Flexibility, Endurability, and Peace

TAOYAKA Newsletter Vol. 2 Fall 2014

TAOYAKA Students visiting Kitahiroshima, Hiroshima Prefecture – October 2014

What should we comply with? – Another aspect of TAOYAKA!

Message from Fujiwara Akimasa Program Sub-coordinator

TAOYAKA Program has been launched into the big challenge of an innovative PhD education program at last in 2014. Eighteen brilliant students, selected from 9 countries, are exerting themselves in the busy interdisciplinary course works. Everything goes well now, although there was some confusion when they entered the program. The program claims to produce onsite reverse innovators equipped with multifaceted thinking, autonomy,

Fujiwara Akimasa
Program Sub-coordinator

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execution skills, and creativity toward a TAOYAKA society, particularity in disadvantaged areas in Asia.

Additionally, there is another non-negligible competency the program pursues: 'ethics'.

One could share an interesting story. On March 11, 2011, while the Fukushima accident was caused by a devastating tsunami, the Onagawa nuclear power plant located in the same northeast region of Japan was not damaged at all. The reason is the height of the seawalls at Onagawa was surprisingly designed at 15m; that is 5m higher than that at the rest of region. A civil engineer made this wise decision by himself against the national rule (i.e. 10m height) for his professional ethics. Consequently, this second NPG accident was spared.

Yeas and nays. His behavior may not avoid some criticism for breaking the existing rule, however it is admired for avoiding destruction from the disaster. Complying with social rules and professional ethics might not always be antagonistic, but it is not uncommon for us to be torn between them. Getting back to TAOYAKA program, we define the word "TAOYAKA" as flexible, enduring and peaceful, in short. This may imply that the innovators who graduate from the program should comply not only with the institutional rules (i.e. laws, acts and standards) but also their own ethics as professionals.

According to Blake Davis at IIT (1999), the achievement of ethics can be evaluated from four viewpoints: ethical sensitivity, ethical knowledge, ethical judgment, and ethical willingness. In a word, our program is required to build the capacity to notice ethical problems instinctively, acquire fundamental knowledge of ethics, analyze the problems based on professional justice, and make decisions to act, with their own expertize and through continuing on-site training.

Key is the concept of 'Ethics across the curriculum'. Davis emphasizes that it is most essential to repeatedly provide various ethical cases mentioned above throughout the entirety of courses, because professional ethics is a kind of preparedness for risks.

Another aspect of TAOYAKA 'ethics', I believe, is to bring our personality out along with many practical abilities in disadvantaged areas. These problems still remain.

News

TAOYAKA Program's Top Stories: June 2014 – November 2014

June 21st-22nd, 2014

Interested students from TAOYAKA Program joined the 2nd student meeting of leading graduate schools in Kumamoto. The meeting was organized by the faculty of pharmaceutical sciences, Kumamoto University. The focus point of the seminar was "Employment issues of PhD holders and their contribution to society". The seminar emphasized three important topics: 1) What should PhD holders do?; 2) What should employers do?; and 3) What should leading graduate schools do? The participants of this seminar were separated into 10 groups. Each group discussed the three points separately and exchanged their views. Each group made a proposal and presented their summary.

TAOYAKA Students at the student meeting in Kumamoto – June 2014

TAOYAKA Students and Phoenix Leader Education Program Students at Hiroshima Peace Memorial Ceremony – August 2014

August 6th, 2014

TAOYAKA students attended the Peace Memorial Ceremony at the Peace Memorial Park (Hiroshima City) to offer their heartfelt consolation to the souls of those sacrificed to the atomic bomb and to pray for eternal peace on Earth. Following the ceremony at the Peace Memorial Park, students attended the Memorial Ceremony for Hiroshima University's academic member/student Atomic Bomb Victims at the Higashisenda campus of Hiroshima University. TAOYAKA students offered flowers to the monument at the Higashisenda campus.

August 18th - September 5th, 2014

TAOYAKA students participated in Intensive Language Courses. The courses were specially arranged for TAOYAKA students. There were two courses; Japanese students took an English course while students from outside Japan took a Japanese course. TAOYAKA students in the Japanese course were able to improve their language skills significantly. TAOYAKA students in the English course also made a great progress, and by the end of the course period, they felt comfortable doing presentations in English.

September 8th-11th, 2014

TAOYAKA Program held a joint fieldwork project with Doshisha University "Global Resource Management" and Kyushu University "Advanced Graduate Program in Global Strategy for Green Asia" – programs selected as MEXT "Program for Leading Graduate Schools." The three programs aim to foster global leaders who "address global issues for multicultural coexistence" (Doshisha University), "contribute to the realization of an Asia where ecology and economic growth can coexist" (Kyushu University), and "lead chain development of culture, technology, and society in disadvantaged regions" (Hiroshima University), respectively. During the joint fieldwork, students visited Oita and Fukuoka prefectures, and visited Suginoi Geothermal Electric Power Plant (Beppu City, Oita) and Kyoto University Institute for Geothermal Science in Beppu City, Oita, the city known as the birthplace of Japan's geothermal power generation, and Hatchobaru Geothermal Power Plant (Kusugun, Oita). 11 lectures by academic members of the three programs and lecturers from public offices and companies were given, and students developed understanding of the geological features of Kyushu, advantages and issues of various types of power generation, and problems of developing nations. 27 students from the three universities were divided into three teams with members of different academic fields and nationalities. On the final day of the joint fieldwork, the students of the three teams gave presentations on the theme of geothermal power generation as clean, renewable energy and the possibilities of using the technology in regions confronted by various issues.

TAOYAKA students at the joint fieldwork with students of Doshisha University and Kyushu University in front of Kyoto University Institute for Geothermal Science – September 2014

October 1st, 2014

TAOYAKA Program's second Opening ceremony was held on October 1st, and the program welcomed 7 new students for the October 2014 Admission and 4 students for the Transfer Admission into the 3rd year 2014. The students are from Japan, China, Vietnam, Indonesia, Laos, the U.S.A., Thailand, and Colombia. The 11 new students aim to become global leaders to promote the creation of regional societies of coexistence by collaborative work with other fields of studies through TAOYAKA Program.

November 2nd, 2014

TAOYAKA Program held the 1st International Symposium "Toward a Multicultural-Coexistence Society." At the symposium, Program Director Sakakoshi Masaki gave an opening address, and MEXT Higher Education Bureau University Promotion Division Chief Satomi Tomoka delivered a guest speech. Program Coordinator Okahashi Hidenori explained the outline of TAOYAKA Program. Two keynote lecturers were present at the symposium. Mr. Ominami Shinya (Director of NPO Green Valley Inc.) gave a lecture titled "Kamiyama Project - for establishing a high-quality and creative place," and introduced the NPO's activities to revitalize Kamiyama, a town in Tokushima Prefecture where depopulation is progressing, with cases of young people moving to Kamiyama and an enterprise opening a branch office in Kamiyama. Ms. Tengeji Hiromi (Representative, Kopernik Japan) gave a lecture titled "How to distribute technologies to last mile communities in developing countries" and introduced projects run by the organization to distribute low-cost technologies having appropriate qualities to recipients in less-developed countries facing various issues.

An active discussion was led among the two lecturers and TAOYAKA students.

TAOYAKA Program's 1st International Symposium – November 2014

Two lecturers and Prof. Fujiwara at the discussion session during the symposium

Introducing Academic Staffs

Cultural Creation Course

Ishikawa Nao (Special-Appointment Associate Professor)

Affiliation: Graduate School of Letters

I have been working here since this August. My major is in Human Geography. I was born in Aichi prefecture. I got a master's degree in Geography and a Ph.D. in Environmental studies at Nagoya University.

My research subject is bullfighting in Japan. It is a cultural event which has traditionally been held in 6 regions in Japan. I have studied the roles and functions of bullfighting in each community. I encountered this traditional event totally by chance. In the Geography laboratory, all students are required to take part in a fieldwork camp every summer. When I was 20 years old, I joined this event for the first time. We chose Uwajima-city, Ehime prefecture as the place for the camp that year. Since I was interested in regional cultures, when I found there was bullfighting in the city, it seemed the most fascinating and exciting research target for me. Since then I have been studying this traditional event for more than 10 years. I have interviewed many bull-owners, coaches who encourage the bulls to fight bravely in the ring, bull-owners' families, relatives, friends and so on.

The most impressive bullfighting field for me is Tokunoshima-island. When I stayed there, I got the chance to be a co-owner of a bull! I joined a group of bull-owners who shared and took care of one bull together. The bull and I had the same name "NAO". Since I was a student studying enthusiastically on the island, they encouraged me and gave the bull the same name with me. From my fieldwork, I have found that people make stronger ties in a community through cheering one bull together.

After getting my Ph.D., I worked in Hiroshima University Museum as Assistant Professor for about 2 years. Then I stayed in the Philippines to study English for 7 months. When I had conversations with English teachers in the Philippines, I felt they had limited information about Japanese culture. I wanted to get them to see not only the economic aspects of Japan, but also those of culture, society and tradition. In this way, I got interested in a job which is involved in cultural exchanges between Asian countries and Japan.

After coming back to Japan, I worked for Miraikan (National Museum of Emerging Science and Innovation) in Odaiba, Tokyo, as a science communicator until this July. Science communicators are a bridge between science and the general public. Not everyone is good at science in school, however, our life is based on science. Therefore, science will have great influence on our future life. All of us should consider how to deal with science technology from each of our standpoints. I talked with visitors to the museum, provided demonstrations and created some events. The most memorable experience in Miraikan was the participation in "Science Circus". Some science communicators, both in Miraikan and an Australian museum, made an international team and went on a tour to disaster areas in the northern part of Japan providing science shows. We visited many elementary schools and community facilities. I learned international team building and

facilitation, not only as an interpreter, but also as a communicator during scientific performances for children.

Here in this program, I have a class on "Creation of Regional Culture". I am grateful that my dream of being involved in international education has come true. I hope I can take advantage of my career as a researcher of Human Geography and a science communicator. I am looking forward to interacting with students, professors and people I will meet in my new field.

Bullfighting game in Tokunoshima

Technical Creation Course

Sushil Raut (Researcher)

Affiliation: Graduate School of Engineering

I would like to thank you for giving me this great opportunity to introduce myself as a University Research Administrator (URA). I was born in Nagpur, India, in 1986. I hold a Bachelor's Degree in Electronics Engineering and a Master's Degree in Intelligent Systems and Robotics. I am enrolled as a PhD fellow under the MEXT scholarship program in the Hyper Human Robot Vision laboratory, Hiroshima University. My responsibilities are arrangement of research activities for TAOYAKA Program and support for students.

In the Hyper Human Robot Vision laboratory, almost all implemented research activities are appointed to achieve real time processing for various applications to contribute to developing a safe, secure, green society. However, these phenomenon are more applicable to developing countries to improve living standards, including education, knowledge, study, research, implementation and development.

Most of the video cameras used are restricted to conventional video signal formats, which are designed based on the characteristics of human eye. However, there is high demand for high-speed and real-time systems, especially in hazardous and unsecured conditions, such as

buildings and social infrastructure, where undesired vibration cannot be sensed or analyzed by normal vision systems or the human eye.

A few years ago my laboratory developed high speed vision sensing technology which brought impressive changes in terms of contactless sensing systems. High speed sensing systems have a wide range of applications including medical, factory automation, human-robot interaction, robotic, etc. It can be used as a monitoring device for applications like structure health monitoring. Multiple camera systems and telescopic lenses are used to evaluate danger levels of buildings, bridges and various infrastructures.

High speed camera systems allow users to grab high frame rate images ranging from 500 fps to 10000 fps depending on applications. Moreover it has the functionality to write hardware based logic to speed up computation as well as reduce the computational load on systems due to algorithm complexity. We used it in applications like object tracking, 3D measurement systems, face tracking, mapping purpose, along with unmanned aerial vehicles (UAV). Over the period of development high speed vision system has become more optimized and more compact to mount on flying and other mobile robots which help us to find more applicable areas.

While pursuing a PhD, I was working on high speed vision based applications, especially Real-Time high speed image mosaicing and Image Stabilization, in which I was dealing with High Frame Rate image acquisition and their processing in order to achieve high resolution Images as well as stabilized images using a hybrid image stabilizer. The concept of high speed image mosaicing can be applicable to various applications where we need distortion-less and seamless high resolution images in order to achieve dynamic mapping and localization when cameras move rapidly. On the other hand, to reduce noise parameters due to undesired camera vibration, I implemented a hybrid image stabilization system, which incorporates 2DOF high speed mechanical stabilization and jitter free digital image stabilization. The digital image stabilization is used to stabilize unattended, undesired motion by an optical image stabilization unit. In the case of mobile robots and UAVs hybrid image stabilization systems have various advantages for grabbing smooth videos and mapping complex areas.

Apart from academic activities, I have several hobbies like cooking, insect photography, hiking, and traveling. These hobbies help me to visit many places, which are good opportunities to meet various kinds of people and cultures. Insect photography inspires me to think about bio-mimicry systems and understand their complex structures.

In TAOYAKA program we are looking for rural area developments which are facing various problems. I would like to implement my knowledge, experiences and potential to contribute towards the development of these societies. The knowledge of interaction between people and technology will be beneficial to bringing valuable systems to these societies.

Social Implementation Course

Hyun Junghwan

(Special-Appointment Associate Professor)

Affiliation: Graduate School for International Development and Cooperation (IDEC)

I am pleased to greet you in IDEC. I joined IDEC and TAOYAKA program this September. I chose IDEC because I am very interested in the Asian economy and the economic cooperation between Asian countries. The region is composed of dynamic and heterogeneous economies. The pace of economic growth differs across countries and there are a variety of economic and political issues related to emerging economies in Asia. However, one thing that is for sure is that financial development plays an important role in determining economic performance and social welfare of the emerging economies. In particular, the countries, such as Nepal, India, and Bangladesh, which we are focusing on, have several common economic issues concerning financial markets. At the micro level, microfinance is the most interesting and important issue, but so far most studies have focused on the effectiveness of microfinance based on natural experiment and theoretical backgrounds. From a practical perspective, microfinance is also a type of consumer finance that should reflect financial consumers' demand. That way, microfinance institutions can be positioned as a key part of the financial system. At the macro level, these economies are vulnerable to external shocks and therefore have been experiencing volatile business cycles. In order to achieve sustained economic growth, financial development is as important as industrial or technological development. Anyway, I expect I will enjoy studying microfinance and financial development in the countries.

Another topic, by which I am intrigued, is the Japanese economy. The current Japanese economy can be characterized by the lost two decades, deflation, and Abenomics. As is well known, the Japanese government and the monetary authority have continuously attempted to invigorate the economy for the last two decades, and a lot of studies have focused on the Japanese recession from academic and policy perspectives. Prior research has uncovered causes of the prolonged recession and suggested several solutions to boost the economy. Nonetheless, prior research is silent about why the monetary expansion policy was ineffective and why the loan markets did not work well. So I am going to tackle the topic with a different approach, focusing on the effects of the expansionary monetary policy on the economy and other neighboring countries. The results will come out next summer. I am already excited and looking forward to the results.

Also, while I am at IDEC, I would like to continue studying some economic issues related to the Korean economy. This month I started looking at small firm dynamics in Korea. Since the Korean economy is a *chaebol*-dominated economy, the importance of small and medium sized-enterprises is usually neglected. In fact, they have some peculiarities in terms of debt financing and investment decisions. They largely rely on trade credit when they become financially constrained. But due to limited data availability, little is known about the debt financing behavior of small and

medium sized firms. I am going to exploit a rich dataset together with an identification method to reveal the relationship between bank credit and trade credit and its dynamics over the business cycle. In a similar vein, the expansionary credit policy implemented during the 2008 recession generated a serious problem, namely zombie firms. Relatively large numbers of insolvent or unprofitable firms survived the recession owing to the easy credit. Indeed, they recently created distortions in the loan markets. This may become a serious problem for the future as well as an interesting topic to work on.

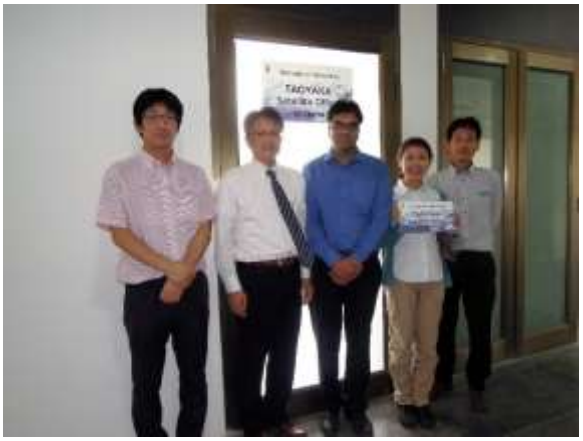
I welcome anyone interested in discussing the above mentioned topics with me. Thank you!

Satellite Offices

TAOYAKA Satellite Office in India has been established.

In TAOYAKA Program, students will do many educational and research activities in India, Bangladesh, and Nepal. To support these activities and promote TAOYAKA Program in those countries, the program sets up a Satellite Office in each country. Their duties, in detail, are; building a database of basic information for each country, finding internship partners, coordinating the On-site Training Course, basic research on possible Team Project sites, arranging promotion events for those who are interested in TAOYAKA Program, etc.

The newly established TAOYAKA Satellite Office in India is situated in the Gujarat Institute of Disaster Management (GIDM); an institute for training, education and research related to disaster management at the national and the state level. The disaster management framework in India has been reformed in the last decade, and the GIDM was established as a part of this reformation. The GIDM is a relatively new institute equipped with state-of-the-art facilities aiming to provide proper insight, knowledge and skills to accomplish appropriate disaster management tasks. A positive synergy from the collaboration between the GIDM and TAOYAKA Program is expected.



In front of TAOYAKA Satellite Office in India

Inside TAOYAKA Satellite Office in India

Gujarat Institute of Disaster Management (GIDM) →

Introducing New Students

Cultural Creation Course

Nguyen Van Hoang (Graduate School of Integrated Arts and Sciences, Department of Integrated Arts and Sciences)

From: Vietnam

I graduated and started my career from the Faculty of Geography, University of Social Sciences and Humanities, Vietnam National University, Ho Chi Minh City in 2002. My academic background is Tourism Geography and Natural Resources Management. Before joining TAOYAKA program and studying at Hiroshima University, I was involved in teaching as a lecturer and researcher at Vietnam National University for more than 10 years. Since studying and working at the university, I have gained experience in teaching methods and doing research as well as the ways to solve on-site issues when participating in field trips as a part of the curriculum.

Based on my academic expertise and experience in doing research, my research interest focuses on sustainable tourism development in various areas, especially in coastal zones and mountainous regions. I have conducted research into tourism development and tourism planning. Through this, I have obtained the fundamental knowledge and skills necessary for planning and exploiting tourism resources, and the methods of assessing tourism carrying capacity to maintain sustainable tourism development for various regions, particularly for coastal zone areas.

Through TAOYAKA program, I would like to apply the new knowledge and methods gained from the courses to conduct my research on pro-poor tourism development in disadvantaged regions, and between developed countries and developing countries. The case studies in my research might be in Japan, Nepal, and Vietnam. However, I would like the orientation of my research to be linked to onsite team projects in disadvantaged regions. From there, lessons learned from these disadvantaged regions could be helpful for me to develop strategies not only for my country, but also for other less-favored areas in the region.

TAOYAKA is a very significant program for addressing the big issues not only in the South Asia region but also in other regions. Studying in TAOYAKA program is a great opportunity for me to fulfill my preoccupation with contributing to communities; to creating livelihoods for poor people; and to bringing about the revitalization and development of disadvantaged regions in my country. Although I have studied in TAOYAKA program for just a short time, I realize that the pathway which I have chosen is tough, but it is worth overcoming, because TAOYAKA is the most practical program that I have known and pursued to date.

To all future students, TAOYAKA is an interdisciplinary program, and of course one of the leading programs which Hiroshima University provides for learners. This is a wonderful program, and it is led by outstanding academic mentors from different majors. Therefore, if you join the program, you will have great opportunities to work with different people from different fields through

classes, workshops, and onsite training, etc. TAOYAKA program not only offers the advanced knowledge and skills for students but also support for your future career. So let's get involved together to contribute a TAOYAKA society.

Mori Ryosuke (Graduate School of Letters, Division of Humanities)

From: Japan

I studied international economics, especially Asian economies, at Shimonoseki University. I also joined the British Culture seminar to study that country's social problems, because Britain has many similar points with Japan. And a bicycle trip I took around Japan was the first opportunity for me to think about how we can retain traditional culture and lives in disadvantaged areas in Japan, as I came face-to-face with these areas. Even until today, I have participated in many volunteer activities in such an areas.

After graduation, I got a job in the Shinkin bank in Shimonoseki city and experienced many aspects of the service industry, for example, learning financial knowledge, building of trust with local people and workers and offering appropriate service for each customer. I also joined some private organizations in Shimonoseki that tried to invigorate local communities.

As stated above, I engaged in many activities and I came to think that I wanted to deal with some problems in disadvantaged areas. So from this spring I quit my job and decided to return to studying at university again, to gain knowledge about disadvantaged areas and culture.

Human geography is now my major and in TAOYAKA program I want to find ways that people can conserve their culture that has built up over a long history, while making a living in the place they were born and brought up in. I would also like to stem the disappearance of culture in developing regions because of population outflow and forest destruction, by suggesting the importance of their culture and proper development based on local facts in developed countries. I aim to create new values of culture in disadvantaged areas to contribute to a global, flexible and sustainable world.

In fact, the curriculum of TAOYAKA program may be hard because there are many things to do and many classes in a variety of fields. In addition, we have to use English! I'm definitely not a good English listener and speaker, so sometimes I get confused and may cause trouble for many people. But all TAOYAKA students always help me, so I feel that I'm blessed with great fellows and I have to study hard to repay them.

In this program, we can learn many things and cooperate with others who have different backgrounds. Moreover, there are special classes, for example, the on-site course rotation. We have already visitied one location, the Geihoku area in Kitahiroshima town, and learnt the innovative ecosystem of that are. It was a really impressive and instructive experience for us. So I'm sure that we will solve big problems in disadvantaged areas in the future. Let's talk and work together for a global, flexible and sustainable TAOYAKA society!

Aliansyah Muhammad Zulhaj (Graduate School of Engineering, Department of System Cybernetics)

From: Indonesia

I come from Indonesia, the place which I hold dearest, an archipelago where vast cultures simply *infuse* one another; social issues are neglected or regarded as trivial until they become pretty complicated; and technological development is mostly geared towards more cost-efficient implementation. Sounds nifty, huh?

I graduated from the Electrical Engineering Department in Brawijaya University, majoring in Computer Engineering, and I also worked as a laboratory assistant while I was there. My research was related to various developments and implementations within the GNU/Linux ecosystem, which is regarded as one of the most influential open-source projects. Research for my undergrad thesis was on the development of parallel computing systems for high-order integral computation, using wholly open-source software and used–scrape hardware for a lower implementation cost.

At the time, I was also involved in Bike to Work Indonesia: Malang, a small community-based non-profit NGO encouraging people to travel to their workplace using bicycle and educating bicycle road safety on the road.

My current field of research is implementation of low power visible light communication for wireless sensing systems. Given that commonly implemented wireless sensor systems are using broad-directed electromagnetic waves communication which dissipates a considerable amount of power when there is a tightly constrained power requirement on the sensor, visible light communication offers more efficient power consumption and human-friendly visual feedback.

I wish to develop a fully working wireless sensor system for structural health monitoring for vital civil structures to ensure their safety. Every failure of vital civil structure involves direct technical inadequacies, but in addition there is the economic and environmental burden and the concurrent loss of a landmark icon of the community.

My fellow students in TAOYAKA Program are kind, cooperative, and colorful (take this either figuratively or literally). Also the mentors and staff are very kind and supportive towards the students with their respective insights and advice.

The insight of TAOYAKA Program is so visionary that every single thing developed therein has to have values from a cultural, social, and technical perspective, rather than just having people with different specializations work their respective share.

So let's work *together*, instead of merely in *parallel*.

Transfer Students into the 3rd Year (D3) – Technical Creation Course

Paksung Nattacha (Graduate School of Engineering, Department of Mechanical Science and Engineering)

From: Thailand

I come from Bangkok, Thailand. I earned my bachelor's degree after studying chemical engineering in the Faculty of Engineering, Chulalongkorn University in 2012. During my undergraduate years, I received an opportunity to visit in Japan in 2010 for one year as an exchange student. At that time, I was impressed by Japanese traditions and culture, as well as the kindness of Japanese people, thus encouraging me to return to Japan in the future. Moreover, I found that Japan is a good place for studying. At Hiroshima University, I can feel an international atmosphere. Here, I can learn a lot from other cultures and ways of thinking. We can discuss and brainstorm during our course work, which develops our communication skills and broadens our mindset. Furthermore, Japanese technology is known to be advanced and already practical in use. For these reasons, I pursued the opportunity to continue my further education in Japan and eventually attained a master's degree in engineering from Hiroshima University. However, I felt I needed something further, not only focusing on a specific field of study. I think that if I do not have broader knowledge and experience in other professions, my knowledge may not be enough for real practice. Since I got accepted to TAOYAKA Program, I have believed that this program can provide me useful skills learned from different points of view, as well as approaches through the effective perspective of cultural creation, application of technology and social transformation.

My present research interest is about renewable energy from biomass conversion. The conversion technique that I am concentrating on is supercritical water gasification, which converts biomass into a form of gaseous product. In biomass conversion, there are some unfavorable products produced from undesirable reactions, which are sometimes difficult to control. Therefore, I am attempting to study the reaction behavior in biomass gasification and control those undesirable reactions by varying the parameters. In addition, not only focusing on the technological aspect, this research is intended to make supercritical water gasification of biomass technology possible to be implemented in diverse cultures and societies. First, the intention of this implementation is to aim at disadvantaged regions, facing the most difficult cases on site to realize the problems, then reverse the innovation from disadvantaged regions to developed regions. That is, if technology is implemented in a disadvantaged region, the worst case is expected to be seen. Therefore the technology could be improved by the greatest degree.

As for my ambition to be accomplished in my profession and obtain a wide range of knowledge and skills, I am certain that TAOYAKA Program could strengthen my skills and make me be more open-minded towards accepting various ideas, while studying in the international environment provided by this program and successfully reaching my goals. So far, I am learning a lot from diverse experiences and I can share my opinion with people from different professions. I would

recommend fellow students who are interested in practical studies to join us in TAOYAKA Program.

Tunchai Mattana (Graduate School of Advanced Sciences of Matter, Department of Molecular Biotechnology)

From: Thailand

Before I transferred into the 3rd year of TAOYAKA program, I was a master student in Global Environmental Leaders Education Program, Hiroshima University. My major is Molecular Biotechnology. Since high school, I have found that biological subjects interested me more than anything else, especially applied organisms tools which have the capacity to provide many benefits to humankind. Therefore, I have made a commitment to pursue my bachelor and master degree in the Environmental Biotechnology field.

In Thailand, I conducted my thesis regarding biodegradation of pesticides using soil microorganisms, which was inspired by the fact that Thailand is an agricultural country and undeniably releases high level of pollutants into the environment, especially agricultural sources of pollutants such as fertilizers, pesticides and herbicides.

With the ultimate goal of better environmental conditions for the generations yet to come, I am eager to broaden my horizons and gain relevant exposure in the field of Environmental Management. Therefore, I joined the Global Environmental Leaders Education Program at Hiroshima University in 2012. My master's research, which will be continued in my doctoral studies, has focused on chemotaxis, or the so-called directed motility mechanism, of plant pathogenic bacterium, *Ralstonia solanacearum,* which is a causative agent of bacterial wilt disease in many economically important crops. By applying obtained knowledge, I am also developing a control method to inhibit the plant infection process.

Even though there is so much fascinating research available, they are not utilized to their full potential, as many people do not understand how these various works can be used or they are not properly adapted to the needs of local people. Since the core concept of TAOYAKA program is reverse innovation, and an onsite team project is one requirement of the program, this provides us with an opportunity to talk and share ideas with the students from different fields as well as local people, which will be a good way to make many different walks of life comprehend what we do and how our research could be utilized to achieve their core values. Finally, TAOYAKA program, in my opinion, seems to have the right ambience to nurture my research interests and to work towards my goals.

Social Implementation Course

Soulixay Hongsakhone (Graduate School for International Development and Cooperation, Division of Development Science)

From: Laos

I come from Luang Prabang Province, Lao PDR. It is located in the northern part of Lao PDR. Luang Prabang was the former capital of the Lane Xang Kingdom. With its rich cultural heritage, traditional costumes and natural beauty, Luang Prabang city became a UNESCO World Heritage city in 1995.

Before I joined TAOYAKA Program, I worked as a Deputy Head in the Planning and Cooperation Section at the Department of Industry and Commerce of Luang Prabang Province (LPDIC). In 2009, I enrolled in the Graduate School for International Development and Cooperation (IDEC) and I graduated from IDEC in 2011. My special thanks go to my professor, Professor ICHIHASHI Masaru, for his great support for my successful research paper. I returned to Laos and worked for LPDOIC and had golden opportunities to visit and go abroad for workshops and trainings, for example, to China, Thailand, Vietnam and Japan. My duties were not only to make development plans but also to organize seminars, workshops and training for local authorities, farmers and traders on regional market access opportunities. I also disseminated the contents of AEC integration of Lao PDR in order to encourage the rural poor to realize their own potential with local resource allocation and cultural values.

Since gaining working experience beyond areas of industry, commerce and government, I have realized that the rural development and regional integration of Laos requires not only advanced human resources, but also state-of-the-art science and technology, and a dynamic and sustainable policy to enhance the economic livelihoods and empowerment of rural poor people in terms of jobs, income generation, and physical infrastructure development. My research interest has focused on the relationship between rural economic development and trade integration impacts of developing countries, especially landlocked and least developed countries like Lao PDR. The trade integration with ASEAN and WTO of Lao PDR would impact its economy and development progress in particular with respect to poverty and rural development dimensions. This is the chief reason why I wanted to join TAOYAKA Program. Through this program, I expect to gain broader perspectives and get a good grasp of key development issues which would equip me to become a specialist and policy analyst, so that I can assume more leadership roles and actively engage in rural economic development. I trust that TAOYAKA Program will not only offer me a variety of ideas, knowledge and skills that enable me to cope with multicultural coexistence issues and development challenges in the world, as well as in the disadvantaged regions, but it will also benefit me as an individual in contributing to the organization where I am working and eventually to the overall development process of my home country.

To all active students who wish to be driving forces in TAOYAKA Program, do not hesitate in your decision, because TAOYAKA Program is extremely unique. All TAOYAKA students will be provided with good facilities and

studying environments and will be given golden opportunities to learn, explore and acquire broader knowledge, experience and share those ideas and experiences with students from different academic backgrounds. This will enable you to develop your communication, debate and negotiating capabilities and skills for resolving problems in both developed and developing countries. Furthermore, TAOYAKA Program will be a springboard for a future career. We would like to invite all active students around the world to join us in making the dream of TAOYAKA Program for creating a flexible, enduring and peaceful society come true in the near future.

Benjamin Kane Blevins (Graduate School for International Development and Cooperation, Division of Development Science)

From: U.S.A.

Regarding my background, for the past three years I was the Country Director for Africa Development Corps (ADC), an American NGO, based in Monrovia, Liberia. During my tenure I simultaneously managed programs in the sectors of education and food security with funding support and partnership with UN Children's Fund (UNICEF), UN World Food Program (WFP), Books for Africa (BFA) and Swiss Aid (SDC) in four Liberian Counties. As the chief representative of the organization in country, I was fully responsible for planning and management associated with donor relations, budget creation and oversight, project development and implementation. Prior to Liberia I worked in Brussels, Belgium for the RISE Foundation as a Policy Assistant, represented RISE with partner organizations on food security/climate policy for the EU's CAP 2013 reform. I have a Master's degree (MSc(Econ)) in International Relations from the University of Wales, Aberystwyth, United Kingdom, and a Bachelor's degree (BA) from Arizona State University in Women and Gender Studies. I have also served for two years as a Peace Corps Volunteer in the Ecuadorian Andes focusing on Sustainable Agriculture in rural areas.

My research aims to produce new insights on the role of technology for education and peacebuilding in rural areas of developing countries with particular focus on the usage of appropriate technology to augment the learning achievement of children and young adults. This research also aims to identify feasible measures and monitoring mechanisms on the usage and efficacy of appropriate technology and its cost effectiveness compared to traditional approaches. The outcome of this research would suggest the value to policy makers and developmental organizations for the case to invest in technology for education and peacebuilding for children and young adults in rural areas. The research would propose that the contribution towards investment in rural areas be proportionate to the learning outputs provided by the technological inputs. So far, I can already see that I will learn much to further my aim in terms of having the skills to undercover the problem areas in remote communities. Despite being a newly created program, I feel encouraged to have many intelligent and experienced classmates to build ideas and create meaningful results in the future.

Yamamoto Fuyo (Graduate School for International Development and Cooperation, Division of Development Science)

From: Japan

After graduating with a Masters in International Economics from the University of Sussex in 1993, I entered the United Nations through its National Competitive Examination in 1997. I was assigned to the Economic and Social Commission for Asia and the Pacific (ESCAP), where I worked mainly on the follow-up to the first United Nations Conference on Environment and Development (held in 1992). I later transferred to the Transport Division.

As ESCAP is one of the UN's regional commissions, our main focus was regional transport planning, particularly under the framework of the intergovernmental agreements on the Asian Highway, Trans-Asian Railways and Dry Ports. We also worked with national governments on a range of other transport policy issues, such as urban and rural transport, sustainable transport policies, and public-private partnerships for infrastructure development.

During my career, I was able to develop a broad overview of many different development issues. In particular, I became familiar with the various transport issues which people and governments in Asia face, both from an international and national perspective. But some time last year, I sensed that I needed to upgrade my technical skills, particularly in terms of conducting analytical work on transport issues.

So when I saw TAOYAKA Program at Hiroshima University, I was very excited. I was looking for a doctoral course which encouraged multi-disciplinary approaches but also fostered a high level of specialization. I also appreciated TAOYAKA Program's core philosophy, which is to find tailored solutions to the unique social and cultural characteristics of target regions.

I have now started the Social Implementation Course, with a focus on transport planning and related skills. My general interest is to look at both transport and non-transport solutions to improve access for people living in rural areas. I plan to study rural areas in Japan and another country in South Asia. On the surface, it may appear that the situation of these areas is totally different. In both cases, however, the relatively low population densities and remoteness of villages and towns make it difficult to find market-based solutions to meet their access needs. In the course of this first year, I hope to find out if there is indeed a case for a comparative study.

I am looking forward to working with students from other disciplines, as I believe that many brains are better than one!

He Bing (Graduate School for International Development and Cooperation, Division of Development Science)

From: China

I graduated from Beijing Normal University in July of 2014. My major was Resource Science and Engineering, which was a multidisciplinary subject. During the four years' study at BNU, I had professional courses which covered Economics, Management, Planning, Ecology, Hydrology, Remote Sensing, Land Use, and so on. In my summer holidays, I did onsite research with the professors at my college. For example, the summer of 2012, I went to the western part of China for a whole month of research. During that period, I carried out many assignments, such as drilling tree rings, making quadrats, scanning leaves of different trees, and so on. I greatly improved my physique and cooperative spirit. In addition, I took charge of an undergraduate research program in my spare time, from December 2011 to April 2013, and for this work I received an Excellent Award in the 21st "Jing Shi" Cup Competition.

My research interest focuses on the problems of economic development in rural areas, especially agricultural economic issues and related policies. Ever since I heard some people who live in rural areas of developing countries don't even have access to clean water and enough food, I felt a big shock and wanted to do some research there. Fortunately, I heard about TAOYAKA Program and luckily enough have joined the team. Now, I want to start working on my interest in the agricultural economic problems in rural areas and choose Nepal as my research area. I really hope I can bring some benefit for the local people through my research.

Through TAOYAKA Program, I expect to be a researcher with innovation and leadership who makes a contribution to multicultural coexistence in society. I hope that I can be a young researcher who is full of new perspectives and advanced skills when I finish my studies at Hiroshima University, so that I can apply my knowledge to make contributions to the development of rural areas in developing countries. Even though I have been a TAOYAKA student at Hiroshima University for only one month, I have experienced the cooperation and academic atmosphere between the students of TAOYAKA . The considerate help and support from TAOYAKA staff also makes me find it much easier to get accustomed to life and studying in Hiroshima. Besides, the onsite course makes me apply my knowledge to analyze real problems and make suggestions, and I think that is really important for my future research. Through this process, I can learn a lot from other students and make ideas collide. In a word, I am on the way to get basic knowledge which I can apply to onsite problems met in TAOYAKA Program.

I think highly of our TAOYAKA Program and I think "the spirit of TAOYAKA" will be popular sometime in the future. TAOYAKA Program not only provides me a chance to study and discuss with students from different countries, but also gives me chances to face onsite problems and gives much guidance to me. For my fellow students, I think you can greatly improve basic knowledge and can analyze problems you meet easier in the future. TAOYAKA Program is a good opportunity, if you take it, you will find a beautiful world and it will lead to your final success in the future! My partners, let's continue our steps and make our contributions to the development of rural areas.

Transfer Students into the 3rd Year (D3) – Social Implementation Course

David Perez Barbosa (Graduate School for International Development and Cooperation, Division of Development Science)

From: Colombia

I graduated as a civil engineer in 2009, and my professional interest has been linked to the transportation field, and especially to the sustainable transportation field. My bachelor's degree thesis was about the geometric design of bikeways in Bogota and its influence on operation. Even though Bogota is a city that has made big progress in infrastructure for non-motorized transport by building a bikeway network longer than 300 km., the existing and future infrastructure must take into more consideration the characteristics of the non-motorized users, i.e. cyclists and pedestrians, so a safer and more comfortable operation can be provided for them. Unfortunately, the infrastructure for cyclists and pedestrians has been given a lower level of priority in comparison to the road infrastructure for private vehicles. This phenomenon can be observed in Colombia, as in many developing countries of the world. The consequences of this approach are reflected in more polluted, unfriendly and dangerous cities to live in. As an urban cyclist, I have directly experienced how inadequate infrastructure designs can negatively affect the most numerous and vulnerable users of the roadways: the pedestrians, followed by the cyclists.

Thus, my professional interest is directly related to improving the conditions for non-motorized trips in developing cities. By increasing the number of non-motorized trips, many benefits for individual health, public health, road safety and the natural environment can be observed, which have been demonstrated by research in recent years. Reducing the carbon footprint of transportation activities and mitigating transport-based social exclusion are two additional benefits that can be obtained by promoting and increasing the use of non-motorized transport.

Promoting non-motorized transport also requires comprehensively understanding which factors motivate or discourage the use of non-motorized transport and what their influence is on modal choice decisions. In this way, we can successfully formulate policy approaches that lead to the creation of more livable cities and communities, reducing the negative effects of existing poverty and social exclusion, and bringing more quality of life to the communities. To provide possibilities to travel to people that currently do not have this possibility would be a possible way to contribute to this objective. From this perspective, I can professionally contribute and take part in the activities of the program.

Joining TAOYAKA program makes me very enthusiastic to have the possibility of thinking and implementing multidisciplinary projects that will be oriented to alleviate the difficulties of communities that have been deprived of some benefits that most of us can enjoy in our daily lives. In my opinion it is extremely important to take action now to develop a more sustainable and equitable world which future generations can enjoy. In this, we have a powerful motivation to work together and cooperate from each individual's perspective to make on-site projects that can positively impact the communities we are targeting.

Andhang Rakhmat Trihamdani (Graduate School for International Development and Cooperation, Division of Development Science)

From: Indonesia

After graduating from the Faculty of Architecture, Institut Teknologi Bandung (ITB), Indonesia, I worked as an architect for an architecture consultant in Jakarta. With the desire to explore how science and technology can be used to improve people's lives, architecture led me to personally engage both creatively and scientifically with the aesthetic and functional aspects of design. I was also actively involved in the creative scenes in Indonesia. I co-founded a company which focuses on making documentary videos about architectural heritage and culture in Indonesia. Those experiences helped me grow as an artist and designer, encouraging me to explore and develop ideas through experimentation, whereas physics and math have helped to engage my scientific mind.

Environmental issues, meanwhile, pushed me to develop reasonable designs in order to achieve sustainable development. I decided to continue my studies at the Graduate School for International Development and Cooperation, Hiroshima University, under the supervision of Dr. Tetsu Kubota. He helps me to sharpen my knowledge about sustainability in built environments. I was also introduced to the issue of urban heat island (UHI). UHI is a phenomenon where the air temperatures in urban areas are relatively high compared to the surrounding rural areas. It is mainly caused by high thermal capacity materials, heat generated by human activities, and a lack of evaporative surfaces due to urbanization. UHI could affect human health and result in higher energy consumption for cooling.

Building and urban environmental science has been my interest ever since then. I intensively study the assessment and mitigation of UHI. In September 2014, I earned a master's degree with the master's thesis entitled "Assessment of urban heat Island in the Hanoi Master Plan and its mitigation."

Many aspects have to be considered for formulating UHI mitigation. Citizens could play a big role in alleviating UHI. However, such mitigation actions might affect their quality of life. In this case, culture plays a role to formulate these strategies. Regarding technological matters, the recent development of cool building materials could be the answer to many problems. Furthermore, innovation in biotechnology could introduce certain kinds of plants for urban green spaces in order to cool down the city. In the end, any proposed strategies should be feasible for implementation. These brief ideas clearly show that the collaboration between culture, technology and social implementation is important.

The collaboration between cultural innovation, technical creation and social implementation is the main core of TAOYAKA Program. In addition, the program also offers a specific study area for conducting research. I am personally interested in India. With their growing population and rapid urbanization, UHI is an inevitable consequence. At the same time, many cities in India are also facing a high rate of poverty. With the threat of hot temperatures, they are experiencing disadvantaged conditions both economically and environmentally. Therefore, proposing effective mitigation measures would be challenging.

TAOYAKA Program has given me more exposure to the global society. The composition of the student body is so diverse. I could say that it is like a miniature of the world, where students experience working with people from different nationalities, cultures and backgrounds. It is a great pleasure to work with excellent students, professors, tutors, and the staff of TAOYAKA Program.

TAOYAKA is a small program but I hope we can give a big contribution to the world. Let's keep working hard and be a good role models for future student!

REPORT: Education Program – Onsite Course Rotation

One-day Onsite Visit on June 6th, 2014 – Fab 15 of Micron Technology Inc.

Contributed by **An Fengwei**
(Special-Appointment Assistant Professor, Graduate School of Engineering)

Overview

The students from TAOYAKA program visited Fab 15 of Micron Technology Inc. located in Higashi-hiroshima city for the Onsite Visit of "Onsite Course Rotation" class on June 6 2014.

Micron Technology Inc., founded in 1978, is an American multinational corporation based in Boise, Idaho, best known for producing many forms of semiconductor devices. This includes DRAM (Dynamic Random Access Memory), SDRAM (Synchronous Dynamic Random Access Memory), flash memory, SSD (Solid State Drive) and CMOS image sensing chips. In 1981, its first wafer fabrication unit ("Fab 1") was completed and Micron started producing 64K DRAM chips. Micron Memory Japan co. Fab 15 is a fabrication facility, previously of Elpida Memory, which was acquired by Micron in 2013. Since August 2011, Fab 15 has been sampling 25 nm DRAM which stores one bit data in a separate capacitor within an integrated circuit. Micron is the No.2 maker of memory chips worldwide after buying out Elpida Memory.

The motivation for a visit to a high-tech chip manufactory is to tell the students how technology changes the lives of people, even those who live in disadvantaged regions.

Fab window tour

After the introduction of the history of Micron and Fab 15, we visited the Fab through windows. Every process of chip fabrication is completed by robot 24 hours per day. To ensure a super-clean environment, the temperature, humidity and chemical composition of the inside air have very strict standards, since even a small particle may ruin the chips. Even if people cannot see the particles, they may build a bridge across lines in the chip which is designed under 25nm rules. In fact, the high-tech factory, like Micron Fab 15, is difficult to be built in disadvantaged regions. However, the products, which here are DRAMs, are widely used in mobile devices and network equipment. The impact of this technology can bring people a comfortable life even in disadvantaged regions.

Discussion and student presentation

After visiting Fab 15 of Micron, TAOYAKA students held a deep discussion about the case of life being changed by high technology in disadvantaged regions. Students divided into three groups to prepare presentations. The cultural group tried to introduce a problem in disadvantaged regions. Then, the technical group tried to solve the problem with technology. Finally, the social-implementation group had to find ways to make the solutions feasible. TAOYAKA students made a proposal for introducing a low cost Kindle to disadvantaged regions in Bangladesh. As a result, they made discoveries through what they learned and felt.

Group photo inside Fab 15 of Micron Technology Inc.

One-day Onsite Visit on July 4th, 2014 – Hiroshima Peace Memorial Park

Contributed by **Chin Lin**
(Special-Appointment Assistant Professor, Graduate School of Letters)

I. Summary of the onsite visit

"Onsite course rotation" is an important onsite education subject for TAOYAKA students. This subject aims to promote awareness of the onsite issues in Chugoku and Shikoku regions, which are related to HIROSHIMA through peace, energy, disaster prevention, medicine, transportation and so on.

In the previous semester, we prepared 3 onsite visits in the Chugoku region. On the third visit, we went to the Hiroshima Peace Memorial Park on July 4, 2014. 7 TAOYAKA students, 1 TA student and 4 TAOYAKA staff attended the onsite visit.

1. Introduction to the Hiroshima Peace Memorial Park

Hiroshima Peace Memorial Park is dedicated to the legacy of Hiroshima as the first city in the world to suffer a nuclear attack, and to the memories of the bomb's direct and indirect victims. The Park is located in one of the city's busiest downtown commercial and residential districts. The park was built on an open field that was created by the explosion. Today there are a number of memorials and monuments, museums, and lecture halls, which draw over a million visitors annually. The annual 6 August Peace Memorial Ceremony, which is sponsored by the city of Hiroshima, is also held in the park. The purpose of the Peace Memorial Park is not only to memorialize the victims, but also to educate younger generations about the horrors of nuclear weapons, as well as advocate for world peace.

Group photo in front of Atomic Bomb dome

2. Activities during the onsite visit

i) Lecture from a bomb survivor

In the first part of the visit, we listened to a lecture from Ms. Okura Keiko, a bomb survivor. She was an 8 years old primary school student when the atomic bomb was dropped on Hiroshima City. She luckily avoided the nuclear attack because she was absent from school on that day. In the lecture, she shared the scenes of refugees and the collapsed conditions of Hiroshima city after the explosion of the atomic bomb. Through the lecture, we believe that TAOYAKA students gained a better understanding of how severe the bomb was and felt more responsible for contributing to a peaceful society.

ii) Visit to Hiroshima Peace Memorial Park

After the lecture, we went to Hiroshima Peace Memorial Park with a volunteer guide. In the park, there are a number of memorials and monuments to establish the memory of nuclear horrors and advocate for

world peace. First, we went to the Hypocenter, Atomic Bomb Dome and Aioi Bridge and heard a talk about the circumstances of the actual drop. Then, we went to Peace Bell, Atomic Bomb Memorial Mound, the Monument Dedicated to Korean Victims and Survivors and the Children's Peace Monument. We understood the design and meanings of Peace Bell and struck it to declare a world without nuclear weapons and wars. Finally we went to the Flame of Peace, Cenotaph for the A-bomb Victims and Phoenix Trees Exposed to the A-bomb. The Phoenix Trees lost all of their branches and leaves and the sides of the trunks toward the Hypocenter were burned and hollowed out after the explosion. Although the Phoenix Trees appeared to have died, their branches put out buds in the following spring. This new life made amazed people in the aftermath of the atomic bomb and the war.

TAOYAKA students and staff listening to the lecture from a bomb survivor

iii) Visit to Hiroshima Peace Memorial Museum

For the last part of the visit, we went to Hiroshima Peace Memorial Museum and had a look at the objects exhibited in the museum. The Museum is located in both the East and Main buildings. The entrance to the permanent exhibit is on the first floor of the East Building, which connects to the Main building. The memorial hall was designed to deepen the understanding of the A-bomb tragedy through photos, memories and stories of the A-bomb victims. The exhibits on the first floor of the east building use models, films and photo panels to describe Hiroshima before the bombing and the development of the A-bomb up to the actual drop. The Main Building displays A-bomb artifacts and materials specifically designed to convey the events and conditions in Hiroshima on August 6, 1945.

TAOYAKA students looking at the exhibits inside Hiroshima Peace Museum seriously

II. Aims for onsite visit to Hiroshima Peace Memorial Park

After visiting Hiroshima Peace Memorial Park, we expect that TAOYAKA students can recognize the importance of creating a peaceful society. To create a peaceful society today, it is crucial to understand the diversity of regional cultures. Therefore, first, the students are required to find out the social issues existing in regional societies, and share their findings. These findings can enable us to better link technological R&D to the real needs of regional societies and with the most appropriate solutions. They can also facilitate the development of technologies without having adverse impacts on our societies. On the other hand, when we understand the various conventions existing in each community, it is easier to utilize advanced technologies to solve problems in regional societies, including disadvantaged areas. All of these facts emphasize the importance of promoting the coexistence between culture and technology in creating a flexible, enduring and peaceful society (TAOYAKA society).

III. Students' presentations and discussions after onsite visit

After coming back from the site, TAOYAKA students had discussions and made presentations mainly focused on "Technology-culture coexistence in regional society: a case of legacy and tragedy". The following are requirements given to students before the visit.

We required TAOYAKA students to think about the impacts of advanced technologies to regional societies, the relationship among culture-technology-society, and the differences between developed and developing countries in creating a TAOYAKA society".

In the discussions, the cultural creation group firstly presented an overall summary of the visit. Then, they took nuclear power as a case to explain both sides of the impact of advanced technologies on society. They also presented their basic ideas about the relationship of culture-technology-society and the differences in creating a TAOYAKA society. The next presentation was from the technical creation group. They used nuclear-related technologies to explain the influences of advanced technologies on society. They pointed out that the relationship between culture-technology-society would be constantly changing in different periods, and between the different conditions in creating a TAOYAKA society in developed and developing countries. Finally, the social implementation group explained their ideas about how to implement advanced technologies to regional societies without negative impacts. They suggested that solar energy is an important renewable energy that is beneficial to human beings and the environment.

From the students' discussions, we realized that they still could not give a fully appropriate answer to meet the requirements. However, they have tried to think in a more interdisciplinary way than before. This is a great change in TAOYAKA students. In the end, we believe in their further growth in the future.

REPORT: Research

Exploring new possibilities through Hiroshima University's long-standing research on India

– Geographical research on India, a recent powerhouse of economic growth

Interview with **Professor Tomozawa Kazuo**
(Graduate School of Letters / Cultural Creation Course Leader)

- *Specializing in geography, the discipline that identifies the mechanisms of place*

Professor Tomozawa specializes in geography, and his research focuses on geographic research of India in particular. He has travelled to India a total of 21 times.

Firstly, let's explain the academic discipline of geography. Geography is made up of two elements: (1) *regional analysis*, which investigates the characteristics of a region, and (2) *the pursuit of spatial laws*, which aims to examine the spatial characteristics of a certain phenomenon. While (1) investigates the formation process and internal structure of specific areas such as villages, cities and industrial regions, (2) researches phenomena such as locations that can be drawn on a map, examining whether or not such phenomena have any common laws or elements. Geography includes the

fields of human geography, physical geography and regional geography. Professor Tomozawa's area of expertise is human geography.

"Recently, I am focusing on the industrialization of India in my research. In particular, I am conducting surveys and research on India's industrial labor market". Industrial estates are currently forming in various areas in India and many types of industries are growing rapidly. The growth of the automotive industry is especially prominent. Professor Tomozawa says that he is investigating the labor market taking shape as the automotive industry grows.

"When you look at the situation closely, you can see that there is an increase in contract-based employment, rather than direct employment. In other words, the placement of temporary personnel. In this way, the labor market is developing a bias toward non-regular employment, and I'm researching how this reality can be explained", says Professor Tomozawa. He says that first it is important to understand the local situation in through statistical analyses of population and economic data. Having done that, in February of this year he held interviews with more than 400 workers, enabled through cooperation with a local university.

- *Developing specialist knowledge on contemporary India*

In TAOYAKA Program, Professor Tomozawa teaches *Geography of Contemporary India*, a subject offered in the second semester. The aim of the subject is to have students learn about the content of a textbook edited by Professor Tomozawa, which covers all of modern India. They also aim to acquire specific skills. For this reason, the subject will include practical elements in addition to lecture-based classes.

"If students select India as the location of their onsite education, then I want to ensure that they have full knowledge of the current situation in India. In addition, they need to 'know the information' – in other words, where they can access data on population, and what types of information they can obtain, for example. I also want the students to perform various spatial analyses related to population, and get to the stage where they can discuss the results of their analyses in depth" says Professor Tomozawa, expressing his expectations for the students.

In other words, one could say that Professor Tomozawa's educational research aims to equip the students with the basic knowledge, understanding, and skill set required to conduct research on India.

He also says that for onsite education, if students decide to go to India, he wants to provide support for their onsite surveys in India and ensure that the students develop creativity, perseverance and cooperative capabilities.

- *Initiatives to resolve problems based on decades-long research achievement*

The history of research on India at Hiroshima University goes back more than forty years. In recognition of that achievement, the Center for Contemporary India Studies at Hiroshima University was jointly established in 2010 by the National Institutes for the Humanities (NIHU) and Hiroshima University, as a research facility that forms part of the Contemporary India Area Studies, one of the regional research projects being promoted by NIHU.

"The very existence of the Center brings great credibility and potential to educational research in TAOYAKA Program" says Professor Tomozawa. "For this reason, three other teachers from the Center, including the Center's Leader, Professor Okahashi, are also participating in TAOYAKA Program".

He also says that he has somewhat complex feelings as they lead up to the start of this new initiative.

"I feel that in TAOYAKA Program there will be many opportunities to make use of our past research and experience. On the other hand, the research conducted by the professors in the Cultural Creation Course has focused on understanding and interpreting the current state, and developing theories for that purpose. In this program, the aim is to have students go to the location to find the specific issues themselves, and then develop countermeasures for those issues. So what we are trying to do goes beyond the boundaries of conventional academic disciplines. I think that for us to ensure that the students have meaningful experiences and results, the teachers themselves also need to make an effort to adopt a new mindset".

The presence of a leader with such expertise on India is a major strength for the program.

Read More!

TAOYAKA Program
Academic Mentor
Interview series (in English)
can be read at
http://taoyaka.hiroshima-u.ac.jp/english/member/academic-mentor/

MENTOR INTERVIEW / 「アカデミックメンターに聞く」
series (in Japanese) can be read at:
http://taoyaka.hiroshima-u.ac.jp/interview/

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TAOYAKA Program's website!

How Advanced Robotics Technology Brings Change to Disadvantaged Regions

– Hyper-human technology research aiming for an industrial revolution in the 21st century

Interview with **Professor Ishii Idaku**
(Graduate School of Engineering / Technical Creation Course Leader)

- *Robotics technology with high-speed cognitive and behavioral skills*

Professor Ishii's research is centered on the creation of high-speed robotic eyes. These are eyes that are able to perceive phenomena that cannot be seen by the human eye. Indeed, they not only see such phenomena but are also capable of instantaneously photographing them and processing the information, thus acting as a sensor. This is technological development with a very wide range of potential applications.

"This technology is 'hyper-human' – in other words, it can do things that cannot be done by human beings, and therefore has a huge social impact. In just the same way as the steam locomotive of the Industrial Revolution or computers in the 20th century, hyper-human technology has changed society. In our research we are also aiming to create groundbreaking technology that will have a social impact" says Professor Ishii.

In the past, sensing technology that can see vibrations using robot eyes that are dozens or hundreds of times faster than the human eye has been put to great use in many areas of society, adopted in the fields of medicine and engineering for inspections and the like, as well as various research fields embedded in microscopes. "One of the motivations for our research is 'to surprise people'. This is compelling technology that makes people think that a person could not do the same thing. I want to develop technology that is exciting."

On the other hand, Professor Ishii says that currently people do not have a proper understanding of what high-speed vision technology, the 'fast robot eye', is good for.

- *Various useful applications for high-speed vision technology*

In TAOYAKA Program, Professor Ishii is directing his education and research to the use of high-speed robot eyes mainly to view outfield objects. Recent focus is on the application of such technology to the monitoring of constructions, where high-speed robot eyes are likely to be useful in inspections of public constructions where aging is an issue, such as roads and bridges.

"For example, some defective buildings may look good externally, but buildings that will collapse if tilted usually sway in an unusual way. I think that this is an area where high-speed vision technology can be applied, to perceive vibrations that are extremely difficult to see with the human eye".

Public infrastructure is not the only target for such technology – cultural assets are included as well. In both

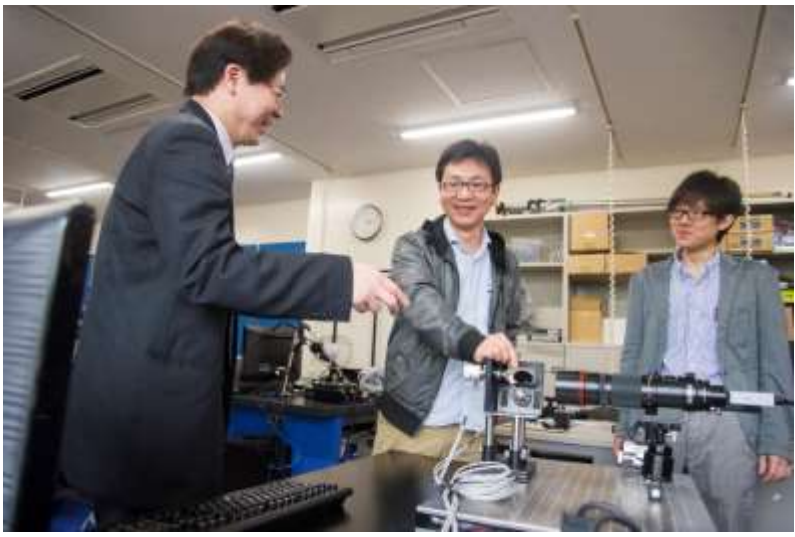
cases, the issues in developing nations are even more serious than in Japan. “We want to use this high-speed vision technology to make a contribution to the creation of safe communities where people can live with peace of mind. And I’ll be very happy if, through this program, we can demonstrate the areas where high-speed vision technology can be of use”. Professor Ishii says that in order to do so, the advanced technology will need to be converted to applied technology.

“Rather than keeping advanced technology as it is, I think that a major challenge is to fully utilize that technology in practical areas. This is what I want to teach students through TAOYAKA Program”.

- *Onsite education – learning that is only possible on site*

Professor Ishii is also the leader of the Technical Creation Course. He says that he feels particularly strongly about this program.

“In TAOYAKA Program, I am hoping that our focus on onsite activities will lead to the discovery of new advanced technologies. Many students think that advanced technology exists only in developed nations, but in actual fact, advanced technology is born in areas where there are problems. Which means that advanced technology does not appear in clean places”.



‘Onsite’ here refers to disadvantaged areas – in other words, places that have the potential to become the big markets of the future. “In a way, I want the students to develop a spirit of survival, so that they can learn how to live in a world that is not ideal”.

This Onsite Education, where students learn onsite, is one of the major features of the program.

“Ultimately, students from each of the three courses form teams and work together. For this collaboration to proceed effectively, the students need to have something to offer to each other. Not just knowledge - it could be something more emotional, like a sense of comfort. We are looking for students who are fully capable of participating in this kind of give-and-take exchange. It is also important to remove all the barriers between the respective fields to enable discussions among the students in the different fields. In particular, I want the students in the technical field to gain proper onsite knowledge”. Professor Ishii speaks passionately of his ambitions for the program.

REPORT: TAOYAKA Program Seminars

TAOYAKA Program frequently holds TAOYAKA Program Seminars with lecturers/speakers invited from universities within Japan and overseas, collaborative organizations and enterprises, etc. The seminars provide opportunities to exchange information on multicultural-coexistence and to develop educational materials. Many of TAOYAKA Program Seminars are open to the public.
Please see TAOYAKA Program’s website for information on upcoming TAOYAKA Program Seminars (http://TAOYAKA.hiroshima-u.ac.jp/english).

The 17th TAOYAKA Program Seminar (July 22nd, 2014)

Professional Skills Useful for Fieldwork in Developing Nations and
Strategies for Raising Funds to Support International Fieldwork

Lecturer: Prof. David J Eaton (LBJ School of Public Affairs, the University of Texas at Austin)

By taking the chance of Prof. David Eaton's, who is one of the professional mentors in TAOYAKA Program, visit to Japan, we asked him to deliver a lecture for TAOYAKA students on learning the importance of communication skills.

In TAOYAKA Program, it is mandated for students to conduct field surveys. Thus, communication skills are one of the most important skillsets students have to acquire.

The aim of this seminar is to let students be aware of the importance of communication skills and making it the starting point of improvement. This seminar was originally planned as a lecture in the Course Rotation. However, when considering the common importance of communication skills for all students who might go out for field surveys, the plan was changed to the open seminar. Therefore, the lecture has a more in-the-classroom style rather than having the traditional, speech and Q&A style.

The lecture started off with an explanation of what you can get through communication or conversation, then proceeded to classify the skills into three types. It

was pointed out that listening, questioning, and clarifying/reframing are the three basic skills to carry out smooth communication, and detailed explanations for these items were made while using the most of the lecture time. The lecture was a very interactive one, so students actively participated in the class. This made it a very useful lecture for students.

The 19th TAOYAKA Program Seminar (July 31st, 2014)

Community Development and Town Management in Higashi-Hiroshima

Lecturer: Mr. Kaguri Takeo (Chairperson of Agricultural Committees in Higashi-Hiroshima)
Mr. Date Yoshiaki (Division Manager of Energia Solution & Service Co.)

The purpose of this seminar is to audit the lecture of Mr. Takeo Kaguri and Mr. Yoshiaki Date, and discuss the future strategies of Higashi-Hiroshima for reference case of TAOYAKA's program. The first 40-minutes of this seminar were for 1st lecture from Mr. Kaguri, and next 30-minutes were for 2nd lecture from Mr. Date.

Firstly, Mr. Kaguri explains about the issues of agriculture division of Higashi-Hiroshima, from this lecture, we can obtain the future strategies of the depopulated area. Next, Mr. Date introduced the examples of solar systems of Shiraichi for bird pest control. Finally, discussion between audience and the lectures was conducted.

The 20th TAOYAKA Program Seminar (August 27th, 2014)

Passion is a key driver for R&D commercialization
-An example of the development of organic electroluminescence televisions-

Lecturer: Mr. Urabe Tetsuo

The purpose of this seminar was to identify the knowledge and other factors, such as passion, which are required for the commercialization of technology, and to understand, through specific examples, the most important considerations. The Sony Corporation is the first company in the world to commercialize electroluminescence television. Mr. Urabe talked about how his efforts in achieving this taught him that a 'strong will leads the way'.

Mr. Urabe's lecture lasted 70 minutes and was followed by 30 minutes' open discussion with participants. Firstly, Mr. Urabe outlined his past R&D works. Since entering the Sony Corporation he had been responsible for developing state-of the art technology. He began by researching and developing the use of liquid crystal, and succeeded in developing products. Later, he was put in charge of developing organic electroluminescence televisions that were then of poor quality. He struggled with many things such as a shortage of time and company policy. Finally, with his boss's admiration, he succeeded in commercializing electroluminescence television for the first time in Japan. It was impactive to hear a real story at first hand from an experienced SVP. Participants realized the importance of self-belief, hard work and the ability to predict the market future.

"Choose an appropriate person as a leader", "Connect with top of the company", "Show co-worker the dedication to the job". These are the keys for success. With the spirit of an engineer, the lecturer sent the message that having, believing in and pursuing one's own view of technology will bear fruit. Participants were moved to hear real engineering experiences and lecture was useful for conducting their research development.

The 24th TAOYAKA Program Seminar (October 4th, 2014)

Revisiting Development Discourse in Nepal:
Turbulent Textile and Garment Industry as a Case Study

Lecturer: Mallika Shakya (Assistant Professor, South Asian University)

This seminar featured contemporary Nepal. Four researchers made presentations in the whole seminar. Participants discuss people's life, identity, family, status of women which are hot issue in Japan as well. Mallika Shakya, assistant professor in South Asian University has approached sifts of garment industry in Nepal in an ethnographic way. She

analyzed the issue on a world economical scale especially regarding the export to the USA. Her presentation was based on her thorough fieldwork, therefore it gave TAOYAKA students a hint to consider what is a suitable assistance in regions where they will visit as onsite team projects.

Upcoming Schedule

- ***January 8th, 2015 TAOYAKA Program Seminar***
  Lecturer: Consul General of India, Osaka-Kobe, Japan
  Venue: Library Hall, Central Library, Hiroshima University
  Time: TBA
- ***January 9th, 2015 Onsite Course Rotation "Onsite Visit" to Akitakata City***
  (a class of TAOYAKA Program)
- ***February 12th, 13th, and 16th, 2015 Lasting Peace and Culture***
  (a class of TAOYAKA Program)
  Venue: Large conference room, IDEC
  Time: 8:45am – 5:45pm

TAOYAKA Program Admission Policy

Realizing a society of multicultural coexistence, which is a challenge the world faces, requires human resources equipped with autonomy, the ability to execute, multifaceted thinking and creativity, to promote the formation of regional societies of coexistence.
The aim of this program is to train global leaders who will make a contribution to multicultural coexistence societies in close collaboration with the regions, by gaining a deep understanding of the region's society and culture, based on which they will then develop the technology to resolve the issues faced by disadvantaged regions, and then implement the results in the regional society.

We encourage students who fall into the categories below to apply.

1. **Students who want to make a contribution to society with cross-disciplinary knowledge and skills**
2. **Students who have an interest in the culture and issues of disadvantaged regions, and feel strongly that they would like to make a contribution to the development of such regions**
3. **Students who want to work as leaders at a regional or global level**
4. **Students who possess outstanding enthusiasm, drive, responsibility and people skills**

For up-to-date application information including application deadlines, please visit "How to Apply" page on our website:

http://taoyaka.hiroshima-u.ac.jp/english/admissions/how-to-apply

Flexibility, Endurability, and Peace
TAOYAKA Newsletter Fall 2014
Vol. 2 / Issued in: December 2014
TAOYAKA Program for creating a flexible, enduring, peaceful society
Organization of the Leading Graduate Education Program

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