessive growth of weeds problem in the paddy fields was observed, causing the decrease of soil nutrient and rice growth. We developed the new method using rice husk as an environmental friendly bio-herbicide, which replaces the existing costly and harmful chemical one.

The rice production continues with the generation of rice waste, namely, rice straw and husk that are potential to be used for bio-ethanol production. Rice straw and husk have cellulose content, a chemical compound that can be converted into bioethanol, which can replace gasoline for various purposes, including fuelling vehicles that can be used in tourism activities. Thus, we added the energy and environment sectors.

TOURISM SECTOR: ECO-HOMESTAY

We created new tourism business called Eco-homestay, with the theme of 'inaka ine', meaning village, nice and rice in Japanese. The participants came from different countries and backgrounds. The event held various activities, such as agricultural, cycling, fishing, hiking, cultural exchange, and visiting local companies and facilities. The concept was created and evaluated using different scenarios so that local people can continue organizing it by themselves.

From the left: Novi, Quan, and Teguh

Eco-homestay's brochure

AGRICULTURE

Application of rice husk in controlling paddy weeds'

Monochoria and Barnyard grass are the common weeds in the Kita-Hiroshima rice fields. These paddy weeds often inhibit the growth of rice plants by exuding endogenous toxic chemicals from the roots. Rice husk, which contains certain chemical components, such as

phenolic compounds and momilactones, can suppress the invasion of paddy weeds. Therefore, the role of rice husks to replace herbicide for controlling paddy weeds was studied.

The concept of our onsite project

The results of the laboratory experiment showed that KoshiHikari rice-husk is stronger than Akiroman and AkitaKomachi in suppressing the growth of Monochoria and Barnyard grass. Momilactones A and B were also found in KoshiHikari rice-husk, proving that these compounds are potential chemical components to develop bio-herbicide in the future.

ENERGY

About 9,000 tons and 2,000 tons of ethanol can be produced from rice straw and husks, respectively, according to our calculations of simple energy and cost analysis based on the annual production of rice in Kita Hiroshima. We selected the environmental friendly process called hydrothermal and enzymatic hydrolysis technology.

The reuse of an additional chemical called catalyst, which is produced from existing biodiesel production in Oasa region, was also considered. Our laboratory experiment showed that rice straw is more potential to be used as bioethanol feedstock compare with rice husk. However, as rice harvesting is done only once a year, other agriculture waste, such as tomato residues or any other vegetable plants, could be used. A deeper feasibility study is required for a real implementation in the future.


Laboratory experiments for bio-herbicide development

LESSON LEARNED

This project introduced successfully a new type of tourism business in Kita-Hiroshima with the evaluation as references. The agriculture and energy sectors were laboratory experiment and desk study; however, the results can be a reference or comparison for future development. As the three sectors are related, we could not clearly measure them in our evaluation. The contribution of this project in solving the depopulation problem is indirect; hence, it could not be exhibited sharply because of the small scale and time limitation of the project. However, this project still provided a valuable lesson for all parties involved.

ACKNOWLEDGMENT

We would like to express our gratitude to NPO for collaborating with us; INE Oasa, especially Mr. Takahiro Hotta and Mrs. Asuka Toya; the Oasa Electronic Co.; Oasa Junior High School; and Prof Tsukamoto. We would also like to thank the former onsite project team (FY 2015); Mr Yamashita and Mr. Yamamoto who served as our interpreters; and Mr. Motaz Sabri who provided us with technology and media support. Finally, we would like to express our appreciation to the professors, mentors and staff of Taoyaka Program, Hiroshima University for their support.


Making a rice straw broom activity


Students from the Oasa Junior High School


Visiting an electronics company in Oasa


Fishing in Ogure Farm


Hiking on the Yahata highland


Host families of Eco-homestay

1. Internship at Forum for Rural Welfare and Agriculture Reform for Development (FORWARD-Nepal): Chitwan, Nepal

<2016/08/25~2016/11/10>

By **Shree Kumar Maharjan**
D1, Graduate School for International Development and Cooperation,
Program in Educational Development and Cultural and Regional Studies
Cultural Creation Course

Field exercise with communities using participatory tools

Nepal is an agricultural country with more than 65% of its population related directly or indirectly to agriculture for their livelihood and sustenance. Many organizations, including the FORWARD-Nepal, a non-governmental organization (NGO) in Nepal, have been committing and implementing programs/projects to improve people's livelihoods through agricultural reform and development. The internship mainly aimed to help students learn the working modality, strategies, and approaches of the organization, including thematic areas and programs/projects. During the internship, fieldwork was conducted to understand the factors affecting climate change adaptation in agriculture through participatory research methods. Moreover, the government and NGOs coordinated their support on climate change adaptation in agriculture.

Learning by doing

The internship was beneficial for both the organization and the intern. The organization encouraged and appreciated the intern's contributions, and the intern acquired work exposure and opportunities from the senior management team. The intern's contributions were mainly on the following areas:

- Re-organizing the organizational strategy, including vision, mission, goals, and objectives in the internal strategic meeting
- Review of the thematic areas and other documents, such as the organizational brochure and other publications
- Coordination support in the national workshop on 'Enhancing Quality Standards of Raw Milk: Validation of Good Manufacturing Practices (GMP) in the Chain' at the Yak Palace, Kathmandu on 3 November 2016.
- Participation in the organizational functions, such as the annual 'FORWARD DAY', Teej festival celebration, and other regular meetings.

Field work

In addition, the field work on climate change and agriculture in Madi Valley was conducted with the support and guidance of the organization; the field work was presented to the management team. After a detail data analysis, Executive Director Mr. Netra Pratap Sen encouraged the presentation of findings to the government, NGOs, and the media. The coordination with the stakeholders, such as Madi Municipality, Buffer Zone Management Committees, I/NGOs such as the Rural Reconstruction Nepal (RRN), World Wildlife Fund/Terai Arc Landscape (WWF/TAL), United Nations Development Programme/Community-based Disaster Risk Reduction (UNDP/CBDRR), farmers' cooperatives/groups, media, police, and army, was conducted during the field work. These stakeholders are supporting the communities with respect to their livelihoods and the impacts of climate change.

Lessons learned and conclusion

FORWARD Nepal has achieved milestone successes in improving the livelihoods of the farmers, rural poor, and marginalized people. It has wider networks and good relations with the government counterpart, other NGOs, researchers, and media. It is among the initiators among I/NGOs for riverbed farming in Nepal, which is one of the adaptation interventions in the Nepalese context. It was initiated as a livelihood intervention for the landless farmers at the beginning. Being an NGO, it has limited resources, but efficiently utilized, thus communities trust and work closely with the organization. Because of limited resources, sustainability is the biggest issue. It has adopted multi-stakeholders' partnership approach to address the issue.

The support and cooperation of FORWARD-Nepal staff members during the internship are highly acknowledged.

Field exercise with communities using participatory tools

2. Internship at Mekong Tourism Coordinating Office (MTCO): Bangkok, Thailand

<2016/12/02~2017/01/30>

By **Nguyen Van Hoang**
D1, Graduate School of Integrated Arts and Sciences, Program in Humanities
Cultural Creation Course

Myself at the Golden Triangle in Chiang Mai

The Greater Mekong Sub-region (GMS) includes Cambodia, the People's Republic of China (Yunnan and Guangxi Provinces), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand, and Viet Nam. The GMS possesses rich natural landscapes and historical-cultural resources that help tourism development in this region.

The MTCO: located inside Thailand's Department of Tourism building.

The Mekong Tourism Coordinating Office (MTCO) was established in 2006, with the support of the Asian Development Bank (ADB), to assist GMS National Tourism Organizations develop and promote the Mekong region as a single destination. In addition, MTCO contributes to the tourism development efforts of each GMS destination to generate job opportunities and reduce poverty rate in the region.

Given my current research and interest in areas related to MTCO's functions, I decided to pursue my internship at MTCO. The objectives of this internship were to explore tourism development in one of the countries of GMS, and understand and be involved in a specific activity of the MTCO.

During the internship, I was assigned an important project that was related to my knowledge and experience thus far. The task was to communicate with travel and tourism stakeholders in my homeland, Vietnam. The MTCO aimed to connect to and build a contact database of Vietnamese travel and tourism industry associations, such as tour operator, travel agent, and hotel associations, and work with them to convey MTCO initiatives to their members. Therefore, I mainly concentrated on collecting data on Vietnamese tourism industry.

Through this task, I learned more about the tourism industry in Vietnam and was able to enhance my personal relationship with certain tourism stakeholders in my country. These outcomes support my current research and future career.

Through this internship, I gained the following:

- A deep understanding of MTCO as an organization and its functions
- An understanding of the tourism development situation in GMS
- Expansion of my knowledge on the Vietnamese tourism industry
- Experiences of Thailand's tourism
- Familiarization of an international working environment

I highly acknowledge the assistance of MTCO, especially its Executive Director and Operations Manager who greatly helped me during my internship. Without their generous support, I would not have completed my internship. Participating in onsite training such as this provided me with an opportunity to obtain invaluable experiences, which make the training beneficial to me.

Ayutthaya in Thailand: among the World Heritage Sites in the Greater Mekong Subregion

3. Internship at Development Action for Women Network (DAWN): Manila, Philippines

<2017/01/16~2017/02/14>

By **Menoza Shikainnah Glow Dalumpines**
M2, Graduate School for International Development and Cooperation, Program in Educational Development and Cultural and Regional Studies
Cultural Creation Course

Inside DAWN Office

I pursued an internship at the Development Action for Women Network (DAWN), given the relevance of its objectives and works to my research. The aim of my research is to understand the dynamics of Philippine–Japan cross-border movements with respect to migrants, especially children, their transnational ties, and formation of identities, with focus on Japanese-Filipinos affected by migration practices in one way or another. These and the opportunity to establish personal connections with DAWN's members motivated me to choose the organization as an avenue for learning.


Facilitating a group activity

Established on 6 February 1996, DAWN is a non-government organization in the Philippines. Its goals include ensuring the immediate reintegration of returning distressed migrant women to their families and Philippine society, creating alternative livelihood opportunities for returning migrant women as an option to migration, generating a strong public opinion against all forms of violence and discrimination inflicted upon migrant women and their Japanese-Filipino children (JFC), building a wide network of support, and developing its organization as a competent and self-sustaining support institution for distressed migrants and their families.

During my internship, my major tasks included facilitating and assisting orientations for Japanese students and guests during their study tours in the Philippines, organizing group activities and assisting cultural lessons for Japanese-Filipino children, participating in home and school visits as part of DAWN's social services program, conducting interviews with DAWN staff and its selected members, and training for its livelihood program.

As part of the training, I administered a cultural lesson for JFC members to broaden their understanding of Japanese culture. Most JFC members were born and spent most of their life in the Philippines, and thus may have limited or no knowledge of their Japanese father. To respond to such need, DAWN provides Japanese cultural lessons to the children. I facilitated 'My Kimono Art' class for eight JFCs, aged 9 to 21 years.


JFC members and their finished artwork

The primary objectives of the class are to encourage JFC to express their own thoughts by designing their own Kimono, and promote group effort by compiling their individual works to produce a one piece of art. Interestingly, children produced their own meanings and expressed their ability to construct their own representations of themselves. Such activities had given JFC the chance to express themselves in various ways.

Having such experience, I would like to extend my heartfelt gratitude to DAWN's executive director and staff for accommodating me during the month-long internship, and for Taoyaka Program for making this experience possible. This has been a critical platform for me to voice out my advocacy of upholding the rights of migrants and their families, and for allowing me to experience work on the field.


Together with DAWN Family

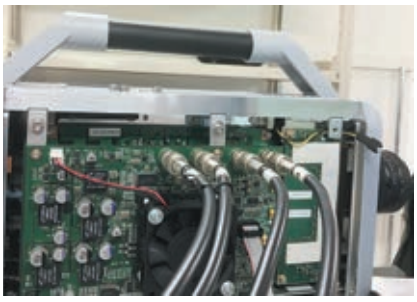
4. Internship at Institute of Automation, Chinese Academy of Sciences (CAS-IA): Beijing, China

<2017/02/12~2017/02/24>

By **Kouhei Shimasaki**
D1, Graduate School of Engineering, Program in System Cybernetics
Technical Creation Course

In front of CAS-IA

Nowadays, there are many applications for convenient improvement by using high-speed vision. For example, we can see, among others, humans, insects, and drones moving by using the technology of tracking. As we can track a high-speed moving entity, we can observe those mechanisms and add other efficient image processing of recognition, classification, and analysis. It is efficient to utilize tracking in various fields. Especially, when we realize a high-speed vision system, we commonly use hardware logic circuit, such as FPGA and GPU.

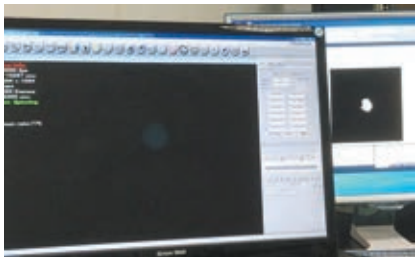

High -Speed vision system

When I use high-speed vision, it at times takes inefficient and useless processing. Thus, we need to adjust the framerate itself. In this case, I also must implement a variable framerate system in this internship. I tried to implement these kinds of function by using FPGA or GPU on a high-speed vision platform, SAX2, which can process megapixel images at 12,500 fps, and Jetson TX1, which can be a portable development kit.

My research topic is vibration source detection based on high-speed vision. For example, the misuse drone (invasion of privacy) detection is important. Generally, human eyes cannot find the position of smaller drones correctly. How can it find the position? We focus on the propeller of drones. In the image, propeller position has changed periodically following an individual frequency. In this way, we can extract regions whose brightness change. If I want to realize a more intelligent system by using this technique, I need to, among others, combine it with tracking and variable frame rate.

In CASIA, Beijing, I learned the FPGA-based hardware implementation for high-speed vision. Especially, I realized the hardware tracking at 12,500 fps and variable frame rate that we want to change by using a digital output signal. When I checked if it can work correctly, I evaluated the working-clock timing simulation and clock count. In CSIR-CEERI, Pilani, I learned the GPU-based hardware implementation and how to utilize deep-learning that can recognize an object. I tried to make the GPU processing, which is a basic image processing of edge detection that can evaluate blur of motion and focus. In addition, I also tried to implement deep-learning recognition based on GPU-processing. This recognition can evaluate about 90% of the object by utilizing a learning model; it takes longer time to learn the model of test objects. I found the validity of deep-learning. I will try to join this function with each other in future work.

Finally, I am thankful to CASIA & CSIR-CEERI, Pilani, for leading the FPGA design for high-speed vision and GPU processing through this internship. I am also grateful to Prof. Gu, Dr. Kota Solomon, and all the members who supported this internship.


Tracking experiment

5. Internship at Central Himalayan Rural Action Group (Chirag): Uttarakhand, India

<2017/02/16~2017/03/15>

By **Ryosuke Mori**
D1, Graduate School of Letters, Program in Humanities, Cultural Creation Course

My translator in Nainital (left) and myself (right)

In India, statistical data show that the share of agriculture in the country's gross domestic product (GDP) is decreasing. People, especially the youth, tend to leave agricultural work and look for a job in urban areas, as the former requires more time and labour but the income from it is inconsistent and low. Market control and debt by urban mediators are among the reasons for rural poverty.

To address the issue, the Central Himalayan Rural Action Group (Chirag), which offers different kinds of activities in the rural mountainous areas of the Kumaon region in Uttarakhand, established the Mukteshwar Kisan Producer's Company (MKPC), a rural farmers' organization, through a grant from the Indian government. The MKPC aims to promote the farmers' local businesses. A survey was conducted among farmers and the MKPC staff members to determine what kind of impact for rural areas can be expected by such Producer's Company, which is the new trend of Indian rural areas.

My Research during the Internship

I obtained data from 47 farmers, who sold their products to the MKPC in 2016, and the MKPC staff members. The MKPC's goal is to purchase all local products at an excellent price. In 2016, the MKPC's contribution to the farmers' income was still low, as the latter only sold about 16% of their products to the former. However, the farmers, who deemed the sales price and provision of agricultural tools as helpful, were already satisfied with the situation and intended to keep working with the MKPC. Moreover, the MKPC staff increased the provision of cheaper package to sell products, agricultural tools, and trainings. In this way, the organization is strengthening the connection between farmers and markets, promoting social connection, and supporting the cultivation of new and traditional products.

In contrast, most members of the MKPC management staff were unsatisfied with the situation, raising concerns on the sustainability of the organization. According to them, there were various problems, such as a lack of fund, a weak market, and misunderstanding between farmers and staff members.

The MKPC's role is essential for rural mountainous communities and thus must be continued. Otherwise, population outflow and agricultural decline, which is currently happening in Japan, will occur. The success of MKPC will help all Indian rural areas and people. I hope that many people understand the MKPC's role, and cooperate so that the organization does not fail.

I express my gratitude to the staff of Chirag and MKPC for their cooperation during my internship and research. I would also like to thank Prof. Prakash C. Tiwari and my translator, Keval Pandey from Kumaon University for their support.

MKPC Office

Research site: Mountains as the seas of Uttarkhand

6. Internship at Sony LSI Design Incorporated: Kanagawa, Japan

<2017/02/05~2017/03/03>

By **Zhang Xiangyu**
D2, Graduate School of Engineering, Department of System Cybernetics
Technical Creation Course

I was in my third year of Taoyaka Program, which means I was a first-year doctoral student when I interned at Sony LSI Design Inc. Thanks to the continuity of Taoyaka Program, I have the chance to conduct my research for three consecutive years, benefitting me in every aspect as I have an adequate time to dig deeper in my research areas. As almost all my knowledge and experiences were acquired from school, I believe that working in a real world will help me gain skills that are immensely valuable to expanding my career prospects. In this way, I will not be limited to research institutes and universities. Because my research focuses on image processing, which is based on the output of image sensors. I decided to complete a one-month internship at Sony, which develops and designs the world's top image sensors.

At Sony, I was assigned to the 1st Image Sensor Design Part 3rd Section, where I learned the whole procedure of noise reduction for complementary metal-oxide-semiconductor (CMOS) image sensors. Specifically, my work included three aspects or phases of noise reduction, namely, theoretical study and prediction, schematic simulation, and chip evaluation.

The internship had been instructive, and the lessons I learned at work and from my colleagues will help me in my future career. Sony offered me the opportunities to learn and develop myself in many areas. I also realized the big difference between learning at school and through actual work exposure. At school, we always want to innovate, whereas at work, I learned how to implement my ideas in reliable methods. This internship introduced me to my future field of work.

Sony LSI Design Inc.

Acknowledgement
I would like to express my gratitude to my teachers (Mitiko Miura Mattausch, Hans Jürgen Mattausch, and Fengwei An) and colleagues (Shizunori Matsumoto, Haruhisa Naganokawa, Motomi Matsuda, Xuefei Gu, Yunhua Sun, and Kenji Kumagai) at Sony LSI Design Inc., for providing me with the opportunity to work on the CMOS image sensor during my internship and their assistance in my research. The training expanded my knowledge.

The road from my hotel to SONY LSI Design Inc.

Award Recipient

Campus Venture Grand Prix: Chugoku-Region

<2017/01/24>

***The Special Award** on **community interaction and enabling resources through agriculture** was presented to **Thomas Michael Kloepfer**. Congratulations!!*

By ***Thomas Michael Kloepfer***
M2, Graduate School for International Development and Cooperation
Program in Development Science, Social Implementation Course

Myself with my vegetables

I applied for the Campus Venture Grand Prix in the fall of 2016, and was selected to an interview for a business venture grant in December. My application was in Japanese; I had to prepare a five-minute speech in Japanese for an audience of professors and professionals. My business partner/wife helped me to prepare the application and speech. I admit, I was nervous to speak in Japanese about my business venture.

As some of you may know, I really enjoy agriculture and farming. In certain ways, my passion for agriculture and farming can be difficult to explain and convey in words alone, especially within the five-minute time constraint. Years of work, both physical and mental, can be difficult to explain, especially in a language that is not my native tongue. My farm 'vision and direction', combined with the variety of interactions and symbiotic relationships occurring on the farm, are seen, felt, and tasted. In certain ways, my inability to communicate my farm business model effectively and efficiently highlighted some of my personal weak points. However, had I not been challenged for the Grand Prix, I would not be aware of these shortcomings. Even if we fail to achieve the goal for which we set out, failure can be truly great. Hence, when one challenges again, it may be possible to rise to the occasion, maintaining a sense of focus and humility.

My farm 'Pitchfork Farms' gratefully received a grant for participation on 24 January 2017, receiving the Nikkan Kogyo Shimbun Award. This award has helped provide our farm with the year's seed, fertilizer, and tools. This year, I will challenge the Campus Venture Grand Prix again. I believe this experience was motivating for me, as farm production and growth were five times higher than last year. I hope my model and farm methods can motivate farmers in the future. To make agriculture regenerative and sustainable, we have more work to do in Japan and around the world. If you are interested, come see us in Mukaishima, Onomichi at Pitchfork Farms.

Pitchfork Farms

Flexibility, Endurability, and Peace

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TAOYAKA Program for creating a flexible, enduring, peaceful society, Hiroshima University

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