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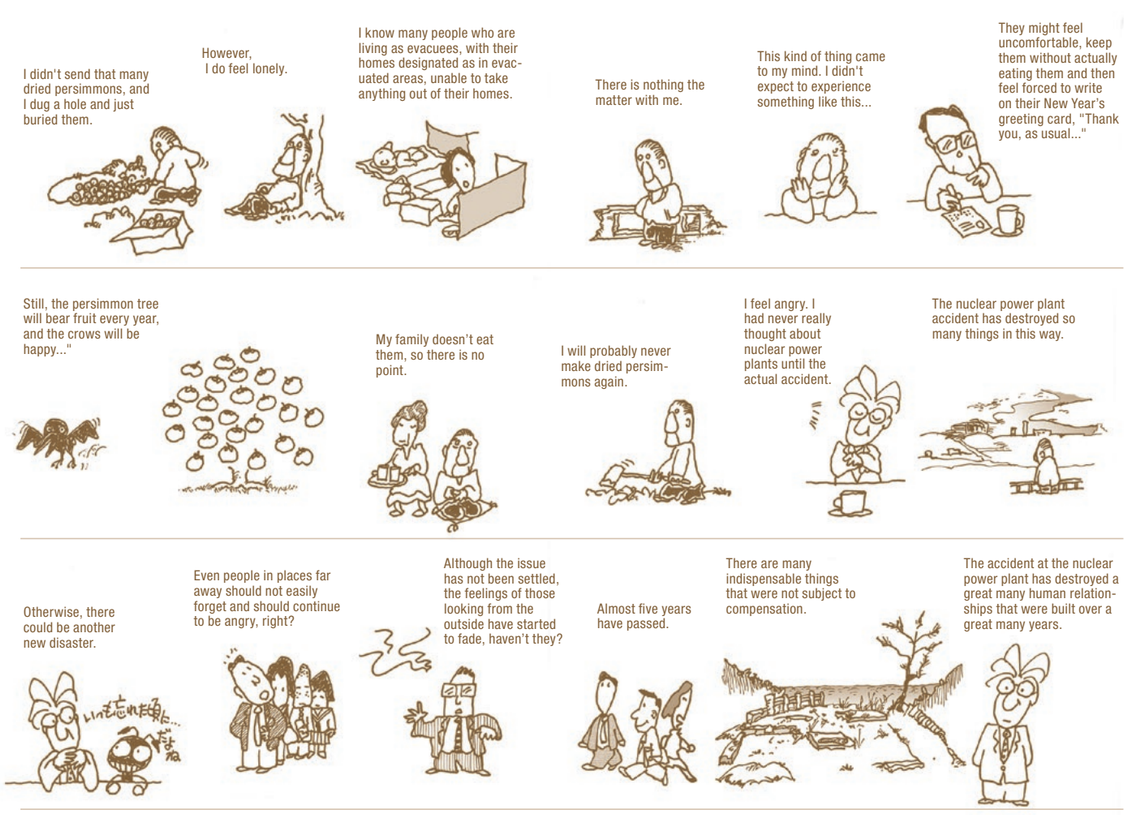
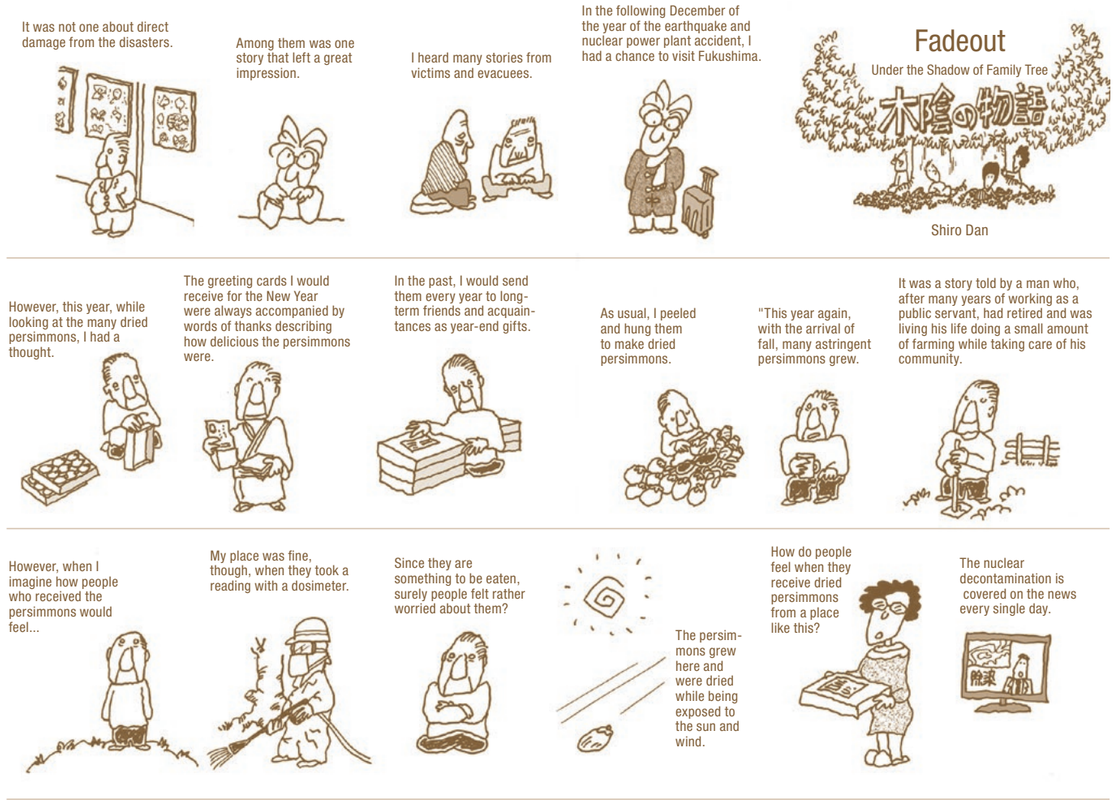
Ritsumeikan University Research Report



I was very cautious about drawing a cartoon using what happened at the disaster-stricken areas as a motif. I was not worried about facts or privacy. Instead, I was not confident if drawing it would reach the audience as something good. Right from the start, I didn't have any intention to collect materials in the affected areas and to draw a cartoon.
Immediately after the earthquake, I came across many events that were indirectly affected by it in every corner of Japan. That refreshed my feeling that our society is connected by a mechanism. It made me very aware that everything is not concerned only with the parties directly involved.
Five years later, I wrote about a story that I heard in Fukushima for the first time. Everyone will take it in a different way, but the damage of the nuclear power plant hasn't ended at all.
I want to warn people that we should not easily forget that our society has caused something that cannot be undone. This is not only the power company's problem but also our society's problem.

Shiro Dan (Professor, Graduate School of Science for Human Services).
"Afterword", Under the Shadow of Family Tree: Calendar Starting in March (Published on August 10, 2015)



RITSUMEIKAN UNIVERSITY

The future is shining brightly
Ritsumeikan research activities
that enlighten the world

[Special Feature]

Living with a Disaster

ISSUE 2
May 2016

While living our lives, it is difficult, of course,
to avoid natural disasters.This is the simple truth.
However, can we anticipate disasters without averting our eyes from this fact?
What are effective methods for disaster prevention and mitigation?
Should a disaster occur, how can we respond to it as quickly as possible
and without too much confusion?
Following a disaster, how can we stay together
and continue to discuss things?
We are searching for the answers to these very questions.

Development of fault-slip detection technology

Research on bridges that were not washed away by tsunamis

Development of landslide detection technology (Slope disaster management, Kiyomizu-dera Temple, Kii Mountains)

Study on reinforcement methods for masonry construction structures

Development of mudflow disaster prediction and mitigation technology using field monitoring systems

Development of disaster prevention technology for Thai Ayutthaya cultural relics

Direct observations of the earthquake occurrence process (International industry-academia joint research by Japan, South Africa, the US and European countries)

Development of international sharing methods for cultural heritage disaster prevention information via GIS

Quantitative evaluation of ultrasonic soil moisture measurement

Research on early rupture process from earthquakes

Establishment of slope disaster avoidance system for World Heritage Sites

Studies on performance improvements of real-time high-performance monitoring systems

Support system to study tourist evacuation guidance methods

Development of technologies for aseismic reinforcement and modification of traditional wood buildings

Development of wide-area sensor network systems to create cooperative processing

Methods to extract evacuation routes for tourists in historic cities

Estimation of transportation demand at the time of a disaster and study of traffic management

Housing promotionn

Development of disaster information sharing systems using pictograms that can be used by overseas tourists

Preparations of scenarios for public resteration housing planning

Study of evacuation guidance methods at the time of a disaster

Micro-bubble emergency water treatment systems

System that enables information transmission and evacuation guidance support in underground spaces

Disaster response robots

Sharing information system for disaster prevention by using one-segment broadcasting that is utilizing white space

White space: Radio frequency bands that have become unnecessary due to the digitization of television broadcasting, etc.

Development of high precision power control systems (Applied to reconnaissance robots)

Development of highly-functional fire hydrants for use by local citizens

Construction of simple assembly halls

Development of area disaster prevention information networks

Proposals for areas for evacuation from tsunamis and refuge areas that take advantage of local resources and culture

Disaster-related research by Ritsumeikan University

Research to elucidate the climate change that has occurred in the past

Earthquake predictions

Research on lightning discharge measurements

Simulation and gaming

Training projects regarding disaster prevention for cultural assets in individual countries

Risk communication to promote the formation of agreements on risk sharing and countermeasures at the time of a disaster

Nowcasting System for Disater Mitigation in Lake Biwa

Study on the methodology of mapping to summarize risk sharing and countermeasures at the time of a disaster

Community disaster prevention

Disaster preventive planning for a historic city and its evaluation

Cost calculations for nuclear power plants

Community safety and security maps (Disaster prevention education for children)

Study on expression methods of historical disasters and map-making by GIS

Review of the succession of assets and maintenance policies from financial viewpoints

Restoration of historical disasters and the extraction of knowledge for disaster mitigation

Database building on the wisdom of disaster mitigation that has survived historical disasters

Risk calculations for disasters

Survey on the history of flood damage in Shiga Prefecture

Feature analysis with spatio-temporal analysis of damage

Collection and organization of information on the occurrence of man-made disasters and wildlife damage

International training on disaster prevention for cultural assets in Japan

Support of the implementation of disaster prevention plans for the cultural assets of Nepal

Preparations

Disasters

Technology

Life

Earthquakes
Floods
Mudflow disasters
Tornadoes
Abnormal weather
Guerrilla rainstorms (Localized downpours)
Buildings collapsing
Wildlife damage

After disasters

Organizations and their theories on restoration support volunteers

Preventing elderly citizens from becoming bedridden

Support of the physical strength development of children in limited spaces

Human services through activities to support aid providers

Prevention of asbestos damage caused by fallen buildings, debris, etc. from earthquake disasters

Sound quality improvements in loud or noisy environments

Human services through psychological clinical activities

Damage caused by harmful rumors

Development of portable solar power generation equipment

Support of the remembrance and sharing of omoide (memories) for the restoration of people and cities (omoide engineering)

Picture book healing

Picture book healing: An activity based upon clinical psychology to provide healing and relaxing effects through hands-on events involving a collaboration between picture book reading and music to be felt by all five senses

ICT cars (Disaster response information collection and multi-purpose support)

Dark tourism research

Dark tourism: The act of sharing sadness and extending support by visiting negative heritage sites such as disaster-stricken areas or war sites

Living with a Dis aster

= International cooperation

For our research on disasters up to the present date in addition to the above, please visit the following pages.
http://www.ritsumei.ac.jp/rs/20110311/

Protecting historical city from disaster with cultural tradition and life

Mangal Bazar (former) in the Patan region, destroyed by the earthquake in 1934
Reference: The Bihar-Nepal Earthquake of 1934, Geological Survey of India, Calcutta, 1981

On April 25 2015, an earthquake of magnitude 7.8 (Gorkha Earthquake) occurred in mid-western Nepal, with the news stunning the world. Seeing media reports stating that a lot of buildings had collapsed and that a large number of casualties had resulted, Takeyuki Okubo felt frustrated when gathering fragmentary information about the earthquake.

Okubo's research theme so far is about how to protect cultural heritage and historic city, mainly in Kyoto, from disasters. When he thought to development his knowledge globally, he focused on Nepal, as a World Heritage site. As a part of Education, Research and Development of Strategy on "Disaster Mitigation of Cultural Heritage and Historic Cities" adopted by Ritsumeikan University in 2008, one of the Global COE Programs adopted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT), he began disaster mitigation study in Patan, one of the seven groups of monuments and buildings of Kathmandu Valley World Heritage site. The Global COE Program research resulted in disaster mitigation plans to protect historic townscapes and cultural heritage in Patan from disasters compiled by his team in 2011. He then continued the research, identified disaster-related problems through workshops and disaster drills for local community, and completed a "Disaster Mitigation Map" that shows countermeasures for related issues. The earthquake occurred right when he was about to hand over and feed back this map to local community.

A study of disaster mitigation is effective only when the outcomes are implemented as actual practice to improve actual situations—this is Okubo's belief. Paying quick attention to Nepal's risk of disaster, he was disappointed at "missing his responsibility by a second." However, his study was not in vain; as a result, the earthquake ironically evidenced Okubo's eight-year research achievements.

After the Gorkha Earthquake, an interview survey was conducted to understand the lives of local people as refugees in the courtyards. Similar to the aftermath of the earthquake of 1934, many local people have been setting up tents in the common areas of historical locations. (Group interview to Ilanani, Nagbahal and Kutibahal communities,December 5, 2015)

How is society to protect the cultural heritage sites that human civilization has constructed throughout history? Amid the backdrop of increased global disaster occurrence, to protect cultural property is an important challenge. In relation, Okubo puts emphasis on protecting not only historical townscapes and buildings as cultural assets, but also the traditional life, business, and culture on which cultural assets are based. "Townscapes and buildings are the representation of human's traditional lives and cultures. If all of these are not protected, a building is just an empty box however rare it is," Okubo says.

Nepal, located on the boundary of the Indian Plate and the Eurasian Plate, has a high concentration of active faults, which makes Nepal a country with extremely high risk of earthquakes, similar to Japan. According to Okubo, records indicate that the last big earthquake was in 1934 and was of magnitude 8.4, killing over 8,500 people and completely destroying more than 80,000 buildings. Kathmandu, the capital, has also lost historical and cultural buildings due to earthquakes. Recently, the Nepalese government has been paying attention to the protection of cultural heritage, but "It's not enough," Okubo points out.

Durbar Square in the Patan region, which suffered from the Gorkha Earthquake; brick walls came tumbling down, exposing the wooden frames. Emergency responses for aftershocks were taken.

A study of disaster mitigation is effective only when the outcomes are implemented into the real society.

In the research of the Global COE Program, Okubo organized a team that included professors of local universities, and set out to analyze structures, conduct social surveys in regional communities, and assess earthquake risk, focusing on historical buildings that are used for residences even today. First, he focused on Patan, Nepal's third largest city, located in the southwest of the Kathmandu valley.

The historical townscape of Patan features a building style known as "facing to courtyard" style. The district that Okubo surveyed consists of about 90 tightly-dense buildings and many courtyards as semi-public living spaces, which are linked with each other by narrow paths that connect to main streets. Element analysis revealed that most of the buildings are not only fragile three-story buildings simply made of bricks, but that, in modern period, extended stories have also been added on top. As a result, the buildings were in a dangerous state due to excessive weight being shouldered, even in non-disaster times. If an earthquake affected such buildings, rubble would immediately block the narrow paths, interrupting escape to the outside and interrupting rescue within the district.

Although the structure of this city, based on traditional life and culture, has high historical and cultural value, aseismic reinforcement using modern technology is not always the best measure, due to aspects

regarding the protection of rare historical heritage and due to cost. In addition, Okubo considers that “The buildings cannot be protected without the effort of residents. It’s important to carefully work out disaster mitigation plans that consist of both building reinforcement and an improvement of the mindsets of the local community involved regarding disasters.”

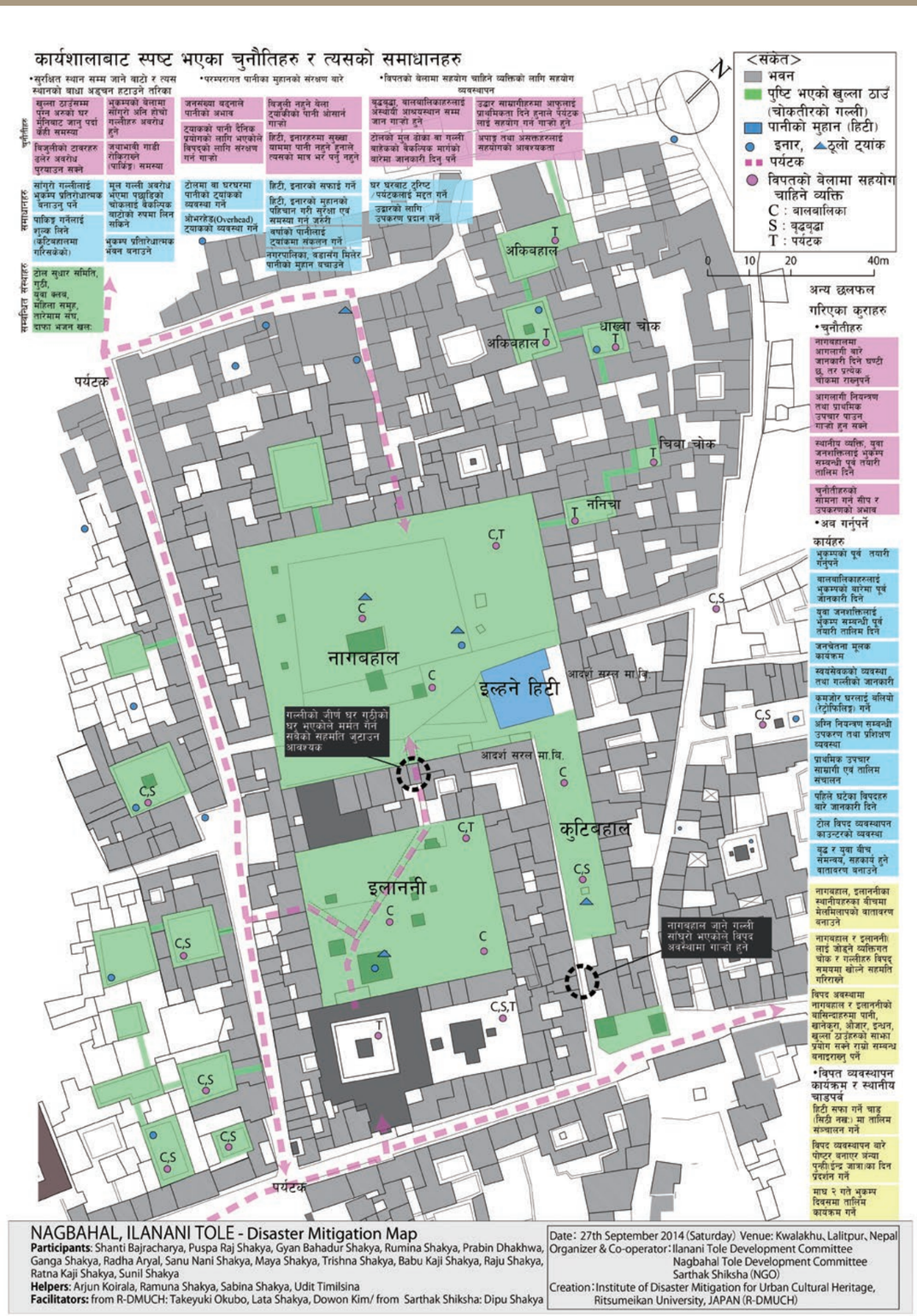
Okubo made contact with the residents of the district for interview introduced by Dr. Lata Shakya, Nepalese researcher who was doctoral student of Kyoto University at that time and held workshops to improve their awareness of disaster prevention. He also asked them for opinions so as to allow them to consider their own ideas for disaster mitigation that would be “Do themselves.” Large-scale renovation or reinforcement that forces the residents to incur substantial expense did not seem feasible. In contrast, he looked for solutions suitable for the residents, such as lectures on techniques for making resilient brick structure using available means, along with the regular cleanup of objects from paths and courtyards to secure evacuation routes in case of disaster. In addition, he toured the district with residents, let them discover areas of danger through disaster drills, and considered how to use common and traditional water facilities in courtyards, with the aim of letting the residents consider their own ideas regarding disaster mitigation. After Shakya joined Ritsumeikan Univ. as senior researcher in 2013, the workshop with residents has been going more smoothly that the disaster mitigation map is realized based on information and the residents’ opinions which were gathered through the methods described above. However, Shakya is visiting researcher from 2014, she is cooperating Okubo as a team member as before.

“A bright spot in this tragedy was that there was neither a casualty nor a completely destroyed building in the district in question. It was too late to hand over the map, but I think that such a favorable result was thanks to the residents’ firm awareness of disaster mitigation,” Okubo summarized.

"Now as right after the earthquake is a good opportunity to prepare for the next disaster, as awareness regarding disaster mitigation has never been higher.” Okubo soon traveled in Nepal to continue his surveys.

Another surveyors, Shakya and Dowon Kim with a graduate student and local contributors, interviewed nearly 60 people in Patan to discover through which courtyards or paths they escaped, where they were living as refugees, how much the earthquake has impacted their lives up to now, and when they were able to restart regular life to the same degree before the earthquake. Kim reported, “As expected, these interviews prove that courtyards and narrow paths as traditional semi-public spaces are effective for refugee sites and for places that support refugee life. However, some residents had abandoned their former residences and left the district, and thus there are now many vacant residences. As a result, some courtyards and paths, available before the earthquake, are now closed.”

Patan is a UNESCO World Heritage Site. Including its courtyards and squares, it is considered to be very important, due its artistic and cultural characteristics. The courtyards also serve as locations for essential infrastructure, such as for water access and for social activity (picture at left). The pictures at right and at the bottom show the researchers conducting interviews with the families living in the houses facing the courtyard regarding their experience of evacuation during the earthquake and their lives as refugees.



Ilanani, Nagbahal District Disaster Mitigation Map

A disaster mitigation map (September 2014) devised from the information gained through repeated workshops with local people, as an application for a district disaster mitigation plan drafted in 2012; this covers detailed items, including the identification of all the problems assumed to occur during a disaster, a review of traditional disaster mitigation situations, and daily countermeasures. This is the disaster mitigation map designed by local people and used by local people. From now on, the researchers are planning to disseminate information through workshops with local people, etc.

Formerly involved in cultural property protection in South Korea, for Dowon Kim, study at Ritsumeikan University caused him to become keenly aware of the value of cultural assets that people build over the course of their lives. That made him considers how to engage in “protection with use.” He is continuing to survey and conduct research in the Patan region, in order to develop and offer programs that help local people to protect their historical townscapes and buildings from disasters.

“The important point is: ‘Build Back Better’ (i.e., ‘reconstructing a society to be better than before an earthquake’). Now is the time for us to provide a vision for achieving this.” Okubo and Kim are devoting themselves to this study.

We’d like to suggest our vision for conserving cultural heritage “Build Back Better,” from disaster.

Dowon Kim (Left)

Associate Professor, Kinugasa Research Organization

Subject of research: Strategy of District Disaster Mitigation Hub for Cultural Heritage, in Order to Protect Cultural Properties and Districts, Methods for Devising Disaster Mitigation Plans Based on Citizen Awareness and on an Evaluation of Disaster Prevention
Research keywords: Cultural heritage science/museology, natural disasters/disaster prevention science, civil engineering project/traffic engineering, architectural environment/equipment, town planning/architectural planning

Lata Shakya (Center)

Visiting Researcher, Institute of Disaster Mitigation for Urban Cultural Heritage, Ritsumeikan University
JSPS Postdoctoral fellow, The University of Tokyo Graduate School of Engineering

Takeyuki Okubo (Right)

Professor, College of Science and Engineering

Subject of research: Disaster Management Planning with Traditional Measures for Disaster Risk Mitigation in History, Design of Disaster Prevention Facilities for Preservation, Conservation and/or Production of Cultural Environment
Research keywords: Cultural heritage science, natural disaster science, civil engineering project/traffic engineering, town planning/architectural planning

Disaster prevention through the establishment of trust relationships, studied based on the perspective of accounting

Impact on the business operations of electric power companies if all nuclear power reactors were stopped:

In the case of minimized impact:

If the operation of all nuclear power reactors were halted in the fiscal year ended March 31, 2014 (Unit: hundred million yen)

		Hokkaido Electric Power Company	Tohoku Electric Power Company	Tokyo Electric Power Company	Chubu Electric Power Company	Hokuriku Electric Power Company	Kansai Electric Power Company	Chugoku Electric Power Company	Shikoku Electric Power Company	Kyushu Electric Power Company	The Japan Atomic Power Company	Totals
Assets	Nuclear power generation unit	2,383	2,926	5,954	1,969	1,930	3,395	752	1,079	2,134	1,659	24,180
	Lands included in the asset account	189	100	229	123	42	215	56	48	85	172	1,260
	Construction in progress (for nuclear power generation units)	Undisclosed	498	2,248	Undisclosed	No answer received	670	Undisclosed	112	3,088		6,615
	Nuclear fuel	1,296	1,535	7,856	2,451	998	5,290	1,829	1,396	2,815	1,165	26,631
	Reserve for the reprocessing of spent fuel	600	851	10,169	2,049	133	5,746	576	1,105	2,611	920	24,760
Liabilities	Allowance for the reprocessing of spent fuel	607	890	10,545	2,219	141	6,168	659	1,156	3,062	1,874	27,320
	Reserve for the preparation of the reprocessing of spent fuel	85	141	679	154	56	481	62	79	267	112	2,116
	Asset retirement obligations	713	1,063	7,089	1,901	540	3,993	723	963	2,011	1,955	20,952
	Reserve for the preparation of the depreciation of nuclear power construction	0	0	52	0	0	0	711	0	0	0	763
Total of net assets (a)		929	4,563	12,300	11,967	3,006	8,067	4,386	2,685	3,414	1,634	52,950
Net profit or loss for this fiscal year (b)		-642	360	3,989	-673	16	-931	-189	280	-909	4	1,306
Adjustments	[1] The amount in the nuclear power generation unit account was transferred to the retirement in progress account.	–	–	–	–	–	–	–	–	–	–	–
	[2] Regarding the amount in the construction in progress account, a temporary loss was posted one time.	–	-498	-2,248	–	–	-670	–	-112	-3,088	–	-6,615
	[3] Regarding the amount in the nuclear fuel account, a temporary loss was partially posted.	-499	-425	-1,836	-592	-454	-2,114	-569	-575	-1,383	-451	-8,907
	[4] Reserve for the reprocessing of spent fuel (the preparation of the reprocessing of spent fuel) was reversed one time.	692	1,031	11,224	2,373	197	6,649	721	1,235	3,329	1,985	29,436
	[5] Reserve for the preparation of the depreciation of nuclear power construction was reversed one time.	0	0	52	0	0	0	711	0	0	0	763
	[6] An allowance for the decommissioning of nuclear power units was made for portions that the allowance had not been made for.	-83	-152	-408	-28	-96	-149	-29	-41	-104	-44	-1,134
	[7] Reserve for the final disposal was recovered (only the total amounts for all companies).	–	–	–	–	–	–	–	–	–	–	10,019
	[8] Direct disposal expenditure (Minimum/Discount rate of 3 percent).	-967	-1,323	-13,684	-2,900	-382	-7,554	-992	-1,501	-4,324	-2,416	-36,042
Totals (c)		-857	-1,367	-6,900	-1,147	-735	-3,838	-158	-994	-5,570	-926	-12,480
Adjusted net assets (a) + (c)		72	3,196	5,400	10,820	2,271	4,228	4,229	1,691	-2,156	708	40,470
Adjusted net profit or loss (b) + (c)		-1,499	-1,007	-2,911	-1,820	-719	-4,769	-346	-714	-6,480	-921	-11,174

Should nuclear power reactors in Japan be restarted? Or, is it a better choice for Japan to opt to quit using nuclear energy? Which would be the correct path for Japan to follow when moving towards the future? No social consensus on the issue has been reached so far.

The Great East Japan Earthquake on March 11, 2011 was one of the largest natural disasters in the history of Japan; whereas, the accident caused by the tsunami after the earthquake, in which a large amount of radioactive material was released into the environment from reactor 1 of Tokyo Electric Power Company's Fukushima Nuclear Power Station, was a human-made catastrophe. An exclusion zone was established covering areas located within a radius of a few dozen kilometers from the nuclear power plant. Even today, five years after the earthquake, there are still many areas designated as no-go zones.

After the earthquake, nuclear power reactors across Japan were shut down one after another. In August, 2015, reactor No. 1 at Kyushu Electric Power Company's Sendai Nuclear Power Station in Kagoshima Prefecture was restarted, marking the end of a nuclear-power-free period in Japan that had lasted about two years. There are still many people expressing opposition to the restart of the nuclear power reactors, as well as strong calls for anti-nuclear power activities. With many recently released predictions showing a high risk of a powerful earthquake occurring in Japan in the immediate future, a difference of opinion still exists as to the pros and cons of the existence of nuclear power plants.

Offering a new point of view for this nuclear power issue, Eri Kanamori said, "The root cause of the issue lies in the loss of a trust relationship between the electric power companies and the public." Kanamori is one of the few researchers who are dealing with nuclear power, natural disaster and environmental issues based on an innovative perspective using accounting rather than traditional methods.

Kanamori believes that there is a single keyword, "Trust Relationship," linked closely between "Disaster Prevention" and "Accounting," both of which seemingly have no relation to each other. She said, "Regional disaster prevention, for instance, can be accomplished as a result of established mutual-trust relationships. The local people's efforts to divide their own responsibilities in preparation for future disasters can help further enhance their disaster prevention capabilities. Trusting each other is essential when asking other people to assume some important role in the face of the threats of natural disasters endangering their lives." Accounting is used as a way of mediating the trust relationship between companies and their stakeholders. Accounting information serves as an indicator to help investors judge the reliability of companies when purchasing their shares or when banks judge the creditworthiness of companies when providing them loans. If it comes to light that companies fraudulently manipulate their accounting information, their trust relationship with stakeholders is shattered.

Kanamori said, "It is a trust relationship that electric power companies operating nuclear power plants and their stakeholders, the public, must construct with each other, too. There are still many people turning a skeptical eye to nuclear power plants, which reflects the public's deep-rooted mistrust of the government's nuclear energy policy and the electrical power companies." To prove her opinion, Kanamori has found out what has caused many people to develop such a skeptical attitude by analyzing the electric power company accounting information.

The abolition of nuclear power generation would lead to a business failure for the electric power companies, dealing a severe blow to the Japanese people and economy. This notion is often cited as an excuse to justify the active promotion of the restart of nuclear power reactors. Kanamori, raising objections to this notion, has carefully studied the earnings summaries and securities reports for the fiscal year that ended on March 31, 2014 of nine electrical power companies in Japan. Based on the assumption that these companies were to withdraw from the nuclear power

Impact on the business operations of electric power companies if all nuclear power reactors were stopped:

In the case of maximum impact:

If the operation of all nuclear power reactors were halted in the fiscal year ended March 31, 2014 (Unit: hundred million yen)

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	Lands included in the asset account	189	100	229	123	42	215	56	48	85	1,260
	Construction in progress (for nuclear power generation units)	Undisclosed	498	2,248	Undisclosed	No answer received	670	Undisclosed	112	3,088	6,615
	Nuclear fuel	1,296	1,535	7,856	2,451	998	5,290	1,829	1,396	2,815	26,631
	Reserve for the reprocessing of spent fuel	600	851	10,169	2,049	133	5,746	576	1,105	2,611	24,760
Liabilities	Allowance for the reprocessing of spent fuel	607	890	10,545	2,219	141	6,168	659	1,156	3,062	27,320
	Reserve for the preparation of the reprocessing of spent fuel	85	141	679	154	56	481	62	79	267	2,116
	Asset retirement obligations	713	1,063	7,089	1,901	540	3,993	723	963	2,011	20,952
	Reserve for the preparation of the depreciation of nuclear power construction	0	0	52	0	0	0	711	0	0	763
Total of net assets (a)		929	4,563	12,300	11,967	3,006	8,067	4,386	2,685	3,414	52,950
Net profit or loss of this fiscal year (b)		-642	360	3,989	-673	16	-931	-189	280	-909	1,306
Adjustments	[1] Regarding the amount in the nuclear power generation unit account, excluding the land, a temporary loss was partially posted.	-274	-353	-716	-231	-236	-398	-87	-129	-256	-2,865
	[2] Regarding the amount in the construction in progress account, a temporary loss was posted one time.	–	-498	-2,248	–	–	-670	–	-112	-3,088	-6,615
	[3] Regarding the entire amount in the nuclear fuel account, a temporary loss was posted.	-1,296	-1,535	-7,856	-2,451	-998	-5,290	-1,829	-1,396	-2,815	-26,631
	[4] The adjustment of the reserve for the reprocessing of spent fuel (the preparation of the reprocessing of spent fuel) was backlogged.	–	–	–	–	–	–	–	–	–	–
	[5] The adjustment of the reserve for the preparation of the depreciation of nuclear power construction was backlogged.	–	–	–	–	–	–	–	–	–	–
	[6] Allowance for the decommissioning of nuclear power units was made for portions that the allowance had not been made for.	-83	-152	-408	-28	-96	-149	-29	-41	-104	-1,090
	[7] The adjustment of the reserve fund for final disposal was backlogged.	–	–	–	–	–	–	–	–	–	–
	[8] Direct disposal expenditure (Maximum/Discount rate of 1 percent)	-1,429	-1,955	-20,231	-4,287	-564	-11,168	-1,467	-2,219	-6,393	-49,713
	[9] Guaranteed obligations for The Japan Atomic Power Company and Japan Nuclear Fuel Limited	-454	-797	-1,749	-1,605	-560	-2,294	-657	-514	-982	-9,612
	[10] Amount of investments in The Japan Atomic Power Company and Japan Nuclear Fuel Limited	-228	-420	-2,055	-783	-335	-1,221	-334	-264	-548	-6,188
Totals (c)		-3,764	-5,710	-35,263	-9,385	-2,789	-21,190	-4,403	-4,675	-14,186	-102,714
Adjusted net assets (a) + (c)		-2,835	-1,148	-22,962	2,582	217	-13,123	-17	-1,990	-10,772	-49,764
Adjusted net profit or loss (b) + (c)		-4,406	-5,350	-31,274	-10,058	-2,773	-22,120	-4,592	-4,395	-15,096	-101,408

business right now, she objectively calculated the amount of the temporary loss that each company would post. The calculation results estimate that the total temporary loss for each of these nine companies would range from one trillion yen to ten trillion yen. Kanamori conclusively said, "Seven electric power companies, excluding Hokkaido Electric Power Company and Kyushu Electric Power Company, would not be insolvent if the operations of all their reactors were halted right now. I estimate that even if these companies reported a loss of ten trillion yen, they would not go bankrupt as long as they are able to receive a subsidy from the government to partially compensate for their losses.

The recent report by Kanamori strongly indicates that the accounting information concerning the nuclear power generation businesses that has been released by the electric power companies has been distorted. Analyzing this distorted accounting information thoroughly, she has examined how different the reality is from the accounting information released regarding nuclear power generation, which has been calculated based on the "foregone conclusion" doctrine that is often used to justify the need for nuclear power generation.

She said, "It is not until this distorted accounting information is corrected that the public distrust of the promotion of nuclear power generation will be dispelled. Building a trust relationship with electric power companies enables people to put their faith in the companies' management policies and judgment. A key to the prevention of a similar tragedy depends on how much reliance people can place in the electric power companies when taking action in the event of the recurrence of a natural disaster."

In her studies, Kanamori clarifies what problems exist in regard to the accounting information on nuclear power generation. The studies reflect her desire for a disclosure of faithful, undistorted accounting information to sustain public confidence in nuclear power generation.

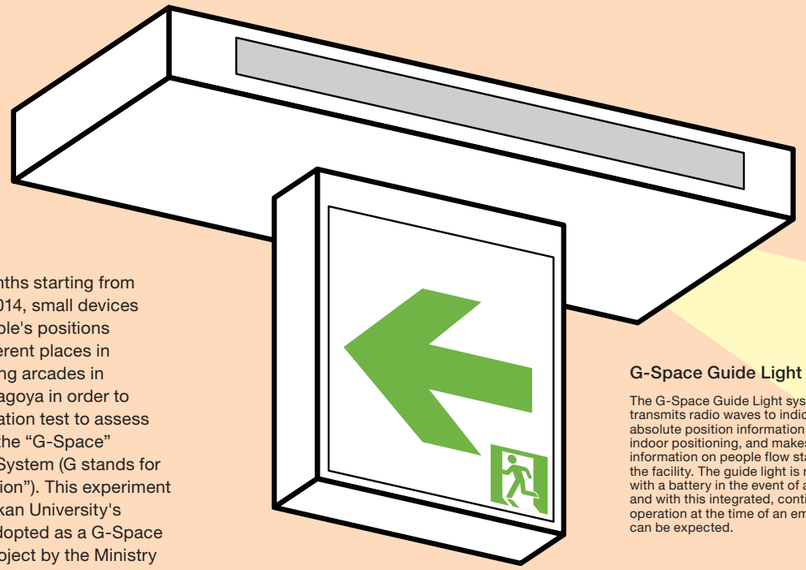
Analyzing accounting information to think through the pros and cons of nuclear power generation

Eri Kanamori

Professor, College of Business Administration

Subject of Research: Nuclear Power Generation and the Relevant Accounting System, the Development of Group Accounting in the United Kingdom
Research Keyword: Accounting

Disaster prevention system for the safe evacuation of people in urban underground spaces where positioning is difficult



G-Space Guide Light system

The G-Space Guide Light system transmits radio waves to indicate absolute position information, enabling indoor positioning, and makes information on people flow status of the facility. The guide light is mounted with a battery in the event of a blackout, and with this integrated, continuous operation at the time of an emergency can be expected.

For the six months starting from September 2014, small devices to locate people's positions were installed in different places in underground shopping arcades in Osaka, Tokyo and Nagoya in order to conduct a demonstration test to assess the effectiveness of the “G-Space” Disaster Prevention System (G stands for “Geospatial information”). This experiment was one of Ritsumeikan University's projects that were adopted as a G-Space City Construction Project by the Ministry of Internal Affairs and Communications (MIC). Nobuhiko Nishio has been engaged in building a system that enables information transmission and evacuation guidance support in underground spaces from the viewpoint of disaster prevention by developing cutting-edge indoor positioning technology.

With the ever growing and widespread use of smartphones incorporating GPS (Global Positioning Systems), it is not difficult for people to find out where they are at the moment. Such G-space information (Geospatial Information) can be utilized to grasp the position and movement of affected people and to guide and evacuate them safely when a disaster strikes. The problem is that GPS cannot be used reliably indoors or underground as it cannot receive radio waves from satellites. Nishio is involved in developing a method to identify an individual’s position indoors without depending on GPS by integrating multiple indoor positioning systems.

"There are mainly two methods to locate indoor positions," he explains. "One is a method to estimate one's current position by using individual sensors incorporated in terminals like smartphones, while the other involves installing equipment to assist positioning on the facility side. Both have advantages and disadvantages, but neither is sufficient to properly measure a person’s indoor position. We therefore applied a hybrid positioning method integrating both."

How to discover an individual’s position in indoor areas where GPS cannot be relied upon

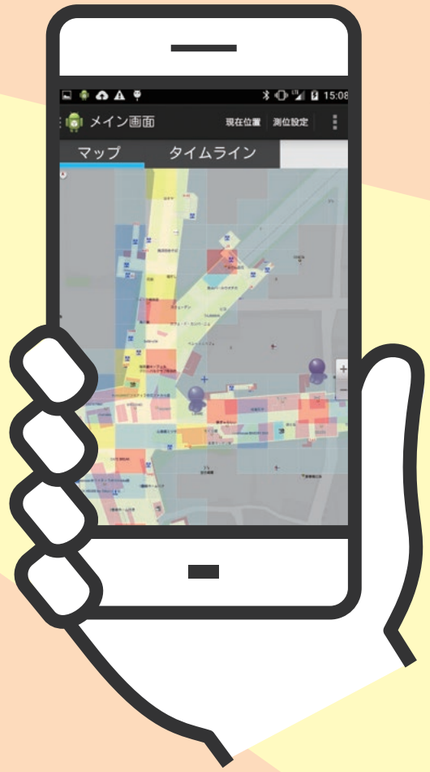
Sensors incorporated in smartphone terminals include an acceleration sensor to detect acceleration in the directions of three axes, a gyroscope to measure rotation and an electronic compass to identify direction, where the locus of movement of the terminal holder is drawn. Furthermore, with a barometer, up and down movements can be estimated to an accuracy of about 1 m, enabling us to comprehend how people move in a three-dimensional underground space in a city.

We can understand relative movement, but we cannot learn the absolute position of where an individual is. One of the methods to enable this is to receive radio waves from Wi-Fi base stations that are installed in different places in underground shopping malls and then estimate the distance from the base station to the terminal. By integrating the radio wave information from multiple base stations, the absolute position of the smart phone terminal can be estimated with a high degree of accuracy. To yield sufficient accuracy, since Wi-Fi positioning has limitations, Nishio additionally installed compact-sized, energy-saving BLE devices (transmitters based on Bluetooth Low Energy standard) to transmit radio waves. Utilizing another MIC’s research grant result, he separately developed a technology that analyzes the people flow status by receiving radio waves from each terminal. By optimally combining these two technologies, it has become possible to estimate the position and movement of people in underground spaces more accurately and effectively.

As another challenge for this project, Nishio has developed applications to acquire and to distribute information that is necessary and effective for visitors and workers of underground shopping malls by taking advantage of the indoor positioning and people flow analysis technologies he has established. One is an application for general visitors to the facilities that is useful as a shopping and facility guide and even for sales promotions for facility managers during usual days, and the other is a business application for facility managers to make use of for evacuation guidance support at the time of a disaster.

The latter is a system that is linked to the tablet terminals deployed at the disaster prevention center of individual facilities to integrate information. When a disaster occurs, information on the movement of visitors in underground shopping malls is integrated into the tablet at the disaster prevention center. Each disaster prevention center operates the tablet in order to distribute necessary information and instruction from the center to B to B applications (see right) carried by staff members. The B to B applications come equipped with a "timeline" function where the information and instructions are displayed one after another text line in addition to a "hazard map" function that draws the information on a map. In this way, he has developed a G-Space Disaster Prevention System for Underground Shopping Malls that combines indoor positioning technology in underground spaces with evacuation guidance support applications linked to each facility’s action plan during a disaster. As a result of the demonstration tests held at the three cities mentioned above, each has proved its effectiveness.

Also, in order to contribute to disaster prevention in a diverse range of indoor spaces, including buildings as well as underground shopping malls, Nishio has developed a G-Space Guide Light, which is a guide light that incorporates a G-space information device that transmits a variety of positioning radio waves and also estimates the people flow status. This has also been recognized for its effectiveness through a demonstration project carried out by the project. "Due to the barrier of the Fire Service Act, commercialization will take time, but going forward without a doubt it is expected to contribute to ICT implementation of Japanese firefighting facilities, firefighting and rescue activities and equipment for firefighters," he says.



Conceptual drawing of B to B application carried by evacuation guidance personnel

In addition to one's current position and the positions of other guidance personnel, the people flow status acquired from the G-Space Guide Light system is displayed as a heat map. In addition, disaster information from a Disaster Response Headquarters can be displayed on a timeline.

In the second half of 2015, Nishio conducted his latest demonstration test in the city of Osaka. It was an attempt to coordinate the multiple disaster prevention centers of underground managers and have the G-Space Disaster Prevention System for Underground Shopping Malls works in a larger area than ever before. "When a disaster occurs, it will be meaningless if information can only be communicated in a single zone underground," he says. "Especially when a localized downpour of a short duration occurs and inundates the underground area, there is a risk that the inundation will spread over a wide area through connected facilities, buildings and subways. For this reason, a disaster prevention system that enables coordination beyond the scope of responsibility of a single facility manager is essential."

The Osaka municipal government established the Council on Underground Space Inundation Countermeasures and has been working on inundation simulations of underground shopping malls as a united effort with railway companies and underground shopping mall managers, and taking advantage of its achievements, Nishio has developed the G-Space Disaster Prevention System as a countermeasure against the inundation of underground shopping malls where multiple disaster prevention centers can work together. They plan to actually operate it at Osaka train station and Umeda train station areas in FY2016. The disaster prevention system developed by Nishio may well become the linchpin of disaster response measures in Japan in the future.

Nobuhiko Nishio

Professor, College of Information Science and Engineering

Subject of Research: Integration of real world information and information space
Research Keyword: Ubiquitous Computing, Sensing Networks, Location-based Information Systems

How should we live alongside disasters?

The View from an "Ars Vivendi" stance

About five years have already passed since the Great East Japan Earthquake when a large-scale earthquake and tsunami hit the Tohoku region on March 11, 2011. Since then, a large number of research projects and other forms of support associated with the earthquake have been made in every field of academia. Shinya Tateiwa and Yoko Yamada have approached the massive earthquake from a new academic field of Ars Vivendi (Forms of Human Life and Survival).

"Human beings all live with differences, such as differences from disabilities, aging, illnesses or differences in terms of sexual identity," Tateiwa explains. These differences can occur in anyone, and while experts research and cooperate as working professionals, the people with differences do not receive any money from their disabilities, illnesses, aging problems or variety of other differences. Further, since the number of each of them with differences is low, issues have not been considered from their particular points of view. How have these minorities with disabilities, illnesses, aging problems and a variety of other differences lived? How are they living now? How will they survive? Ars Vivendi is a study that investigates and considers living in the past, present and future.

When the Great East Japan Earthquake struck, general news outlets and newspapers rarely reported on the situations faced by people considered to be minorities among the minority who were victims, those with disabilities, illnesses, aging problems and a variety of other differences, in the affected areas, or what they wanted and needed. For this reason, thinking along the lines of "even if we are far away, let's do what we can do," graduate school students, etc., associated with the Research Center for Ars Vivendi, Ritsumeikan University started by collecting information on people who had disabilities or illnesses and published it on a website immediately after the earthquake. For example, if these people could not properly use a generator or batteries during a blackout, they could not use an artificial respirator, and therefore some people could die as a result. The information that those people needed existed to a lesser extent than the general disaster information, but it was still available via the Internet. This was very different from the Great Hanshin/Awaji Earthquake. Graduate school students summed up the needed information on their website. In conjunction with this activity, there were graduate students and researchers who recorded how disabled or ill people were living in the affected areas and the kind of people that took action on their behalf.

Overwhelming losses can occur during anyone's life.

Through a wide variety of activities and support, many people participated who were involved with movements and actions since the Great Hanshin/Awaji Earthquake and even further back to the 1970s. Such connections to the past functioned well, and people from Kansai promptly went to the affected areas and started organizing activities from an early stage. Also, it led to economic support through a fund that was established as a result of the Great Hanshin/Awaji Earthquake. Tateiwa points out, "I think there is a role for researchers such as us to record these facts and let many people know about them."

At the same time, Yamada, majoring in psychology, while working at the Research Center for Ars Vivendi, Ritsumeikan University with Tateiwa, has been pursuing the question of "How to live a life?" through a narrative approach. Everyone encounters certain negative events, such as an illness, accident, disaster or death that cannot be recovered in life. Yamada says that the power of a narrative lies in helping people to compromise with an overwhelming loss or a negative experience like the Great East Japan Earthquake and to look towards the future. The fact that the negative event has occurred cannot be changed, but by retelling it, it can be changed into narratives of hope. Yamada has heard many narratives of hope from victims of the disaster. "There is the story from a daughter who had the experience in which she lost her grip on her father's hand, and her father died after being carried away by the waves," Yamada says. "From retelling this story with a narrative of self-reproach, 'Why did I lose my grip on his hand?' and then to 'At the moment I lost the grip, he cried, "Don't come with me!" and disappeared into the waves. I believe it was a cry telling me to survive.' She could then accept the death of her father and believe 'I should live for my father.' Therefore, in this way she changed her story into a story of hope."

Yamada has also analyzed many of these narratives and has found a sentence structure leading to hope that is common in the stories. This structure is of "no, but, yes." For example, "All the shops are closed, and no traffic lights are working, but people are helping each other, saying, 'after you' to each other," or "I lost my husband, but I was able to locate his body." Like these examples, a negative fact is converted with a "but" into something positive however small it may be. Narratives to convert a "no" to a "yes" can be a source of recovery for affected people and can also be a story generated jointly that moves many more people's hearts together.

Although his approach is different from Yamada's, Tateiwa has also continued his studies that depend upon the power of words. "Words rich with impatience, anger or sorrow can move people much more than an excellent research thesis. Investigating and analyzing facts cannot compensate any of the losses victims have, but I want to record such losses from the viewpoint of the people involved."

Miracle lone pine tree

People have placed their hopes for survival
on a tree that survived the earthquake.
In spite of their hopes, the tree perished.
Together, people generated the story of a miracle lone pine tree.
The tree was revived as a memorial and lives on in people's prayers.

(Yoko Yamada)

Yoko Yamada (Left)

Professor, Kinugasa Research Organization

Subject of Research: Multi-cultural psychological studies in visual narratives and methodology of qualitative psychology
Research Keywords: Psychology, Life-Span Developmental Psychology, Narrative Study, Qualitative Study, Cultural Psychology, Medical Psychology

Shinya Tateiwa (Right)

Professor, Graduate School of Core Ethics & Frontier Science
Director of Research Center for Ars Vivendi, Ritsumeikan University

Subject of Research: Organization of social domains, distribution of ownership, (history of) movements by ill and disabled people, social welfare policies
Research Keyword: Sociology

Robust, durable mechanical robots with a seemingly unsophisticated appearance that are capable of fulfilling their potential at disaster sites

A long, slender snake-like robot is moving inside a long thin pipe with an internal diameter of about 75 mm. It is remarkably capable of moving up and climbing without stopping when reaching a pipe portion that bends up, down, right or left.

The robot was developed by Shugen Ma and Atsushi Kakogawa, both of whom are engaged in the development of robots capable of handling operations in places that are difficult for humans to enter, such as at disaster sites.

Reflecting upon the Great Hanshin/Awaji Earthquake of 1995, Ma said, “It was not until then that the Japanese people were strongly aware of how important robots capable of handling operations at disaster sites were.”

In residential areas where there were many wooden houses located, there were numerous buildings and houses destroyed and reduced to rubble or debris, which made rescue operations difficult. Rescue workers had trouble moving around to remove obstacles from collapsed buildings or houses and searching for people trapped in them. To prevent secondary disasters at sites hit by this kind of urban disaster, there is great demand for the development of robots that can act as surrogates for humans to handle operations at locations that are physically impossible or dangerous for people to enter.

The robot developed by Ma and Kakogawa, which looks like a snake, is designed to move in a way that is quite different from how living snakes move. Kakogawa said, “As it is difficult for a robot to creep like a snake in a long, thin pipe, we introduced snake-like structures to enable the robot to travel even in a thin, narrow location. We have also designed wheels that help the robot to move more efficiently.”

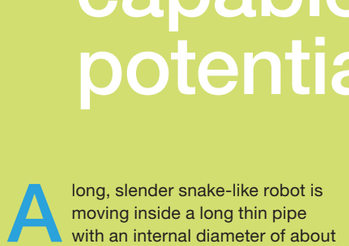
The robot consists of several body units that are connected to each other through joints with the front body unit, the rear body unit and each joint equipped with wheels. What is the most distinct about this robot is that the moving direction of the robot can be flexibly controlled towards right or left and up or down directions, even along a narrow pipe, by rotating the wheels attached to the front and rear body units. It is impossible for vehicles having wheels that are attached only to car bodies, like trailers, to move in a side to side direction because their propulsion force is applied only to forward and backward directions. The robot’s wheels attached to the front and rear units enable the side to side movement of the robot. When the robot is moved in a side to side direction inside a pipe that has a circular cross-section, the robot is capable of changing its movement direction while rolling over.

The robot is composed of several driving units that are connected to each other through joints, which allows for the generation of large propulsion even within a narrow space. Furthermore, motors, cameras, sensors and other devices can be installed on the robot if more joint parts are added to the robot as needed. As the number of motors required to drive the robot is less than those of traditional robots, the maintenance of the robot is much easier. To enable the robot to support both autonomous movement and remote control operations, Ma and Kakogawa are working to make improvements with the goal of putting it into practical use within five years.

When it comes to the application possibilities for this robot, Kakogawa said, “The robot is expected to be used to make regular inspections of the inner conditions of pipes to check for deteriorated parts or flaws before a natural disaster occurs, in order to prevent a large accident.”

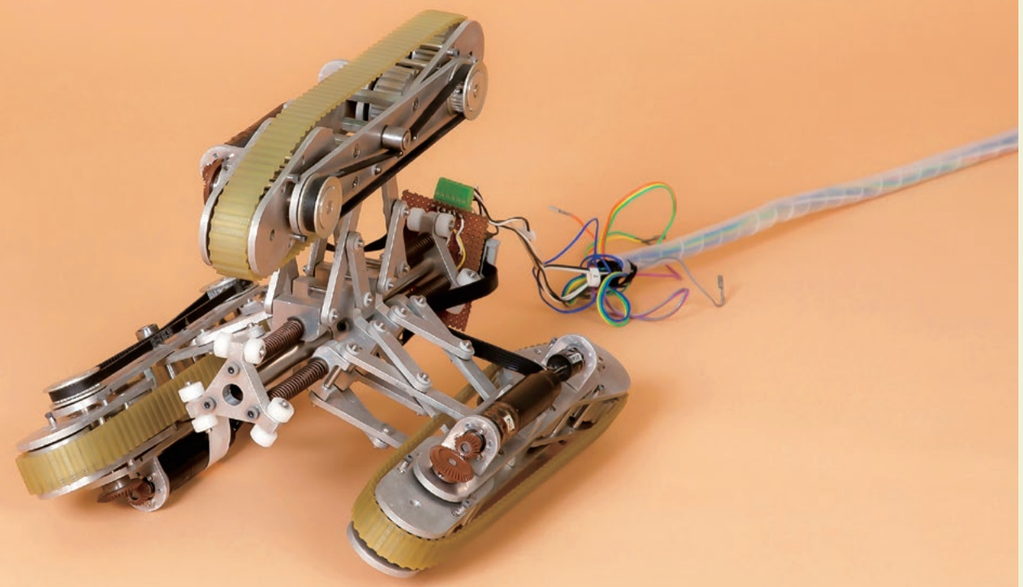
Ma said, “Our mantra is that what can be done by machines should actually be executed by machines.” According to this mantra, Ma and Kakogawa are developing robots that can be driven by only a very limited number of motors and mechanisms, with limited and simple control system rather than with complex control system. Even if software is elaborately developed, it is impossible to avoid a malfunction of the software, which occurs with a fixed probability. Such malfunctions are even more unavoidable during natural disasters and other contingencies. In this regard, their machines have the advantage of possessing higher reliability.

Kakogawa also said, “Just because the most advanced technologies can be applied for robot development, it doesn’t mean the most appropriate development of robots is achievable. Robots for disaster relief are highly expected to have capabilities for responding to contingencies or adapting to adverse environments flexibly and to be robust enough to tolerate them. The principles of physics can be applied to the design of robots too. As a reaction force is generated when robots come into contact with the surrounding environment, this force can be used as propulsion to drive the robots. Specifically speaking, robots can be designed to rotate themselves to climb over steps by using the force that is generated when their wheels contact to obstacles. Therefore, there is no need to incorporate extra sensors and actuators into the robots, and it is possible to make them more durable and consistently more

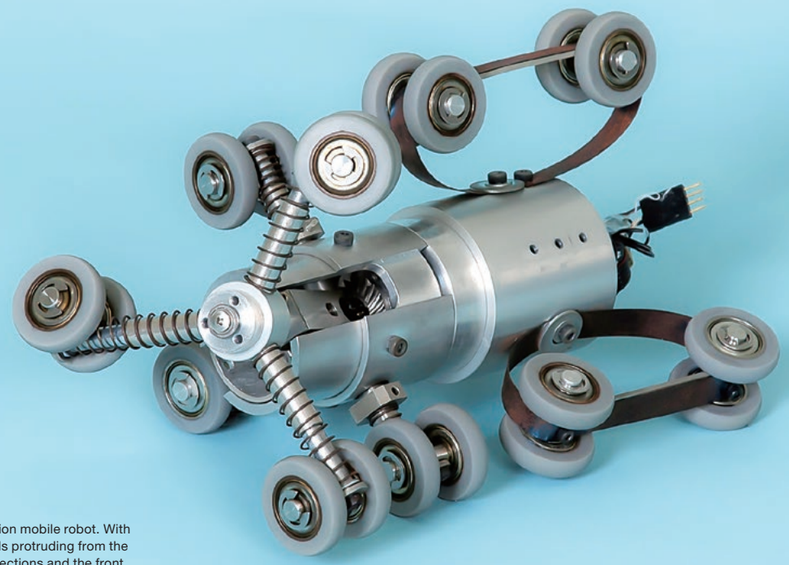


Robot entering the inside of a pipe. The moving direction of the robot can be changed with the wheels attached to the head and rearmost units and joints. This enables the robot to flexibly travel inside a pipe.

Robots that can act as surrogates for humans to perform search and inspection operations at sites that are difficult and dangerous for humans to enter.



In-pipe inspection mobile robot with three modules. As the three modules are mutually connected with spring-like joints and the tip end of the caterpillars is designed to be bent, the robot can be adapted to a variety of pipes configurations for flexible movement inside a pipe.



Screw-driving, in-pipe inspection mobile robot. With the combined use of the wheels protruding from the main body to the three axis directions and the front unit capable of making a flexible movement, the robot can be moved inside a pipe while the wheels of the front unit move in a spiral path.

What can be done by machines should actually be executed by machines. This is the most useful at disaster sites.

reliable, smaller and lighter. Our research laboratory makes it a research policy to maximally pull out the capabilities of the mechanical systems with a less use of sensors and actuators."

The above mentioned features are also introduced in-pipe inspection mobile robot with three modules, developed by Ma and Kakogawa. The robot has a structure in which three independent driving modules are arranged radially. Each of these caterpillar-type modules can be independently driven because each of them is equipped with a motor. When all of these three modules are driven at the same speed, the robot moves forward. When one of them is driven at a different speed, it is possible to change the moving direction of the robot into the direction where the wheels rotating at the lowest speed are located.

As the three modules are connected with springs, the robot can be expanded and contracted flexibly even if pipes are clogged or the width of pipes narrows unexpectedly. "When designing the robot, we carefully adjusted the number of gear wheels attached to the robot. This is intended to ensure that the differential drive system will function when the robot collides with obstacles so that it can autonomously contract itself. In this way, it is not necessary to equipped with more complex driving mechanisms or sensors designed to change its shape."

Ma said, "Our unending mission is to make robots smaller for reduced power consumption by reducing the number of motors and other actuators incorporated into these robots as much as possible." This is because the achievement of their mission greatly affects the usefulness of robots at disaster sites.

This humorous looking robot, capable of climbing up a vertical glass wall, has caterpillars to which suction cups are installed. The robot is designed to climb on a glass wall by attaching the suction cups to the glass surface. The robot is not equipped with suction pumps to generate power supporting the weight of the main body. Taking a cue from inspired from the functionality of push-type suction hooks commonly used in households, Ma applied a mechanism in which suction cups are stuck attached to and then smoothly detached from the glass surface by the caterpillars. A great number of know-hows are applied to the robot, although its appearance seems to be unsophisticated.

This screw-driving in-pipe inspection mobile robot has wheels that always make forward movement, as well as wheels that support the main body in the three axis directions. With the three wheels attached to the front unit of the main body being inclined, the wheels can be rotated, just like screw propellers. This makes the robot move forward while the wheels move in a spiral path. Since the robot can be driven with much less force in accordance with the same mechanism as the screw drive mechanism (it is possible to move up an object in a gentler slope with much less force), the robot is suitable for miniaturization.

"For rescue operations at areas flooded by a large tsunami or typhoon, it is essential to use robots that can be operated in submerged or muddy places."

Using the lessons from their experience with the Great East Japan Earthquake of 2011, Ma and Kakogawa have been taking on a new challenge.

To make robots waterproof and dustproof, these two researchers needed to get away from conventional design ideas and make a new one from scratch. This fact also applies to the robots that they have already developed. For the most existing robots, it is impossible to maintain their original structures and functions if seals or rubber packings are additionally attached to their parts or units that must not be exposed to water or any other liquid. Ma and Kakogawa have succeeded in the development of a three-module, in-pipe inspection mobile robot that is waterproof and dustproof.

Ma said, "What we are really aiming at is to develop robots that are actually useful at disaster sites." To this end, these two researchers are devoting themselves to research and are striving to increase the feasibility of such robots. It is highly expected that their robots will be put into practice as soon as possible.

The robot is designed to climb on a vertical surface only with a well-balanced combination of caterpillars and suction cups. This robot was developed based on the design mantra that what can be done by machines should actually be done by machines.

Atsushi Kakogawa (Left)

Assistant Professor, College of Science and Engineering

Subject of Research: Research and development of in-pipe inspection mobile robots
Research Keyword: Dynamics/Control, Mechanical Systems

Shugen Ma (Right)

Professor, College of Science and Engineering

Subject of Research: Research and development of the biologically-inspired robots like a snake-like robot and a legged robot, the environmentally adaptive machines like an in-pipe inspection mobile robot and a crawler robot, and rescue robots.
Research Keyword: Intelligent Robotics, Dynamics/Control, Intelligent Mechanics and Mechanical Systems

Can hundreds of thousands of tourists be safely evacuated from the tourist city of Kyoto?

START

After the operation of railways is restored, tourists start to move along guidance routes from Kiyomizu Temple and Yasaka Shrine, which are emergency evacuation squares, to Kyoto Station (red line)

People who decide to go towards nearby private railway stations on their own appear (blue line)

Simulation of tourists' evacuation behavioral situation

Plotting tourists' movements on Google Maps
Tourists are represented as red and blue lines and displayed in animation over time

Kyoto is a world famous tourist city. The number of Japanese and overseas tourists who visit the city on an annual basis is as many as 55 million people. Have you thought who would protect them, and indeed how, if an earthquake or other disaster occurred in a place like Kyoto where so many tourists congregate?

From an international point of view, Japan is a country that experiences many natural disasters. After experiencing the Great East Japan Earthquake and anticipating the occurrence of a huge earthquake in the near future, the central government and local municipalities have worked towards creating disaster prevention measures. However, they basically focus only on the protection of the safety of residents, and there are few measures in place for tourists. With this in mind, Kyoto City has planned disaster prevention measures for tourists early on and has addressed measures to protect tourists from disasters through positive participation by local residents, temples and shrines, companies and universities. What has played an important role in this is a study by Yoshio Nakatani and Tomoko Izumi, among others.

"Imagine the situation where hundreds of thousands of tourists who don't have any place to go flood the city when a disaster occurs. It is self-evident that safety measures for tourists are essential," Nakatani says explaining the necessity. "At the same time, creating a mechanism to protect tourists by the municipality will enhance its evaluation as a tourist spot and also enable many people to visit with a sense of safety and security."

Should a disaster occur, how should we guide and evacuate tourists? For the purpose of supporting the establishment of an evacuation and guidance method for tourists, Nakatani and his group have developed a system to simulate on a computer the evacuation behavior of tourists in a large area. "Many attempts have been made to simulate evacuation behavior with computers," Izumi says. "However, most of them evaluate behavioral situations in buildings or other limited places. There was no system in place focusing on tourists or to evaluate evacuation guidance methods over a large area."

Different from residents, tourists are not acquainted with the locality, so it is difficult for them to know of an evacuation site or a direction to escape. For this reason, they tend to be induced by the crowd, and also have a tendency to gather near railway stations to collect information. They are also characterized by an inclination towards mental stress and unrest in an unfamiliar place. Nakatani and his group analyzed these behavioral characteristics of tourists to create a model of behavioral elements, simulated what evacuation behavior tourists would take and created a system to visually understand it by expressing temporal changes in people's evacuation situations as a dynamic graph on a map.

Nakatani and his group also devised a method to safely evacuate tourists in a tourist area based on their analysis of tourist behavioral characteristics.

"In Kyoto, while the main tourist spots are dispersed over a wide area, many of the railway stations are concentrated in the center of the city, so there is a risk that at the time of a disaster, a crowd will gather from the peripheries into the central area," Nakatani explains. "To avoid this, a method of evacuation guidance is necessary that takes place in stages in which people are evacuated in series with time differences." To secure these time differences, Nakatani and his group have proposed the establishment of emergency evacuation squares as buffers to temporarily evacuate tourists at points between tourist spots and train stations in Kyoto City and incorporated this into the simulators. With this system, by establishing starting positions, evacuation routes and final evacuation destinations, as well as halfway evacuation squares, staying time at evacuation squares and a number of evacuees, one can study a variety of evacuation methods.

Nakatani and his group's initiative has developed into something that can contribute to Kyoto City's real disaster prevention measures beyond only the development of a simulators.

Planning evacuation measures based on simulations and protecting tourists through all-out regional efforts

Kyoto City adopted the simulator of Nakatani and his group to study what situations may occur at the time of a disaster and whether they can be improved upon by making evacuation guidance in stages and then reached an agreement with specific candidate locations to house tourists. When the regional disaster prevention plan was reviewed following the Great East Japan Earthquake, Nakatani participated in the project as Vice Chairperson, assuming leadership in the establishment of a variety of disaster prevention measures.

Currently, with the participation of many large companies having factories in Kyoto City, hotels and inns, large-scale facilities attracting visitors, universities and high schools, railway operators, temples and shrines and local shopping streets, they are studying tourist guidance and evacuation methods for the time of a disaster using the simulator developed by Nakatani. In addition, since 2013, evacuation guidance training with the participation of 400 to 600 people has taken place near Kiyomizu Temple and Arashiyama in addition to JR Kyoto Station. There is no other municipality where not only the administration, but also many other people in different positions are united under the same principle of addressing disaster prevention measures that cover the entire area of the city. Taking the simulator developed by Nakatani and his group as a foundation, the community has become unified, establishing a unique disaster-prevention Kyoto Model.

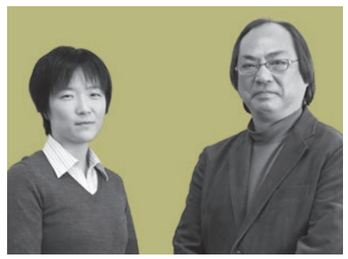
GOAL

The red circle gets larger, indicating that many tourists have completed evacuation at Kyoto Station

Tourists out of the route starting to remain at private railway stations (blue circle)

Tourists following guidance go beyond Kamo River towards Kyoto Station

Tourists gathering at Kyoto Station in accordance with the guidance plan (red circle)



Tomoko Izumi (Left)

Lecturer, College of Information Science and Engineering

Subject of Research: Useful information system at the time of a disaster, tourism support system based on the benefits of inconvenience, algorithm design with adaptability and fault tolerance
Research Keywords: Human Interface, Cognitive Science, Distributed Algorithm, Dynamic Network

Yoshio Nakatani (Right)

Professor, College of Information Science and Engineering

Subject of Research: Disaster mitigation information system, omoide engineering (Support of evoking memories with computer system for those who have lost memorial items at disasters, dementia patients and their families and long-term recuperating persons and method of utilizing memories), (Identity confirmation support, community building support and knowledge succession support)
Research Keywords: Human Interface, Cognitive Science, Artificial intelligence

Where are the safe places to evacuate to?

2011 Jusanhama, Kitakami Town, Ishinomaki City, Miyagi Prefecture, only two months after the earthquake. Temples and shrines were utilized as refuge sites.

1896 An illustration showing temples and shrines used as refuge sites, published in a magazine in the Meiji Era, Fuzoku Gaho

"Illustration of temporary refuge," Extra Issue of Fuzoku Gaho (Volume 2 of Tsunami Damage Record)

There were many temples and shrines that escaped the huge tsunami caused by the Great East Japan Earthquake and that served as refuge sites

Thousands of human lives were lost in the Great East Japan Earthquake of 2011, but most of the casualties were from the resultant tsunami. Attacked by mountains of waves as tall as buildings, people escaped to higher ground at any cost. "In that time, more than a few people took refuge in cultural assets in the community, such as temples or shrines," Michiko Hayashi says.

Only two months after the earthquake, Hayashi visited one of the affected areas, Jusanhama in Kitakami Town, Ishinomaki City, Miyagi Prefecture and investigated the temples and shrines that served as refuge sites. "I felt a strong ambivalence about conducting a survey while there still were people who were forced to evacuate the area. I was intent on doing it however, thinking that otherwise I wouldn't be able to produce lessons that could be useful later on," Hayashi says, showing her sense of mission as a researcher.

Jusanhama in Kitakami Town where Hayashi surveyed is an area prone to tsunamis. It has suffered damage three times in three different massive tsunamis, one each in 1895, 1933 and 1960. Hayashi considers, "Temples and shrines in the area have been used as refuge sites for a long time." These places are suitable for evacuees because, for religious reasons, they tend to be built on elevated ground away from residential areas. In addition, in the Sanriku region, due to the three tsunamis since the Meiji era, the temples and shrines built on flat land are considered to have been almost entirely eliminated.

Thanks to Hayashi's survey it was discovered that at the time of the Great East Japan Earthquake, out of the 16 temples and shrines scattered around Jusanhama, 11 of them were found to be located outside of areas that were inundated by the tsunami. In addition, a detailed analysis revealed that three out of the five of the damaged temples and shrines were temples, and only two shrines were damaged out of a total of 12. "It turned out that it was discovered for the first time that there are differences between temples and shrines, for example, in that shrines generally tend to be built on higher ground than temples."

Hayashi also paid attention to the effectiveness of temples and shrines as temporary refuge sites to evacuate to immediately after a disaster, and through calculations clarified that the time for an evacuation would differ depending on whether these places were utilized as temporary refuges under attack from a tsunami or not. According to the data, "It depends on geographical conditions, but if temples and shrines are located on a ridge line, people can quickly move while they have to climb steep slopes and can expect to shorten the evacuation time involved," she says. In addition, temples and shrines tend to have main halls and other spaces to shelter people from the rain and wind, and always have many floor cushions, futons and candles, in addition to food and beverages, effective for a short stay following an evacuation.

At the same time, Hayashi continues, "There are issues in terms of operation." As a result of actually interviewing people who temporarily evacuated to temples and shrines in the affected areas, it turned out that the places that were closely related to the local community and where local residents had a stronger attachment and a sense of belonging operated smoothly when they became refuge sites. Temples and shrines that are cut off from day-to-day connections with local residents cannot be expected to build good cooperative relationships when they suddenly have to accept many people. "In particular, this is an issue that needs to be studied for temples and shrines in city areas going forward."

In addition to research to record the present situation immediately after an earthquake and utilize it in later years, Hayashi also tackles the challenge of learning about disasters from history based on her career studying the history of civil engineering. While much of disaster prevention research focuses on forecasting disasters in the future, Hayashi's view of studying the past is a new concept.

"In an era when infrastructure and public support were not yet established, affected people would think about ways of finding a means to protect themselves from disasters. The utilization of temples and shrines is one form of these. I believe that by reflecting on the past and acquiring a point of view not available in the present, we can offer a knowledge that can be utilized for disaster prevention going forward."

As one such activity, Hayashi examined a flood disaster that hit Shiga Prefecture in September 1896. In addition to a deluge of rainfall experienced from the beginning of the year that was greater than usual, heavy rain in September caused Lake Biwa to overflow, killing about 100 people. Hayashi carefully read newspaper articles from that time and confirmed that temples that were located on high ground and that were not affected by the flooding accepted many people and were utilized as refuge sites. Currently, she is conducting a survey of how temples and shrines were utilized at the time of the Great Kanto Earthquake of 1923.

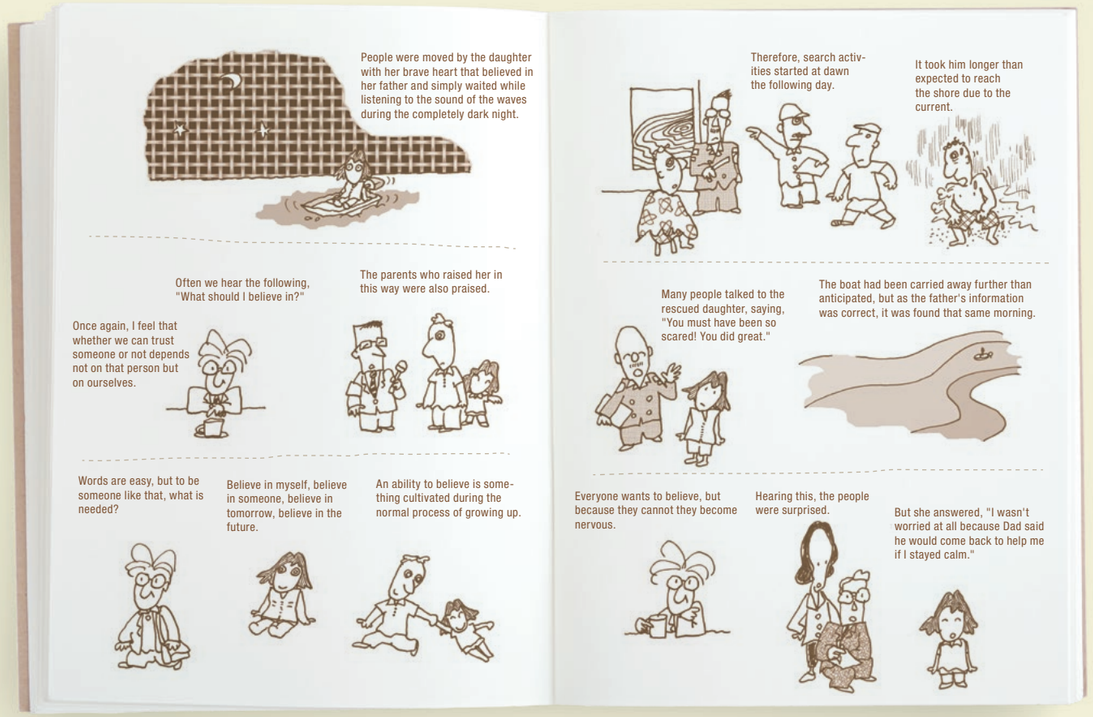
Hayashi has also started to record the Great Hanshin/Awaji Earthquake of 1995. She has visited people who experienced the damage one by one and conducts interviews, thinking, "It is only now that we can listen to the actual experiences of the affected people."

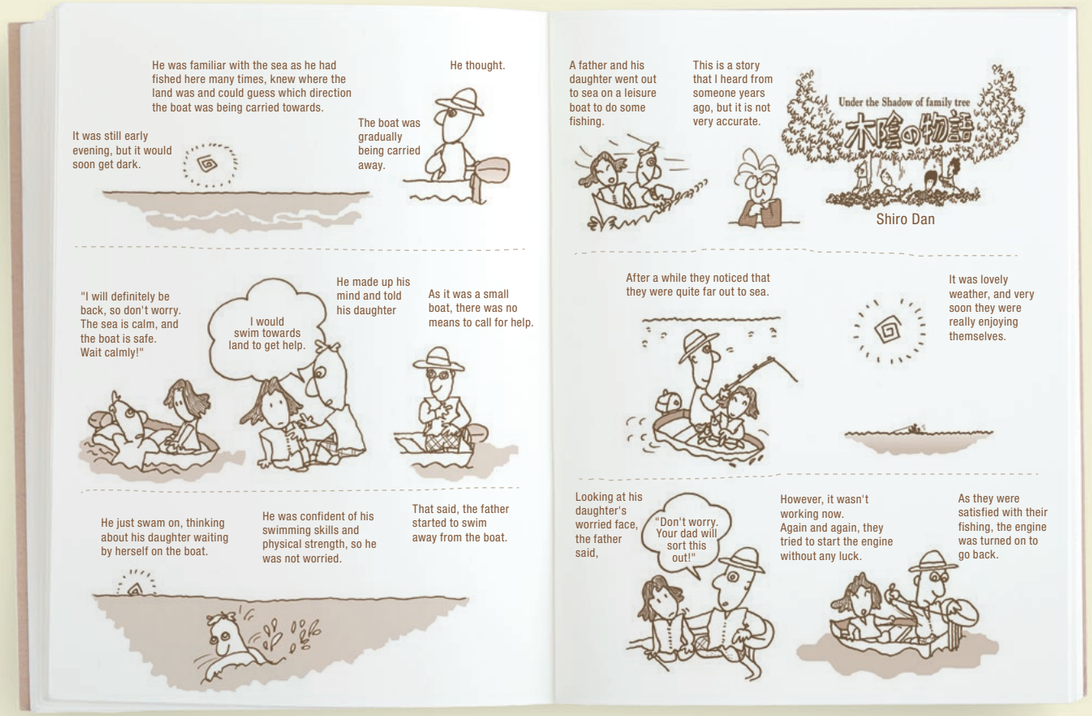
People have been hit by numerous disasters but have overcome them and have rebuilt their towns and lives from the past until the present. Hayashi hopes to steadily grasp any lessons that can be learned and make further proposals for the future.

Michiko Hayashi

Assistant Professor,
College of Science and Engineering

Subject of Research: Proposals for refuge sites that take advantage of community resources and culture in the case of tsunami, survey of flood damage in Shiga Prefecture
Research Keywords: Civil Engineering History, Landscape Engineering, Disaster Prevention for Historic Cities





Being a witness to disaster and restoration

10-year project of human services

The Great East Japan Earthquake not only caused the death of many people but also brought overwhelming loss and confusion to survivors. This has lasted up to the present day and has also become even more complicated over time with the spread of mental health issues such as PTSD.

"Before serious damage, there isn't much the Science for Human Services can actually do," says Kuniko Muramoto, who has been deeply involved in this clinical field as a specialist in the Science for Human Services, with some self-reproach.

"Even after being engaged with clinical work on trauma for the past 25 years, I realize how powerless we, the care providers, can be. In the case of serious damage like the current disaster, human services involving listening to people one on one and supporting them over time is not helpful enough. I think ultimately what we can best do is to be present as a person who “continues to witness with care and interest".

In a study of Holocaust victims, Muramoto concluded that the cruelest thing for people who have been treated in an inhumane or unreasonable manner is that no one knows the facts. She goes on to say, "The presence of people who know, mourn and continue to pay attention with interest regarding the victims' unrecoverable losses are a driving force in helping them stand up again. What I first considered in terms of providing support for the Great East Japan Earthquake was to become a witness to the disaster and the restoration.”

Visit the affected areas, establish personal relationships with the survivors and become a witness who remembers their individual lives before the earthquake, the influences brought about by the disaster and the present life of people who continue to survive it. In response to an appeal from Muramoto, the East Japan Family Support Project was launched.

"We will continue with this for ten years." To establish relationships with survivors, Muramoto emphasized the importance of continuing for a long time even if it makes only a small contribution. "Since I announced our intentions right from the start, people accepting us on site felt reassured, and we were able to build relationships of trust." Based on her experiences from the Great Hanshin/Awaji Earthquake, she thought it was necessary to set a "stage" for meeting with people in the communities of the affected areas where the project team had no previous relationships with the locals. Instead of just thinking about what is not available or is lost, it is important to take advantage of what is at hand and the strengths that are available. As a resource of the Graduate School of Science for Human Services, there is the graphic work, "Under the Shadow of Family Tree" by Shiro Dan, an expert in family therapy and a cartoonist. By turning his comic into panels and hosting a comic exhibition, the project team made a place for people in the community to casually get together, spend time and exchange casual conversation. In addition, not only Muramoto, but also experts on human services and students from Ritsumeikan University held workshops to empower the community. During the workshops, there was training for human service providers engaged in the support of survivors on site, games for children to play, programs to pass on traditions and a variety of other initiatives.

"Under the Shadow of Family Tree" by Dan is a collection of short stories depicting different family episodes It doesn't deal directly with the earthquake disaster or damage; however, during the hosting of the comic exhibition, it became clear that it had a steady power to move people. "When hit by a tragedy that seems unrecoverable, people may lose the strength to stand up again. However, even if material items are lost, what is inside people can never be lost. People can revive their own stories from their subjective world by recalling their own memories. And, although they are reading stories about other families, when they feel sympathy for other people's lives and feelings, it also helps their own subjective world to be revived," Dan says.

"Five years have already passed since I decided to begin a 10-year project to tour the four prefectures in Tohoku, and there have been voices from the many locals that give our continuous effort a humble meaning— 'It was like that last year', 'I can now talk, though I couldn't before,' and 'I want to do it that way next year.'" Muramoto can sense the positive in these quiet responses.

This project has developed in diverse ways. The symposium reporting on the annual initiatives and changes of the affected areas is now in its 5th year as of 2015. In addition, in 2015, as part of the East Japan Family Support Project, to help people feel familiar with the affected areas from far away, Dan's Family Manga Exhibition was held at Sanjo Station of the Keihan Railway in Kyoto. This project has been a practice providing support and at the same time, opportunities for research and education for the participating experts, researchers and students.

The efforts by Muramoto and Dan overturn the traditional methodology of human services in general. "We present a brand new form of support that does not approach the individual’s hearts but the community," Dan says. "We cannot prove it quantitatively, but the people participating in the project have demonstrated steady effects."

As a witness to the disaster and restoration, the initiatives by Muramoto and Dan will continue on.

Continuing to pay attention with interest is a driving force to stand up again

Kuniko Muramoto (Left)

Professor, Graduate School of Science for Human Services

Subject of Research: Child-rearing support and prevention of child abuse, clinical support of women and children affected by domestic violence, sexual abuse, and so on, intergenerational trauma caused by war, disaster and so on and peace education
Research Keyword: Clinical Psychology

Shiro Dan (Right)

Professor, Graduate School of Science for Human Services

Subject of Research: Actuality of family support
Research Keyword: Family Therapy

Visiting humanity's "negative heritage" to grieve and pray

Atomic Bomb Dome, Hiroshima Peace Memorial Park

Hiroshima Peace Memorial Museum

Hiroshima Peace Memorial Park

World Trade Center site (Ground Zero)

World Trade Center site (Ground Zero)

Fort Siloso, Singapore

Chiran Peace Museum

Auschwitz-Birkenau concentration camp

As a place to vividly communicate the horror and tragedy of the atomic bomb, the Atomic Bomb Dome in Hiroshima Prefecture has been visited by Japanese and foreign visitors for more than 70 years since the end of WW2. In addition to war sites, there are many examples of places that display the sorrowful memories of people's experiences of natural disasters that have also become tourist destinations over time. Tourism that involves visiting this kind of example of humanity's "negative heritage" is known as "dark tourism." It is now coming into the limelight. Hideki Endo, who studies sociology of tourism, is one of researchers paying attention to dark tourism.

With a preliminary note explaining that since "the history of this research is still relatively short, researchers have not reached a consensus about its definition." Endo explains that dark tourism is the "act of traveling to places linked with death and suffering, such as disasters or wars" or "visiting the sad memories of humanity." For example, it is the act of visiting places connected to death and suffering that were caused by human hands, such as war, terrorism, social discrimination, political suppression, pollution and accidents. The Auschwitz-Birkenau concentration camp, where Nazi Germany slaughtered countless numbers of Jewish people during WW2, is registered as a UNESCO World Heritage Site or negative World Heritage Site. Many people visit the site of the World Trade Center, which was flattened by the September 11, 2001 terrorist attacks. It is also called Ground Zero in the US. Tours to places linked with the death and suffering caused by earthquakes or fires are also considered dark tourism. Visits to the Disaster Reduction and Human Renovation Institute established following the Great Hanshin/Awaji Earthquake of 1995 is one such example.

What is the difference between dark tourism and conventional visits to places of negative human heritage? Endo answers, "What is important is not the phenomenon of visiting negative heritage sites, but to make its objective and meaning tangible by summarizing it as a unified concept of 'dark tourism.' It can be called dark tourism only if people miss, grieve and pray for the people who experienced sorrow." In dark tourism, an event should be conceived as a "darkness," and it should be something that turns the tourist gaze towards it and evokes emotions such as sorrow, anger or fear. Even if a damaged site is preserved or is historically important, unless it is constructed specifically as "darkness for tourism," that place cannot be the subject of dark tourism. Endo introduces a vivid example, "Fort Siloso on Sentosa Island in southern Singapore was the site of a hard-fought battle when the Japanese military forces attacked Singapore. Currently, there is a Fort Siloso military museum, and guided tours are available. At the same time however, Sentosa Island is a popular resort where casinos, Universal Studios Singapore and Marine Life Park are all located. It is touted worldwide as a cheerful and enjoyable resort to visit, while any negative aspects as a war site have been nearly eliminated. What the darkness becomes depends on the actions of society."

However, dark tourism that generates grief and sympathy for people who have experienced sorrow can become a mechanism to create a completely opposite effect if there is the slightest mistake. For this reason, there is criticism that turning negative human heritage sites into tourist destinations is exploitation of human sorrow for the sake of tourism.

"In this sense, dark tourism is deeply ingrained with people's ethical views," Endo says. Affected areas of the Great East Japan Earthquake of 2011, which is still fresh in the memories of people, is a site of death and suffering brought about by a natural disaster and the man-made element of the nuclear power plant accident. Some experts discuss the possibility of making this area a tourist destination of dark tourism, but Endo takes a wary position. "Making places for tourism where there still are people living in overwhelming sorrow seems to me a rather cruel act. Thinking about this, I think it is difficult to get too close to people's sorrow, at least when memories are still too fresh."

How will we take advantage of this new way of tourism, which attracts attention due to dark tourism? Endo is still searching for the answers.

What is "dark tourism" in places where a disaster has occurred to focus on and share in sorrow with victims?

Hideki Endo

Professor, College of Letters

Subject of Research: Area study based on tourism, Study on interactions between tourism and popular culture, Study on touristic nationalism, "Touristic turn" in social and human sciences

Research Keywords: Sociology of Tourism , Studies on Tourism and Media Culture, Contemporary Cultural Studies, Social Survey Methods

RESEARCH TOPICS

Ranked in first place for the number of cases of the implementation of commissioned research funds from private-sector industries
The AY2014 Industrial-Academic-Government Collaboration Implementation Status of Universities published by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)

On November 27, 2015, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) published the AY2014 Industrial-Academic-Government Collaboration Implementation Status of Universities. Ritsumeikan University was ranked in first place in Japan (total of 247 programs) for the number of commissioned research funds from private-sector industry (From the findings of AY2013, Ritsumeikan University was ranked second with 242 programs).
MEXT conducts the Industrial-Academic-Government Collaboration Implementation Status of Universities survey every year with the purpose of reflecting upon the results for the planning of industrial-academic collaboration and other initiatives. The survey was conducted with 1,085 institutions, including national, public and private universities (including junior colleges), national, public and private technical colleges and inter-university research institutions.

Number of commissioned research implemented from private-sector industries (AY2014)

No.	Name of institution	Number of programs	Category
1	Ritsumeikan University	247	Pr
2	Kinki University	239	Pr
3	Keio University	204	Pr
4	Waseda University	160	Pr
5	Nihon University	157	Pr
6	Tokyo Women's Medical University	150	Pr
7	University of Tokyo	147	
8	Osaka University	133	
9	Osaka City University	118	Pu
10	Tokyo City University	117	Pr

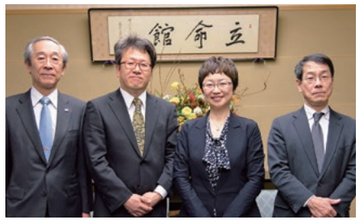
Pr: Private University Pu: Public University Nu: National University

The AY2014 Industrial-Academic-Government Collaboration Implementation Status of Universities
http://www.mext.go.jp/a_menu/shinkou/sangaku/1365479.htm

Micro-quantification method of DNA methylation Development of a direct quantification method using (lc) ms/ms (SMM) methodology

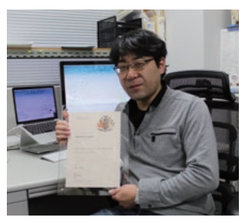
A group including Tatsuyuki Takada, Professor, College of Pharmaceutical Sciences, Ritsumeikan University, Yoshinori Okamoto, Assistant Professor, Meijo University, and Naoko Yoshida, Lecturer, Kansai Medical University have developed a direct quantification method for DNA base modification using a highly sensitive (lc) ms/ms (SMM) methodology that enables the analysis of quantitative relations between different modifiers in a minute amount of samples, which has previously been considered very difficult by conventional means.
DNA methylation and its control are known to be important for the expression regulation of genes, and together with the acetylation of histones, it has attracted attention in the field of research on the onset mechanism for cancer and other diseases as well as research on normal embryogenesis in epigenetic expression regulation, in addition to as a target of anticancer agents.
It is known that the amounts of methylcytosine and hydroxymethylcytosine in mammals change from DNA demethylation in embryogenesis immediately after fertilization, but stoichiometric investigations could not be conducted through conventional detection methods such as fluorescent antibody tests.
Instrumental analysis methods are suitable for discovering the absolute amounts of different modifiers and to analyze the embryogenic process; an analytic sensitivity of about 10 to 100 cells or at mol level (1/1018 mol).
With the results of this research, highly sensitive analysis has become possible, and it can be applied to not only embryogenesis after fertilization, but also to other limited scale biological samples, such as DNA modification analysis in cancer chemotherapy. In addition, by using a chromatin immunoprecipitation method, it becomes possible to quantify the chemical modification of a specific DNA part, accelerating research on the mechanism of regulating epigenetic gene expression in a tissue-specific differential process. The results were published in the online edition of Scientific Reports at 19:00 on January 11 (Japan time).

Ryozo Matsuda, Professor, College of Social Sciences and Yoko Matsubara, Professor, Graduate School of Core Ethics & Frontier Science are recognized as eminent members of the screening committee for Grants-in-Aid for Scientific Research of the Japan Society for the Promotion of Science



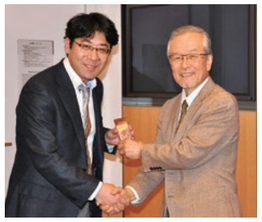
The Japan Society for the Promotion of Science administers the Grants-in-Aid for Scientific Research to promote academic studies and attempts to conduct proper and fair screening for all its allocations. The allocation screening of grants is conducted in two stages: the first stage of screening (document-based screening) and second stage of screening (collegial screening), with an improvement to the quality of the screening consistently being emphasized. Following the screening, a review is carried out. Based on the results of this review, committee members from the first stage of screening (document-based screening) who appended an opinion significant for the second stage of screening are selected and recognized. Ryozo Matsuda, Professor, College of Social Sciences and Yoko Matsubara, Professor, Graduate School of Core Ethics & Frontier Science were selected for this recognition along with just 189 people out of about 5,500 screening committee members. Professor Matsuda was responsible for document screening in medical sociology (research field), while Professor Matsubara took charge of the document screening in sociology/history of science and technology (research field).
On December 22, 2015, Professor Matsuda and Professor Matsubara made a report on winning the recognition to Mikio Yoshida, Chancellor of The Ritsumeikan Trust, and they were presented with a testimonial and a commemorative.

Hiromitsu Maeda, Professor, College of Pharmaceutical Sciences, elected as a Fellow of the Royal Society of Chemistry



On December 11, 2015, Hiromitsu Maeda, Professor, College of Pharmaceutical Sciences, was elected as a Fellow of the Royal Society of Chemistry (FRSC) for the first time in history for a staff member of Ritsumeikan University.
The FRSC election recognizes researchers who are members of the Royal Society of Chemistry, have had a research career of five years or more and have made a conspicuous contribution to the development of chemical studies while engaged in the management of associated organizations, etc. Professor Maeda has become the youngest Japanese FRSC (elected at the age of 39) up to this point in time.
The group led by Professor Maeda has addressed the challenge of developing unconventional electron and optical function materials on the basis of synthesizing new π-electron systems and focusing on their molecular recognition abilities and self-assembly behaviors. His proposal on new molecular assemblies based on π-electron systems, which were developed independently, has attracted global attention and has resulted in his election at this time.

Hiromitsu Maeda, Professor, College of Pharmaceutical Sciences, won a Banyu Chemist Award (BCA) 2015



Hiromitsu Maeda, Professor, College of Pharmaceutical Sciences, won the Banyu Chemist Award (BCA) 2015 (from Banyu Life Science Foundation International) for his work entitled "The Synthesis of Ion-Responsive π-Electron Systems Forming Supramolecular Assemblies." This award was established to stimulate the creativity of young researchers in the field of organic synthetic chemistry and to develop exceptional human resources while recognizing young researchers under the age of 40 who have made outstanding achievements in the field and who are expected to attain future significant developments. In FY2015, six researchers, including Professor Maeda were given the award. An award-giving ceremony was held at the head office of MSD K.K. (formerly Banyu Pharmaceutical) on December 5, 2015. In addition to this award, he also won a Thieme Chemistry Journal Award.
The group led by Professor Maeda has addressed the challenge of developing unconventional electron and optically functional materials on the basis of synthesizing new π-electron systems composed of pyrrole rings, etc., focusing on their molecular recognition abilities and assembly behavioral patterns. The unique points of his award-winning theme lay in the proposal of new molecular assemblies by achieving the sequence regulation of ions in undeveloped π-electron systems, which he has developed independently. In particular, his clarification of the contribution by assemblies that are difficult to achieve offers a new formation principle for molecular assemblies, with very high originality and innovation. For this award-winning theme, the design and synthesis of π-electron systems with a new skeleton are a very important factor, displaying the significance of organic synthesis.

Yasuyuki Kita, Director of Research Center for Drug Discovery and Development Science, elected as a Senior Fellow of the International Society of Heterocyclic Chemistry (ISHC)

Yasuyuki Kita, Director of Research Center for Drug Discovery and Development Science and Professor, Research Organization of Science and Technology, was elected as a Senior Fellow of the International Society of Heterocyclic Chemistry (ISHC).
This organization is an authoritative society that was established in the US in 1968 for the purpose of developing the field of heterocyclic chemistry, which is indispensable for the development of drugs and other new materials. The Senior Fellow that was awarded to Professor Kita is a title given by the society to people who have made outstanding contributions to the field. In the society, there are three researchers entrusted with Senior Fellow titles, namely Albert Padwa (Emory University), Victor Snieckus (Queen's University) and Margaret Brimble (University of Auckland), and with the addition of Professor Kita, only four researchers in the world now hold the title. This is the first time that a Japanese person has been elected.
Professor Kita is a specialist in precision organic synthesis, which is indispensable for new drug discoveries and was elected for the title after being recognized for his many achievements, including a study on eco-friendly organic synthesis using iodine reagents.

Gakuto Takamura, Professor, College of Policy Science, won a Japan Society for the Promotion of Science Prize

Gakuto Takamura, Professor, College of Policy Science won a Japan Society for the Promotion of Science (JSPS) Prize. The JSPS Prize aims to identify young researchers with great creativity and exceptional research abilities and by recognizing them early on, stimulate their research motivation and support the development of their research in order that the standards of Japanese academic studies are developed to the highest global level.
The recipients of this award are researchers who are under 45 years of age and are doctors or have academic research abilities equivalent to or higher than doctors and that have achieved notably excellent academic results through research, such as theses.
Professor Takamura won the award for his work entitled "Legal Structuring of Joint Management Rules on Urban Common Resources through the Reconstruction of Living Law Theory."

Masayuki Uemura, Director of Ritsumeikan Center for Game Studies, won an AY2015 (19th) Japan Media Arts Festival Special Achievement Award

Masayuki Uemura, Director of Ritsumeikan Center for Game Studies and Visiting Professor, College of Image Arts & Sciences, won a Japan Media Arts Festival Special Achievement Award.
The Japan Media Arts Festival is a comprehensive festival of media arts that recognizes excellence in the four categories of art, entertainment, animation and manga and offers opportunities for visitors to enjoy viewing award-winning work.
The Special Achievement Award that Professor Uemura has won is given to people who have made contributions to the field of media arts on the basis of a recommendation by the judging committee. Professor Uemura was responsible for the development of the Family Computer at Nintendo during the rise of video games and went on to establish this genre, which might otherwise have been only a temporary boom, as an industry and indeed, a part of modern culture. Since 2011, he has been the director of the Ritsumeikan Center for Game Studies and has been engaged as a researcher in a project to reconstruct human civilization from the viewpoint of "play". His field of vision has a great scale, covering pre-historic ancient civilizations to modern society, modern times and post-singularity, and he won the Japan Media Arts Festival Special Achievement Award with the hope that winning the award will enable him to further share his vision.

Japan Media Arts Festival
http://j-mediaarts.jp/

Hiroshi Yoshida, Professor, Graduate School of Core Ethics & Frontier Science, won the Suntory Prize for Social Sciences and Humanities

Hiroshi Yoshida, Professor, Graduate School of Core Ethics & Frontier Science, won the Suntory Prize for Social Sciences and Humanities in the Literary and Art Criticism category for his "The Aesthetics of Absolute Music and Disintegrating Germany — 19th Century," which is a part of

a trilogy. The prize is awarded by the Suntory Foundation each year to individuals who have made original and distinguished contributions in fields of research or criticism through publications that adopt a broad perspective on society and culture in their four award categories of Political Science and Economics, Literary and Art Criticism, Life and Society and History and Civilization.

Suntory Prize for Social Sciences and Humanities
http://www.suntory.co.jp/sfnd/prize_ssah/

Ritsumeikan Global Innovation Research Organization (R-GIRO)Achievement reporting symposium held entitled "Towards the Creation of Research Cores with Uniqueness in a Global Society"

On February 18, an achievement reporting symposium held by R-GIRO for research cores took place on the Biwako-Kusatsu Campus. Haruhiro Imizu, President of Nikkan Kogyo Shimbun, gave a keynote address on the latest trends for the new industrial revolution. From four research cores integrating different fields for which research activities have been promoted over the three years starting with the second semester of 2012 (energy, advanced medicine, human life & value and food supply), the research results of mainly five projects were reported and active discussions were held on the challenges for global society that are faced in each field. During the subcommittees of the second part of the symposium, lectures by invited speakers, achievement reports by research group leaders and presentations by young researchers took place for each project, and the symposium was completed successfully.

Symposium to celebrate the opening of the OIC hosted by the Research Center for Innovation Management

On February 10, in the conference hall on the first floor of Ritsumeikan Ibaraki Future Plaza (Building B), a symposium entitled "Can Japanese Companies Survive in the Age of IoT?" was hosted by the Research Center for Innovation Management to celebrate the opening of the OIC. Takashi Shigematsu, Chairman & Representative Director of Fujitsu Ten Limited, gave a keynote speech entitled "The Future of Automobiles in the IoT Age: From the Point of View of the Fujitsu Group." During the panel discussion, participated in by Hiroyuki Murayama, Executive Advisory Engineer, Denso Corporation, Kazuo Kajimoto, Senior Councilor, Group-wide CTO Office, Panasonic Corporation, Kazuhiko Hayashi, Executive Officer, Sumitomo Electric Industries, Ltd. and Seiko Shirasaka, Associate Professor, Graduate School of System Design and Management, Keio University, a discussion on the direction of problem solving and actual approaches was held, bringing the challenges Japanese companies are facing in the IoT age to the fore.

Research Center for Pan-Pacific Civilizations Ritsumeikan Global Innovation Research Organization (R-GIRO)Research Core for Pan-Pacific Culture Analysis using Annually Laminated Sediments Kyushu and Saga symposiums held

On January 9 and 10, with sponsorship by the Research Center for Pan-Pacific Civilizations and co-sponsored by the Research Core for Pan-Pacific Culture Analysis using Annually Laminated Sediments (R-GIRO), a symposium entitled "The East China Sea and Rice Cultivation, Fishing and Yayoi Culture" took place at Avance (Saga, Saga Prefecture).

The Research Center for Pan-Pacific Civilizations was established in 2013 to fundamentally investigate how the environment and civilization should be considered and to elucidate upon the environment of the Pan-Pacific region and the rise and fall of civilizations. Following symposiums in Hakodate and Munakata, the event was held in Saga, where the Yoshinogari site is located.
The first day of this two-day symposium hosted lectures on themes such as the relics of the paddy field of the Nabatake site that overturned the conventional theories on the origin of rice cropping, roots of rice farming via the Korean Peninsula and China and the history of the Yoshinogari site excavation. On the second day, following a keynote speech, there was a panel discussion entitled "Kyushu and Yangtze River Civilization," and the symposium was completed successfully.

Robotics technology explanatory meeting held

On December 18, 2015, a robotics technology explanatory meeting took place at Grand Front Osaka. With the goal of commercializing research results, researchers made presentations on the latest studies of robotics technology, for which Ritsumeikan University is well known, introducing technologies in order to advance the goal of further academia-industry collaboration. In addition to these presentations, posters and robots were also displayed.

Research Center for Design Science, Ritsumeikan University Symposium to celebrate the opening of the OIC took place

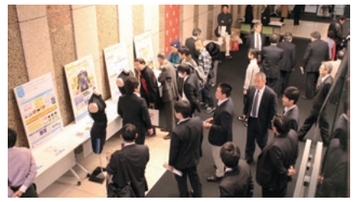
On December 18, 2015, in the conference hall on the first floor of Ritsumeikan Ibaraki Future Plaza (Building B), a symposium entitled "The Future of Open Innovation & Collaboration: Feel the Challenger's Beat" was hosted by the Research Center for Design Science to celebrate the opening of the OIC. Naoto Kimura, Counselor at the Office of the Assistant Chief Cabinet Secretary of the Cabinet Secretariat, gave a keynote speech entitled "Science and Technology Innovation Policies in Japan," introducing some of the latest trends. In addition, research results were reported by the center on their activities that follow the slogan adopted by the COI STREAM: "Bright Future for All Ages with Health Innovation by Daily Exercise."

Exhibiting at International Robot Exhibition

For the four days from December 2 to 5, 2015, International Robot Exhibition 2015 was held following the theme of "RT Making a Future with Robots," and three laboratories from the Department of Robotics, College of Science and Engineering, namely, the Humanoid System Laboratory (Sang Ho HYON, Associate Professor), Kawamura Laboratory (Sadao Kawamura, Professor) and Soft Robotics Laboratory (Shinichi Hirai, Professor) were selected for attendance and had a booth.
The biennial International Robot Exhibition is one of the world's largest robot trade shows, and this event was the 21st exhibition. During the four-day period, 121,422 people visited the venue, making it the largest exhibition to date.

Center of Innovation program (COI) A symposium took place "Bright Future for All Ages with Health Innovation by Daily Exercise"

On December 1, 2015, a symposium took place with the primary goal "Bright Future for All Ages with Health Innovation by Daily Exercise" for those who could not maintain an exercise regimen. Kaori Araki, Associate Professor, School of Human Science and Environment, University of Hyogo, who served as a mental coach to the Japanese rugby team for the Rugby World Cup 2015, gave a keynote speech entitled "How to Maintain the Resiliency to Begin and Continue to Exercise," applying the idea of "stumbling seven times but recovering on the eighth" to the process of making exercise a custom through the psychological skill of "resilience." Following the keynote speech, there was a general explanation of the center along with research activity reports from individual research teams.



Rice Ball Seminar started at the Osaka Ibaraki Campus (OIC)

A Rice Ball Seminar began at the Osaka Ibaraki Campus (OIC) in November 2015. At this seminar, while eating rice balls during lunch breaks, participants listened to presentations by young researchers and enjoyed free discussion with presenters. This type of event started at the Biwako-Kusatsu Campus (BKC) in 2007 and then started at the Kinugasa Campus in 2011. Rice Ball Seminars not only offer a forum for young researchers to present their research activities, but also promote intellectual communication between researchers and students.

Symposium held entitled "The Future of Food – Gastronomic Science & Innovation"

On October 27, 2015, jointly sponsored by Le Cordon Bleu and the National Museum of Ethnology, a symposium entitled "The Future of Food – Gastronomic Science & Innovation" was held at the Biwako-Kusatsu Campus (BKC). Celebrating the 120th anniversary of Le Cordon Bleu Paris, leading researchers who are bringing innovation to the culinary world were invited. Three special lectures and a panel discussion were held, introducing medical food such as nursing food based on French cuisine, post-molecular gastronomy, cooking methods popular in Europe and the US and research on "gastronomic tourism" to apply the culinary industry to tourism.

EVENT GUIDE

First International Symposium hosted by the Ritsumeikan Inamori Philosophy Research Center "The Outlook of Globalization on Inamori Management Philosophy" With simultaneous interpretation

March 4 (Friday) 10:00 ~ 17:00 (Doors open 9:00)
Colloquium on the third floor of Ritsumeikan Ibaraki Future Plaza (Building B)
Ritsumeikan University Osaka Ibaraki Campus

A keynote address by Dr. Ikujiro Nonaka, Professor Emeritus at Hitotsubashi University and review lectures by leading researchers from Europe, Asia and the US will show the significance and vision of global developments in academic research on Inamori management philosophy.

Symposium participation fee is free, but advance application is required.
For application method and other details, please visit the website below:
http://www.iqform.jp/riprc2016/

Symposium program entitled "The Past, Present and Future of Innocence Efforts in Japan" With simultaneous interpretation

March 20 (Sunday) 13:00 ~ 18:00 (Doors open 12:30)
Colloquium on the third floor of Ritsumeikan Ibaraki Future Plaza (Building B)
Ritsumeikan University Osaka Ibaraki Campus

The Innocence Project is an organization that was established in the US to support people who proclaim their innocence when they have been falsely accused. In April 2016, as a Japanese version of the Innocence Project, the Innocence Project Japan will open based at Ritsumeikan University. At this symposium, following the theme of "false accusation relief," participants will consider new methods of relief from false accusations based on reports on the current practices in this field in Japan and the US.

Symposium participation fee is free; Reception participation fee is 3,000 yen. Advance applications are required for both (deadline March 10).
For application method and other details, please visit the website below:

Center for Forensic Clinical Psychology
http://www.lawpsych.org/home

Lecture meeting celebrating the opening of The Kato Shuichi Collection

May 7 (Saturday) 13:45 ~ 17:30 (Doors open 13:00)
Igakukan Hall 1, Kinugasa Campus, Ritsumeikan University
Lecturers: Kenzaburo Oe, Sonja Kato (Daughter of Shuichi Kato)

Shuichi Kato is an international intellectual representative of postwar Japan. Ritsumeikan University will open the Kato Shuichi Collection, featuring a myriad of books, posthumous writings and notebooks that have been donated at the wishes of his bereaved family. It will be open to members of the public at the Hirai Kaichiro Memorial Library on the Kinugasa Campus in April 2016.
In celebration of the opening, we will hold a lecture meeting to make the significance of this collection better known.

Lecture participation fee is free, but advance application is required (available in the order of receipt, capacity: 350).

For application method and other details, please visit the website below:
Research Center for Shuichi Kato and the Japanese Contemporary Thoughts
http://www.ritsumei.ac.jp/research/center/kato_shuichi/

PUBLICATIONS

GyongSu MUN et al (Ed.)
General magazine for Korean people in Japan, Koro
Crane Ltd.

Eri Kanamori (Editor/Writer)
"Nuclear Power Generation and Accounting System"
Chuokeizai-sha, Inc.
March 2016

Now Printing

COLUMN #1 The World of Shirakawa's Letter Science

Essence of Shirakawa Kanji Science: "遊" and "斿"

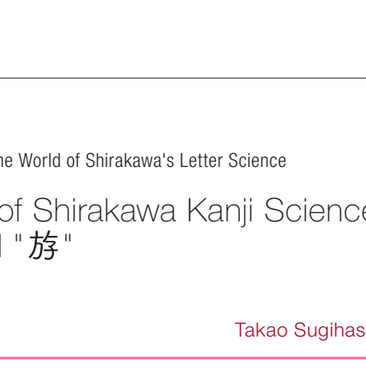
Takao Sugihashi

"斿" is a combination of en (方 and 人: a type of flagpole with a windsock) and "子", and the meaning is depicted as a person holding a flag. In other words, "斿" means "going out and raising the flag in which a clan's god and spirit dwell," and when shinnyo, representing "go out" or "advance" is added to this, the character "遊" is formed. Thus, the character has the meaning that the god "goes out," plays freely, and that people "play" with the god.

A passage from the Analects of Confucius refers to the "play as a form of cultural enrichment," with Confucius positioning it as the "highest state of life." In the world of art and science, Dr. Shirakawa interacted and played with many different people and books. He once mentioned that "遊" was his favorite Chinese character, and on the monument at his place of birth in the city of Fukui, there is an inscription of "斿" in his own handwriting (shown below).

Let me quote the opening to his "Discussion of the Character 遊" from the beginning of his book Moji shoyo as follows. Please appreciate this passage along with the uniqueness of his comments: "The one playing is a god. Only a god can play. Play is the world of absolute freedom and abundant creativity. That is none other than the world of a god. When involved in this godly world, humans may play along... Play means to move. When something that doesn't usually move does move, then '遊' becomes an act of its semantic meaning."

It is a shame that we no longer hear the word "遊学" (studying at a place far away as if it were playing).



Fukui Prefecture and Dr. Shizuka Shirakawa
In Fukui Prefecture where Dr. Shirakawa was born, the prefecture has presented him with an Honorary Prefectural Citizen Award, opened the Shirakawa Mojigaku no Heya (Shirakawa Kanji Science Archive), built a memorial monument at the site of the house where Dr. Shirakawa was born in Fukui City, hosts memorial forums, kanji science courses and systematic Chinese character education at elementary schools, in addition to many other activities.

Shirakawa Mojigaku no Heya
The Shirakawa Mojigaku no Heya was built at the Fukui Prefectural Library to recognize Dr. Shizuka Shirakawa's achievements and to serve as a forum to learn about the history and origins of Chinese characters.
A collection of items prized by Dr. Shirakawa are on display, and there is a library that belonged to Dr. Shirakawa that accurately reproduces the real atmosphere of his library with books piled up to the ceiling.

Source: Lifelong Learning and Cultural Assets Division, Fukui Prefecture Education Agency

Takao Sugihashi Director of the Shirakawa Shizuka Institute of East Asian Characters and Culture/Tokunin Professor and Professor Emeritus, Ritsumeikan University

COLUMN #2 Lifestyle recipes

Present from our mother the sea Akamoku of Shima (Sargassum horneri of Shima)

Kumiko Ebi

In May 2016, a summit will be held in Ise Shima, Mie Prefecture. When it comes to food from Ise Shima, what comes to mind? Ise-ebi lobsters? Matoya oysters? No, that's not all. Shima City is currently trying to establish the akamoku of Shima (Sargassum horneri of Shima) as its sixth industry.

Akamoku is a type of seaweed similar to Hizikia fusiforme. It has been eaten in the Tohoku region and other places for many years, but as the weeds tend to tangle in fishing boat lines and nets, fishermen have called it jamamoku, referring to it as a nuisance.

In fact, akamoku contains nutrients that are believed to have diverse beneficial effects, for example, fucoidan, which strengthens immunity and prevents lifestyle-related illnesses, fucoxanthin, which has strong anti-oxidant abilities and helps to avoid metabolic syndrome, and vitamin K, which prevents osteoporosis. However, neither the municipality nor local citizens could properly utilize the jamamoku and large volumes of akamoku have been disposed of without ever being used. This is genuinely a terrible waste.

Due to a request from Shima City and after seriously considering the situation and trying to communicate the appeal of akamoku as a valuable item to people inside and outside the city, we developed recipes and proposed making a leaflet. We paid great attention to detail, hoping that people could benefit from using akamoku as a food that makes life pleasurable as well as being one that is rich in nutrients.

Taking this leaflet as a turning point, we genuinely hope that going forward the akamoku of Shima can grow as a brand as vigorously as the plant itself grows. Please try the akamoku of Shima as it is filled with both beneficial nutrients and the hopes of the people of Ise Shima, and also consider the richness of the sea near Ise Shima.

Kumiko Ebi Professor, College of Sport and Health Science
Completed doctoral course second term (Nutrition Science), Graduate School of Nutrition Science, Koshien University in 2007. Doctor of Nutritional Science. Contracted researcher, Department of Sports Medicine, Japan Institute of Sports Sciences, in 2006. Professor at the College of Sport and Health Science, Ritsumeikan University in 2010. Vice Chairperson and Dietetics, Japan Society of Nutrition and Food Science, Japan Sports Association, Japanese Society of Sports Education, Japanese Society of Clinical Sports Medicine, and the Japan Association for the Integrated Study of Dietary Habits.

COLUMN #3 "Altruism" rooted in society

About Compa

Ritsumeikan Inamori Philosophy Research Center

It is widely known that at the KYOCERA Group, compa is emphasized as a part of their corporate culture, and its history is long, as exemplified by the fact that the first compa was held after a ceremony to celebrate the foundation of the company. Dr. Kazuo Inamori, Director Emeritus of the Ritsumeikan Inamori Philosophy Research Center (Chairman Emeritus of KYOCERA) says as follows: "It is a forum to openly promote communication with colleagues and at the same time create a place to help everyone understand my ideas. By talking to as many people as possible and taking a great deal of time to do it, we have established human relations that allow us to trust each other." The role played by compa in the process of the management reconstruction at JAL, in which Dr. Inamori was engaged, has again recently been attracting attention.

For research activities, having a place to conduct compa is considered very important. In particular, when researchers from various fields talk openly and without reservation, differences and similarities in their ideas will become clearer and may even suggest new ideas for research. European and American universities and research institutions have a culture in which researchers leave their rooms, get together to interact and have free discussion over a few drinks during teatime. This can be considered compa. Through free communication with an open mind, unprecedented innovation may well appear.

At our research center, we positively use compa in research promotion not only at research sessions among members, but also when conducting group interviews. Participants and researchers tend to come to new realizations and receive inspiration. In the near future, we plan to hold a compa with Dr. Kazuo Inamori, Director Emeritus, at the research center.

Reference: KYOCERA PR magazine, Keiten Aijin (Respect the Divine and Love People) No. 255 (May 2015)

Ritsumeikan Inamori Philosophy Research Center A research center established at the OIC in June 2015 with a goal of making the study and use of Inamori's management philosophy more universally applicable and more widely practiced from diverse academic viewpoints, such as philosophy, psychology and management. We also promote the research and development of educational programs to help people master Inamori's management philosophy.

Ritsumeikan Saturday Lecture Series

The late Dr. Hiroshi Suekawa, then the President of Ritsumeikan University, proposed that "study and science are for the sake of protecting the benefits and human rights of citizens and the general public. A university is a place to develop human beings through study, and it is important to walk, think and study along with the general public." Therefore, the Ritsumeikan Saturday Lecture Series was established to open the lectures of the university to the general public and strengthen the ties between the university and the local community. Ever since the first lecture entitled "About the Labor Union Act" by Professor Hiroshi Suekawa on March 31, 1946 during the turmoil of the postwar period, for more than half a century, this series of lectures has taken place.

March — Global Environment and Energy Management at Hand

March 5 No.3158
Trilemma and the Uncertainty of Energy Issues: Should Japan Give Up or Continue With Nuclear Power Generation (Nuclear Power Plants)?
Weisheng Zhou, Professor, College of Policy Science, Ritsumeikan University

March 12 No.3159
Campus Design in Consideration of the Global Environment
Tsukasa Nagai, Part-time Lecturer, College of Science and Engineering, Ritsumeikan University

March 19 No.3160
Creation of a Recycling Society and Energy
Seiji Hashimoto, Professor, College of Science and Engineering, Ritsumeikan University

March 26 No.3161
Healthy, Energy-Saving or Zero-Energy Housing Transmitted from the Community in a New Energy Society
Tomoyuki Chikamoto, Professor, College of Science and Engineering, Ritsumeikan University

April — Possibilities for Comprehensive Psychology

April 9 No.3162
Mechanism for Looking at "Things"
Takao Sato, Dean of College of Comprehensive Psychology, Ritsumeikan University

April 16 No.3163
Careers and Turning Points from the Viewpoint of Lifetime Developmental Psychology: From a Speech by a Woman Who Faced Difficulties with Reproduction
Yuko Yasuda, Associate Professor, College of Comprehensive Psychology, Ritsumeikan University

April 23 No.3164
Where in the Mind Is Memory? The Meaning of Events and Live Discussions
Masayoshi Morioka, Professor, College of Comprehensive Psychology, Ritsumeikan University

Ritsumeikan Saturday Lecture Series website
http://www.ritsumei.ac.jp/acd/re/k-rsc/kikou/doyokozakikoh.htm

Admission free, no advance application required

Lecture room, Suekawa Memorial Hall, Kinugasa Campus, Ritsumeikan University