Preservation of Cultural Heritage by Science and Technology: Experience from the 3.11 Earthquake and Tsunami in Florence

This was a program of lectures held by CNEAS, with support from the Istituto Italiano di Cultura-Tokyo, at the Sendai Chamber of Commerce and Industry on 10 March 2012. The event was held in conjunction with “Spirit of Tohoku University,” Tohoku University’s one-year anniversary commemoration of the Great East Japan Earthquake, inviting overseas researchers connected with the university for a program dedicated to recovery from the disaster.

Many historic buildings and cultural properties were lost in the tsunami at the time of the March 2011 Earthquake and great effort has been invested in their salvaging and restoration. Like Japan, Italy is a nation of volcanic eruptions and earthquakes and is known for its active research in natural disasters. Following the tremendous damage resulting from the flooding of the Arno River in 1966, Florence has become a city with a great accumulation of experience in the preservation of cultural treasures. For these lectures, associate professor Massimiliano Pieraccini, of the University of Florence, with which Tohoku University has an academic exchange agreement, was invited to speak. He presented specific examples of ways science and technology have been mobilized for the preservation of cultural treasures. After introducing his research conducted at the University of Florence relating to preservation of cultural artifacts that began following 1966 flooding in Florence, he spoke about the case, in which he himself was involved, of using radar to explore the theory that another painting was hidden beneath a work Battle of Angliari by Leonardo da Vinci. Kaori Fukunaga of the National Institute of Information and Communications Technology (NICT) talked about the study and repair of early Renaissance paintings at the Uffizi Gallery in Florence using terahertz waves that are midway between the wavelengths of electronic waves and light. Monoyuki Sato introduced the electronic wave technology being used at CNEAS for archaeological site preservation and protection against fires and disaster mitigation. Akihito Kaneda and Yosi Konomu of the Nara National Research Institute for Cultural Properties reported on cases of the application of technology for preservation of cultural properties in Japan.

From the Director

Seventeen years have now passed since the founding of CNEAS. In October 1981, I took two years off from university to study in Ulan Bator, in what was then called the Mongolian People’s Republic. What I witnessed there was the different world of the Soviet socialist system from ours and the Mongolian people at that time were full of confidence in the future of socialism. Then in June 1989, when I was studying in Beijing, I was a witness to the Tiananmen Square Incident. That incident, it seems to me, which coincided with the visit to China of Soviet leader Mikhail S. Gorbachev, was symbolic of the history that would follow. The tragedy at Tiananmen Square may have been one of the last pains from which Northeast Asia was born.

The spasm kept up after that for quite some time. When I visited Mongolia in the summer of 1993, socialism had become a ruin. Mongolia after its recovery quickly established deepened relations with Japan and is now one of the most pro-Japan countries in the world. Japan’s relations with Russia as well have been gradually improving.

The Mongolia to which I traveled for study seemed very far away thirty years ago. But today, we can visit both Mongolia and China without visas to have a discussion with my research collaborators there. I couldn’t help thinking of the difference from the distance I had felt two or three decades before.

Northeast Asia’s cultural diversity will never fade, no matter how accessible the region becomes — the stylish European-style townscape of Siberia, the nomadic lifestyle of the peoples of the Mongolian steps, the battle of China’s great metropolises, the Chinese farmers who live as an integral part of the land. In places where such diverse cultures meet, friction is bound to occur, but diversity is essence of this region.

Northeast Asia is emerging not into homogeneity but as based on diversity, and that is the event that takes place and we are seeing. Today we enjoy an environment in which we can consider the problems that arise from that diversity together with local researchers and residents of various parts of the region. This is a truly exciting and momentous development.

Oka Hiroki
Professor

People and Publicity
Center for Northeast Asian Studies
Tohoku University, 2013-2015

Environmental and energy policy, international cooperation
Design of institutional arrangements

Division of Russian and Siberian Studies

TERAYAMA Kiyosuke
Professor
Soviet history, Japanese-Russian/Soviet relations
In order to gain an in-depth understanding of the development of Stalin’s regime, I study and investigate Soviet border areas (the Far East, Mongolia, Sinkiang, Finland and Poland) in the interwar period (1918-1939), especially from the point of view of mobilization of human and natural resources, so as to prepare for prospective future research. At CNEAS, I am also engaged in research on censorship policy in the former Soviet Union.

TAKAKURA Hiroko
Professor
Social anthropology, Siberian and Arctic studies, disaster studies
My research in progress concerns! the cultural adaptation of Siberian local communities to climate change, focusing on indigenous knowledge of the river ice ecology. Another topic is related to applied anthropology in Mongolia and exhibition, bridging people at home with people at field sites. After the 3.11 Tohoku Earthquake, I began documentation projects on the intangible cultural heritage of local communities based on applied disaster anthropology.

SHOTANI Masachika
Assistant Professor
Russian economic history, modern Russian economy
During the nineteenth century, Russia imported steam engine technology and applied it to industry and the transportation system, including steam locomotives and steamships. I am investigating how steam engine technology transformed trade between Russia and Asia. I am also interested in contemporary business practices in Russia.

Division of Mongolian and Central Asian Studies

KURIBAYASHI Hiroshi
Professor
Philological studies of Mongolian, comparative studies of Mongolian
In the eighteenth century, during the Qing dynasty, massive polyglot Manchu dictionaries were compiled one after the other. My research investigates the characteristics of Mongolian words and phrases included in such dictionaries as Watt Qingjienji [Pengqig Mirror of Qing Languages].

Oka Hiroki
Professor
Mongolian history, Asian history
My research explores the social and administrative structures established in Mongolia during the Qing dynasty (seventeenth to early twentieth centuries). The recent focus of my work is on re-examining the historiography of Mongolian scholars in and after the socialist era and also on Qing dynasty politics in Mongolia in the seventeenth century.

YANAGIDA Kenji
Associate Professor
Russian linguistics, sociolinguistics
New language varieties may appear due to use of multiple languages and language contact. I am engaged in observational studies of the changes taking place in the Russian language in this region, along with incidents such as decreased status in the multilingual society of Central Asia.

Division of Chinese Studies

ASUKA Junen
Professor
Environmental and energy policy, international corporatism
Design of institutional arrangements
 fervor in Russia and using data obtained from imaging and electromagnetic methods. My research focuses on the relation- ship between the origin of these volcanoes and plate-tectonic move- ments.

GOTO Akio
Assistant Professor
Geology, physical properties of magma
Volcanic eruptions differ greatly from one volcano to another, and their controlling factors are not clearly known. To clarify these factors, I measure the physical properties of magma, conduct experimental simulations of vol- canic eruptions, and observe actual eruptions.

MIYAMOTO Tuyoshi
Assistant Professor
Geology of volcanoes, petrology of volcanic rocks
The history of the volcanic erup- tions of Mt. Pacif. on the China- sea coast of the first century AD, and the development of the petrology and geology of volcanic rocks. My research is focused on the changes in volcanic eruptions and their controlling factors.

HIRANO Naoto
Associate Professor
Ecology and evolution, conservation biology
The research in my laboratory is focused on understanding the mechanisms that regulate biologi- cal diversity on various spatial and temporal scales. I use methods such as evolutionary and population genetics, nestedness of amphibian, crustacean, land and marine mollusk, and trematode parasites to detect and address the need to modify existing spatial systems to clarify the evolution- ary origins of biological diversity in Northeast Asia.

SHIKANO Shin'ichi
Associate Professor
Microbial ecology, system ecology
Molecular phylogenetic analysis of the composition and dynamics of microorganisms communities in lakes, wetlands, and other aquatic ecosystems is the main subject of my research. I also analyze the structure of the food web sup- porting these communities in the lakes and wetlands of western Siberia.

Division of Japanese and Korean Studies
ISHII Anshu
Associate Professor
International relations, science and technology studies
My current research focuses on the process through which Chi- nese linguae (zongzu) have been restored and how they have changed. My research mainly focuses on the early and mid-twentieth century Chinese lineages (zongzu) have been restored and how they have changed. My research mainly focuses on the early and mid-twentieth century Chinese lineages (zongzu) have been restored and how they have changed.

Division of Japanese and Korean Studies
TAKAHASHI Karunori
Assistant Professor
Urban planning, urban and regional studies
The history of the urban planning of the city of Isahaya from the early Edo period to the present day. My research is focused on the urban and regional changes in Isahaya City and its surrounding areas.

TAKAHASHI Yohsuke
Assistant Professor
History of travel in early modern Japan
In early modern Japan (from the seventeenth through the nine- teenth centuries), people of every class were able to travel every- where, though movement was by foot, and might take several months. The purpose of my study is to clarify the historical charac- teristics of travel by analyzing old travel journals and diaries.

Department of Research Projects
TAKIZAWA Katsuhiko
Research Fellow
Religious studies
My research explores the religious situation in present-day Mongolia, especially focusing on the influx of new religions in Mongolia. I am currently working on the dissemination of new religious beliefs in Mongolia, and the impact of these beliefs on society.

Department of Research Projects
TAKIZAWA Katsuhiko
Research Fellow
Religious studies
My research explores the religious situation in present-day Mongolia, especially focusing on the influx of new religions in Mongolia. I am currently working on the dissemination of new religious beliefs in Mongolia, and the impact of these beliefs on society.

Department of Research Projects
TAKIZAWA Katsuhiko
Research Fellow
Religious studies
My research explores the religious situation in present-day Mongolia, especially focusing on the influx of new religions in Mongolia. I am currently working on the dissemination of new religious beliefs in Mongolia, and the impact of these beliefs on society.