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Japan the Horned Islands

JSPS Nordic & Baltic Newsletter (5)

2010 Winter

The main hall of *Joururi* temple (national treasure), Kyoto (see p. 18)

In this issue

Japanese puppets

The newsletter can be accessed at the JSPS Stockholm homepage www.jsps-sto.com

I. Prologue

Study of Western Science

by Hiroshi Sano

Today, Japan is regarded as one of the advanced countries, which are defined as "countries that allow all citizens to enjoy a free and healthy life in a safe environment". However, Japan became a member of advanced or developed countries only 50 years ago (the 1960s). Since the opening of the country to the world in 1868 *(Meiji Reformation)*, Japan went through unstable periods

Before the *Meiji Reformation*, people's life was modest but the society was stable and peaceful under the government managed by the feudal lord, *Tokugawa*. This era is referred as the *Edo*-period, as the capital was located in *Edo*-city (currently Tokyo). It is intriguing that the *Edo*-period has been well maintained for 265 years (1603-1868) without any big social problems.

In Japan, rice has been the limiting factor for human activity. The total population was exactly proportional to the rice production. For example, in the 8th century (*Nara*-period), the rice yield was one million tons and the population was 6 millions, supplying approximately 150 kg per capita annually. In the early 17th century (early *Edo*-period), the yield and the population doubled, being 2 million tons and 12 millions, respectively. In the middle of the 19th century (1850, late *Edo*-period), the yield was 4.8 million tons and the population was 35 millions, providing 140 kg per capita annually. These figures tell us that 150 kg/year of rice were necessary to feed a person, and that, during the 250 years of the *Edo*-period, both rice production and population increased up to 2.5-fold, proving the era to be stable and productive.

Due to the steady and harmonious society, culture and science have much developed. Contrary to the preceding ages, the cultural activities were mostly promoted and sustained by ordinary people or town folks, and reached the peak during the early 19th century (1804-1830). Many Japanese customs were developed and established during this period (*Bunka-Bunsei* era), covering almost all genre of arts, including woodblock prints (*Ukiyo-e*), poems (*haiku*), public entertainments (*kabuki*, *jo-ruri*), ceramic arts (*Kyo-yaki*) and literature (popular works such as the *Shank's Mare Tokaido*). The basic recipes of traditional Japanese cooking were also established and widely published during this time. It is worthy to note that these activities were eagerly supported by ordinary people, whose literacy reached 85% of the population.

Scientific knowledge and technology also advanced. Although science in Japan steadily progressed by modifying Chinese knowledge since the 8th century, research was rapidly raising due to the introduction and adaptation of Western science during the *Bunka-Bunsei* era. The field covered almost all areas, natural history, medicine, calendar, engineering and geography. There were already many excellent specialists in these fields, and recognizing that new and advanced knowledge was available in Europe, they promptly "studied" and adopted it. The mean was mostly through books written in Dutch language, as the Netherlands was the only European country allowed to contact Japan. Consequently, it became a prerequisite for scientists to understand Dutch, and "the study of Western science by means of the Dutch language" (*Ran-gaku*) constituted one of the major academic activities.

Perhaps the most influenced area was medicine. In particular, anatomy was enthusiastically studied, since traditional Chinese medicine had hardly described the structure of human body. A pioneer work was done by a surgeon, *Sugita, Genpaku* (1732-1817) and his colleagues, who translated the *Tabulae Anatomie* (Dutch edition; *Ontleedkundige Tafelen*) into Japanese after working hard in order to breakdown the language barriers. The first edition was published in 1774, and the second edition appeared in 1826 after intensive revision. The publication influenced the medical field, and also much stimulated Western study (*Ran-gaku*). Indeed, science in Japan greatly advanced thereafter, by adopting Western ideas and mingling them with traditional knowledge.

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When I was a college student, one professor of biochemistry told us "Japanese biochemists have very much contributed to the field, but the principle biochemical concept could have been obtained without the Japanese contribution". Perhaps he thought and regretted that modern science in Japan initiated from the imitation of the Western science and advanced by its modification. This statement might be true up to the middle of the 20th century. Today, a much diverse and creative generation of scientists is growing, and I hope that they can develop unique fields in science and easily communicate with researchers from all over the world.

(Director, JSPS Stockholm Office)

II. Reports

JSPS Colloquium

Advances in Cellular Reprogramming & Stem Cell Biology

by Rumiko Mouri

On 5 September, the JSPS Stockholm Office organized a colloquium on the topic "Advances in Cellular Reprogramming and Stem Cell Biology." Venued at the Karolinska Institute (KI) in Stockholm, the colloquium was attended by some 70 people.

In this era when advanced aging and changing dietary habits are proliferating such diseases as Alzheimer's, cancer and diabetes, keen interest is converging on regenerative medicines that can reprogram cells and restore the function of organs impaired by disease.

Riding the crest of this wave of interest, the symposium featured presentations by Prof. Shinya Yamanaka, director, Center for iPS Cell Research and Application, Kyoto University, and five other researchers from the Center. Starting with Prof. Yamanaka's success in generating induced pluripotent stem (iPS) cells from human skin tissue, the Center has taken a world lead in the subject field of research. Along with presentations on advances on the leading edge of iPS cell research, presentations were also delivered on embryonic stem cells and a wide range of cutting-edge work by researchers from KI, Ludwig Institute for Cancer Research Ltd, Umeå University, Lund University, and University of Turku.

Colloquium participants

Some of the research achievements reported will be published in next year's edition of the international journal Experimental Cell Research.

(former Deputy Director, JSPS Stockholm)

JSPS Sweden Alumni Club

Seminar Held in Linköping

by Lisa-Mi Swartz

In front of Linköping Cathedral

In September JSPS Sweden Alumni Club held a board meeting, with following seminar and excursion.

The board discussed 2010 activities. Next SAC will hold General Assembly and seminar on neurochemistry in Stockholm in March. Look out for further information in later. The new fellowship programme for SAC members, called Bridge was also on the agenda. This new programme is introduced to support alumni members to keep in touch with their Japanese network. (More detailed information is provided on p. 22)

After the board meeting, we had the opportunity to hear Prof. Chikara Sasaki lecture on the topic "Japanese Mathematics from Traditional to Modern", which was most interesting giving us a thorough historical introduction to Japanese mathematics. (See p. 9-10 for Prof. Sasaki's seminar summary and impression of Sweden.)

When the seminar was closed, it was time for a guided tour of Linköping. We were shown both old and new landmarks in Linköping, and of course the cathedral. Being one of Sweden's oldest cities there is much history and many stories connected to the town, so the tour was much appreciated.

The day ended in a somewhat more Japanese fashion at one of Linköping's sushi restaurant close to the station, with easy access to transportation home for the out-of-towners.

(Assistant, JSPS Stockholm)

Sweden Alumni Club and German Alumni Club's Meeting with JSPS Tokyo

by Jan Sedzik

From left, Prof. Jan Sedzik (SAC), Mr. Murata Naoki (JSPS), Prof. Heinrich Menkhaus (GAC)

On November 27th, 2009, the Chair of the Swedish JSPS Alumni Club (SAC), prof. Jan Sedzik (presently at National Institute of Physiological Science, Okazaki, Japan) and the Chair of German Alumni Club (GAC), prof. Heinrich Menkhaus, (presently at Meiji University, Tokyo, Japan) visited the Headquarter of the JSPS in Tokyo, for meeting with: Mr. Naoki Murata - Executive Director of the JSPS; Mr. Hisashi Kato, Head, Overseas Fellowship Division of JSPS; Ms. Sawa Koyama, Deputy Head, Overseas Fellowship Division, International Program Department, and Ms. Miami Oyama, Director, International Program Department. This was the first informal visit of the Chair of SAC, in JSPS Headquarter. The following was discussed: a) the new program of BRIDGE Fellowship and its prospect for future, b) budget of the JSPS in the light of the last decision of Japanese government to cut spending, and how such decision may influence the development and activities of Alumni Clubs, in Sweden and in Europe in general; c) and how to improve the program of inviting foreign researchers to Japan and making such program more attractive to them; and how to attract more Japanese scientists to visit Europe and Sweden; d) the problem of "social security" of JSPS Fellows during and after the tenure of their visit is completed. The meeting was very open and detailed, and further study and discussions will be continued. The meeting ended with a delicious lunch in a local Japanese restaurant.

(Chair, Sweden Alumni Club)

Report from Physics & Mathematics Class' of 2011, NTNU Trip to Japan

by [1]Lisa-Mi Swartz och [2]Mikael Lindgren
ex post NTNU Student-report March-April 2009

In the spring of 2009, the main excursion of the physics- and mathematics class of 2011 at NTNU took place. The destination was Japan, and the trip consisted of an educational part and a free-time part. 58 students were participating on this trip, and they were accompanied by two professors, Prof. Mikael Lindgren and Prof. Bjørn Torger Stokke.

Tokyo

We landed in Tokyo, the capital of Japan, which is a surprisingly tourist-friendly town, although the first impression can be daunting. We enjoyed Tokyo Tower and other sights and the shopping districts of Harajuku/Shibuya and Akihabara electric town, with some also trying out the nightlife.

Our first visit was to the Royal Norwegian Embassy, which is placed near the Hiroo station in Tokyo with Innovation Norway and the Norwegian Seafood Council also located at the same address. On the agenda were three presentations from the embassy and Innovation Norway. We were honored to be welcomed by the Minister Counsellor, Mr. Tor Dahlstrøm. He gave an interesting presentation about current political issues and the Japanese economy.

After Mr. Dahlstrøm's presentation we got to learn more about the Japanese culture from Ms. Marit Bruaset who talked about cultural differences between Japan and Norway. She gave us advice of what to think about when it came to polite behaviour and common practice in Japan, which we had great use of during the rest of our stay.

The last presentation was held by Dr. Per Christer Lund, representing Innovation Norway. Dr. Lund introduced us to Innovation Norway, which is a state owned agency, and told us about their purpose in Japan. In addition to this, he spoke about Japanese business culture and the challenges a foreign company can meet when coming to Japan. It was interesting to recall this presentation when we a few days later visited Det Norske Veritas in Kobe,

All in all it was an informative day, and we thank the embassy and Innovation Norway for arranging the presentations and allowing us to visit.

Tokyo University

Our next stop was University of Tokyo to which we were invited to a workshop on the topic of Energy and the Environment at Kashiwa Campus. We met Dr. Masayasu Kinoshita, that lead us to the campus that is a little outside central Tokyu. The workshop was arranged and hosted by Prof. Shuichi Iwata and his students. The day started with an interesting talk by Professor Hiroyuki Yamato on how to organize an on-demand bus system, where one would order a bus instead of having the buses going on a set schedule. The system had been tested near the university.

After lunch we were divided into groups with Japanese students to discuss different topics. The groups had one Japanese and one Norwegian group leader, and although the students were a bit reserved at first, the discussion soon became lively. The academic part of the day was concluded by each group presenting their opinions on their topic. The workshop was a success; with everyone having about the same level of knowledge no one dominated the debate, but everyone knew enough to have an opinion and participate in the discussion. The day was ended with a nice banquet at the university, were we got to know the other students better. We are very grateful to Professor Iwata for practical arrangements and sponsoring of the bus-trip to the campus.

Kobe

Now it was time for us to continue our journey through Japan. We boarded the shining white Shinkansen train that would take us to Kobe. Just as we got used to watch tall, apparently tilted buildings passing by outside our windows as the train was curving through Japanese suburbs, the group leaders proudly announced that we had arrived at our destination.

Visit to Spring8

Spring8

Our first visit went to the synchrotron SPring8 which is the world's largest third-generation synchrotron radiation facility delivering the most powerful synchrotron radiation currently available. The research conducted here includes

nanotechnology, biotechnology and industrial applications. Any user, both domestic and international, whose application is accepted may use this facility.

Our hosts put all their efforts into giving us an interesting and educational day at this gigantic laboratory. When we first arrived we got some minutes to have a look at some amusing toys describing how light with the right frequency can move electrons, why no crystal structures are perfect and so on. Then we got a lesson on the SPring8 facility and on all its purposes for both research and industry. Those of us studying physics had a lot of fun walking inside the synchrotron, considering that we recently before this trip had a lab exercise where we used x-ray diffraction in order to find the lattice structure of an unknown solid.

Himeji-Jo

For lunch we just had to try out the famous Kobe steak. After a quick walk through Kobe city we saw fancy restaurants offering Kobe steaks for prices ranging up to 20 000 yen, before we ended up at a truly tiny and cute restaurant. The overwhelming impression from the first chew on the Kobe steak sent us into a higher state of mind for a moment; Kobe was the expected gastronomic climax.

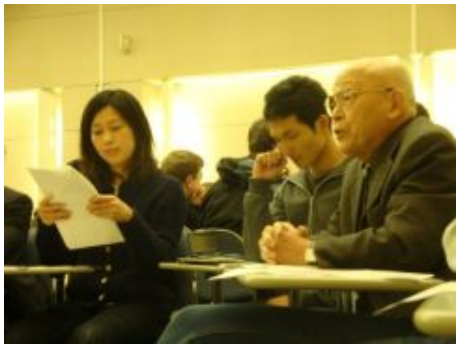
Another highlight during this stay was our trip to Himeji-Jo. Here we enjoyed the Kokoen Japanese style garden and the UNESCO world heritage site; the Himeiji castle, some of us also enjoyed green tea in the ceremony house in the Kokoen garden. We were lucky enough to visit during cherry blossom season, and the architecture and the colour combinations of the castle surrounded by cherry trees were stunning.

DNV, Panasonic and Asahi Broadcasting

The next day we started with a visit to Det Norske Veritas, DNV, which is a global provider of services for managing risk. Here we were given a very interesting talk by Mr. Johan Petter Tutturen concerning their business in Kobe and the challenges foreign companies face in Japan.

Afterwards we moved on to Osaka, where Mr. Maeda from DNV had arranged for us to visit Asahi Broadcasting Corporation (ABC) as well as Panasonic. At ABC, we were given a guided tour of their brand new headquarters. The tour gave us an insight in all the efforts that goes into creating a television show. Our tour included a television set and the store-room for set pieces as well as the television control room and the radio section. Not many of us been had considered what lay behind these things we usually take for granted, and just how gigantic an organization a good broadcasting company requires.

The day was rounded off with a visit to Panasonic Center in Osaka. There we were presented with Panasonic's technological solutions for today and tomorrow. Again a very interesting visit and we were pleasantly surprised by Panasonic's concerns for the environment and global climate. During the tour we were all wearing very practical earphones, enabling us to hear our guides. The solutions we were presented were both interesting and inspiring.



Meeting with hibakusha (atomic-bomb survivors)

Hiroshima

Our next stop was Hiroshima where we met again with Dr. Motoyasu Kinoshita who took us to the memorial park where we all assembled in front of the atom-bomb dome. After a short guided tour in the park the entire class sat down in a conference room inside the peace-museum. Dr. Kinoshita had arranged for us to meet three atomic-bomb survivors. The classes split into three groups and listened to the survivors tell their story from the Hiroshima bombing. This was by far one of the strongest and most powerful experiences during the entire field-trip to Japan. It was also very educational, as our previous historical education largely has focused on the European part of World War II.

To mark the occasion we had small gift ceremony and Mr. Eirik Vilpponen held a short speech.

After the program, half the group chose to go to the island of Miyajima to enjoy the famous floating torii and savouring the Japanese atmosphere.

Kyoto

With a lot of thoughts and impressions on our minds after some intense days in Hiroshima, we travelled to Kyoto.

Arriving in the cultural centre of Japan was special for all of us. Everyone immediately appreciated the rectangular structure of the city streets; Kyoto was a pleasure to navigate in.

In the morning we went together to Kinkaku-ji, the elaborate Zen temple named the Golden Pavilion, and later to Ryoan-ji, the famous Zen stone-garden. Both were magnificent sights, and bathed in sunlight the Golden Pavilion is really something to remember. Ryoan-ji was a relaxing place where we spent much time, especially gazing at the infinite truths within its riddle of rocks and sand - the meditational and abstract pattern of stones at the center of the garden. Many of us spent the evening in one of the city parks, enjoying the cherry blossom trees and the fine weather.

The next day some of us had to travel back to Tokyo, while most of the rest rented bikes and went to Arashiyama, at the western outskirts of the city,. Here we relaxed and enjoyed the summer temperatures by the river, after a visit to the monkey park in the hills. From a bikers view the cultural and historical aspects of the city became even more apparent, and we got a feeling of why Kyoto is known as typical Japan.

Osaka

This concluded the all-organized part of the trip. The group split up, allowing people to travel the country on their own, still most of us travelled together to Osaka since we had only visited the city briefly earlier and considered Osaka a city worth seeing.

Fourteen of us were lucky enough to get tickets for the final day of the March Sumo Tournament. The best candidates competed last. Before every game there were different ceremonies where the sumo wrestlers drank sake and scared the bad spirit and the other candidate. When they did not compete, they walked around in *setta* (Japanese sandals) and *yukata* (cotton kimono). It was all very exciting. I was impressed that they were very resilient, light and so strong. Sometimes the size did not matter at all, when a wrestler only half the size of his opponent won the game.

Nara

The last stop in Japan was Nara, a very beautiful city, especially since the cherry blossoms bloomed and the weather was perfect. Nara has an interesting history, being the capital of Japan from 710 to 784, with eight temples, shrines and ruins, collectively forming Historic Monuments. One of them is Todai-ji with the world's largest statue of the Buddha. In the back of the temple there is a hole in one of the great pillars, and it is said that if a youth makes a wish and passes through, the wish will come true. It looks small, but you would be surprised by how large people who are able to climb through. The Sika deers that we had also met in Miyajima, were present everywhere while we discovered the lakes, forest and hills.

The trip to Japan is something we will all remember. We have had very interesting visits to science centres, the embassy, a broadcasting network and different companies. On the way, we have also met wonderful people, tasted incredible food, and experienced a lot of new thing that are very different from our own culture. The wonderful atmosphere, the exciting culture, the warm people and their friendliness that made us feel so welcome, are just some of the aspects we are going to remember for life.

([1]Assistant, JSPS, [2]Professor, NTNU)

New S&T Budget and Policy

Since Japan has a new government there have been many speculations about the future policy and budget for S&T domestically and regarding international co-operation. Those interested can find status reports on the National Science Foundation's Tokyo Regional Office web-page, which periodically reports on developments concerning research in Japan. http://www.nsftokyo.org/trm.html

(Lisa-Mi Swartz, JSPS Stockholm office)

III. Science & Culture

Lesson from "Paddy Field" – Continuation

by Jan Sedzik

Paddy field between Okazaki and Nagoya, when traveling by Rapid Limited Express (快速特急,) of Meitetsu Line

Prof. Hiroshi Sano, Director, JSPS Stockholm Office in a very interesting prolog, Paddy Field (JSPS Nordic & Baltic NewsLetter No., September 4, 2009, page 2) presented his insight about "paddy field" from perspective of Japanese observer. Very unusual observations supported by the numerous literature citations. What about, if at the "paddy field" will look a foreigner? What he will uncover? I have spent in Japan 4 years in total, I have seen these paddy fields numerous times, but I have to confess that I have not realized the deep lesson which can be derived from the simple, small paddy field. 1 corn of rice when planted on paddy field, gives at harvest 1000 corns! The overall population of Japan increased from 93 million (1960) to 127 million (2009); at the same time the annual production of rice decreased from 30 million tons to 9 million tons, but there is no symptoms of starvation! Japanese people nowadays consume 61 kg per person a year, vs. 115 kg rice in 1960 (The Japan Times, Oct 6, 2009, p. 3).

Paddy fields are the most typical feature of all rice-growing countries of Asia, but they can be found also in the European Union regions such as Piedmont of Italy, or the Camargue in south France or even in Caribbean, Artibonite Valley in Haiti. Paddy fields are usually built adjacent to the naturally found in flat/plain terrain: rivers or marshes, as this is typical scenario for Japan. In other countries paddy fields are constructed on steep hillsides like in China, Philippine, Bangladesh. To grow rice, the paddy fields require large quantities of water for irrigation. In Japan the paddy fields are represented by the kanji symbol 田, which is read as ta (da). There is tremendous progress in agriculture, physical work human is exchanged by machines, what before took one day for few people, today it takes one hour, and for one person. In more advanced situation, the GPS system can be linked to the robots, it will be enough to pres the right button, and machines will do everything. In XXI century no human are really needed to cultivate the land.

What is important lesson from the paddy field? Over the hundreds of year, there was developed a strong bond of collaboration between the nature, and between farmers. In Japan, the agriculture land is very precious, so every available piece of land has to be used wisely. Please note that there is no competition between farmers, all of them have only one goal, to produce enough good grains to feed family and neighbors and by no means to become rich! It is also unusual, but rice farming household which income comes only from agriculture earned in 2007 an average ¥4.7 million a year (for comparison foreign researcher holding Ph.D. title and coming to Japan as JSPS Post doc Fellow, is getting ¥4.4 million a year, without tax and other social security payments).

Imagine per moment that there will be competition for land, competition for access to water, competition for potential customers. Indeed, it would lead to real disaster and disturbances.

Please look at the other sites, for example "paddy fields of electronics", for example sacred places like Akihabara (in Tokyo), Nipponbashi (in Osaka). There are products mainly Japanese companies: Panasonic, Fujitsu, Canon, Nikon, Sanyo, Sharp, Kyocera, Pentax, Sony, Casio, JVC, Nikon, Mitsubishi and many, many other. All of them are producing virtually the same products like: cameras, computers, home appliances and much other electronic stuff. It is also unusual to observe that on the market all of them are doing pretty well. Assume for moment that to this well working economy developed for years, it will be introduced element of competition, and companies instead of collaborating will compete with each other. Of course the strong companies will stay, and other will go bankrupt.

For older readers, it is perhaps still in their memories the

competition in Europe between ideology of East (socialism) and the West (free market economy), the competition between ideology of the central planning vs. free and unrestricted market economy. The big country like USSR was ruined and collapsed (1991) and 27years later (2008) another big power, USA, was on the brink of economical and financial collapse.

Another question we can ask is: what is the lesson from paddy field, when looking on science? In Japan, the collaboration is important way of doing business as well as research. Japan has a long history of collaborative research. JSPS was established in 1932 as a non-profit foundation through an endowment by Emperor Showa (in kanji writing 昭和天皇,). He was the 124th Emperor of Japan reigning for 63 years, this is so far the longest reign in the history of Japan (as well in other countries), which encompassing a period of difficult and tremendous changes in Japanese society. One of the first decisions of the JSPS was organization (in 1933) of the University-Industry Cooperative Research Committee. In 1959 there was launched Fellowship program for Young Japanese scientists visiting other countries and year later program included invitation of foreign researchers to Japan. The US-Japan Cooperative Science program and Cooperative program with South Asian countries, the JSPS Research Station in Nairobi, and opening the Liaison JSPS Office in Stockholm, in 2001. The JSPS has initialized also unique program to organize its former alumni in so called Alumni Clubs, and offering club members possibilities of visiting Japan to refresh the previous contacts and continue collaboration. All of this was made on the fundamental principle of collaboration/cooperation and not on rules of competition for profit. Indeed this is an important lesson from "paddy field" that the tremendous success can be achieved by collaboration/cooperation and not by competition.

(Chair, Sweden Alumni Club)

Lecture at a Seminar of the Sweden JSPS Alumni Association
Japanese Mathematics from Traditional to Modern

by Chikara Sasaki

A seminar for the Sweden JSPS Alumni Association was organized at Linköpin University on September 25 (Friday). I was honored to have been invited to the seminar and delivered a lecture entitled "Japanese Mathematics from Traditional to Modern." I would like to write briefly its summary and my intention of the lecture, as well as a general impression of my visit to Sweden of this time.

I was born in the Northeastern district of Japan and studied mathematics at the Faculty of Science of Tohoku University and then its Graduate School. After that I went to the USA and was enrolled at the Graduate School of Princeton University from where I obtained my Ph. D. degree in History. Then I was granted a generous financial support from the JSPS. My Ph. D. dissertation was "Descartes's Mathematical Thought." It was published both in English and Japanese in 2003 with Kluwer Academic Publishers in Dordrecht and the University of Tokyo Press in Tokyo, respectively. Thus, I am an expert of the history of European mathematics. This spring I completed a big volume of the general history of mathematics, to be published with Iwanami Shoten, Publishers, in Tokyo in the early spring of 2010. I am now planning to write a book both in Japanese and English with the title Japanese Mathematics from Traditional to Modern, so I was very pleased to accept an invitation to talk about the history of Japanese mathematics in Sweden.

Prof. Chikara Sasaki

Japan has about 1000 year history of a satellite civilization of China and then adopted a modern Western civilization for about 150 years. Its transition was quite drastic. The style of mathematics was more clearly

transformed from traditional Japanese to modern Western.

Before the Edo period, Japanese mathematics was in quite a low level. But at the end of the 16th century, some important Chinese books on mathematics were imported to Japan through Korea. And with the flowering of the rather peaceful Tokugawa regime, a high culture of indigenous mathematics began to be created. The traditional mathematics during the Edo period was called *wasan* (*wa* means Japanese and *san* mathematics), and it is characterized as the most advanced form of traditional Chinese mathematics. Especially the government officer Seki Takakazu (?-1708; sometimes his year of birth is ascribed to 1642 as Isaac Newton's, but this is a kind of historical fabrication.) reformed Chinese mathematics into a higher form of genuine Japanese mathematics, i. e. symbolic algebra named *tenzan jutsu*. The foundations of mathematics which guaranteed the later development of *wasan* were thus formed in the second half of the 17th century.

Soon after the arrival in the Edo Bay of Commodore Perry of the United States of America in 1853, politics and situations of culture in feudal Japan began to change. Toward the end of 1855 the Tokugawa government opened Nagasaki Navy Training Institute to teach Western mathematics for the art of navigation to Japanese officers. In 1857, the first monograph on Western mathematics was published under the title Yôsan Yôhô (The Use of Western Mathematics) by Yanagawa Shunsan (1832-1870), an expert of Dutch studies from Nagoya. In this small book, four operations of basic arithmetical calculation was very easily rewritten into operations in Tenzan algebra of *wasan*.

In 1872, the fifth year of the Meiji period, the new central government issued *Gakusei* (School System) in which the teaching of Western mathematics was ordered in elementary education of new Japan. In other words, from the very beginning Western mathematics was determined to be accepted in modern Japanese education. When the University of Tokyo opened in 1877, Kikuchi Dairoku (1855-1917) became the first professor of mathematics. He received a good education at the University of Cambridge and his mathematical background was fundamentally for British gentlemen. Therefore, the transformation in mathematics from traditional Japanese to modern European was drastic and the history of Japanese mathematics has provided us with a typical case for the civilization change in Japan. In my opinion, Japan has had a very interesting place between the Eastern and Western civilization and the history of mathematics has shown it extremely clearly.

After a couple of impressive days in Linköping, I took an express train to Stockholm. There I enjoyed visiting the Royal Palace where Descartes died in 1650 and a museum dedicated to the Ship "Vasa", which sank in 1628, soon after having set its first voyage going to fight for the Thirty Years War.

I express my heartful thanks to Dr. Ma Li for the invitation of me to Sweden, Dr. Göran Thor, who kindly organized a day of excursion in Stockholm for me, and staffs of the Stockholm Office of the JSPS.

(Professor, University of Tokyo)

Lecture at a Seminar of the Finland JSPS Alumni Association

Design of Porous Glass from By-Products in Materials Processing

by Toshihiro Tanaka

Introduction

Although a large amount of slag discharged from iron & steelmaking industries as well as waste melting furnaces has been recycled as construction materials, new processes for producing value-added materials have been required to promote the recycling of slag as well as waste glass. It is, however, very difficult to develop value-added materials from slag or glass because glass or slag is regarded as having low value of "Exergy" which indicates how valuable a material is. Exergy is defined in the following equation :

$$Exergy = \Delta H - T_0 \cdot \Delta S \quad (1)$$

where ΔH : the enthalpy, T_0 : room temperature, ΔS : the entropy of a material.

When a material has large ΔH and small ΔS, the exergy of the material is evaluated to be large. This means that the material is regarded as highly valuable and it is useful. Glass and slag are generally stable multi-component oxide materials. Oxides are more stable than metals, and thus the enthalpy of the oxides is less than that of metals. In addition, glass and slag are mixtures of many cations and anions, which means that their mixing entropy is very large. Therefore, glass and slag have very small exergy. This

suggests that it is very difficult to create value-added materials from such glass and slag with low exergy in any recycling processing.

We assume in the above discussion that materials have infinite size and uniform structure. If "surfaces" or "interfaces" can be incorporated into a material structure, the material may gain additional valuable functions. For example, when we make porous glass or slag materials as shown in Figure 1, we can apply them for various ways owing to their surface phenomena, such as filter, adsorbent etc. The purpose of the present paper is to describe some examples of producing porous glass even from slag or waste glass.

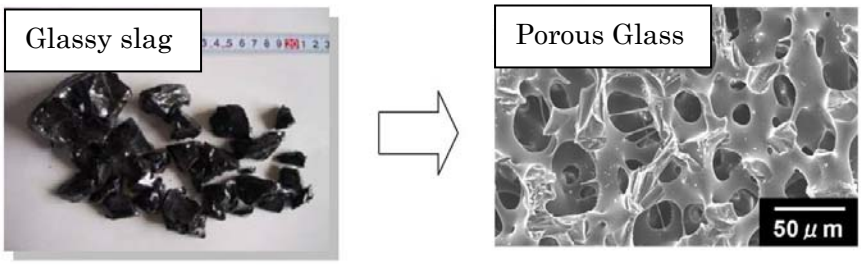


Figure 1 Making porous material from glass or slag with low value of exergy

1 Porous glass materials made by spinodal decomposition

Phase separation in glass refer to a phenomenon in which a single glass phase separates into two or more glass phases with different compositions in heat-treatments. Some experimental studies[1,2] have been carried out on the occurrence of the phase separation in various oxide systems. To create value-added functional glass materials using silicate slag discharged from metallurgical and ash melting processes etc., the authors have focused on and investigated the phase separation in multi-component oxide glasses containing fundamental components in slag[3,4]. For instance, spinodal decomposition as one phenomenon of phase separation forms interconnected microstructure in glasses, and porous glasses are produced by dissolving one of the separated glass phases with acid solution as described in Fig.2. Since the porous glasses have three-dimensionally interconnected porous structures, they are expected to have widespread applications, for example as filters to trap impurities in water. Thus, slag may be transformed into value-added functional glass materials using the phase separation in oxide glasses.

To generate phase separation in glass from slag, the composition ranges for metastable immiscibility as well as spinodal decomposition need to be evaluated for multi-component slag systems. For multi-component oxide systems such as slag systems, it is difficult to predict metastable immiscibility empirically. Therefore, it is necessary to perform a thermodynamic evaluation to determine the phase separation in multi-component oxide systems.

The authors attempted to predict the composition ranges for metastable phase separation and spinodal decomposition in the SiO_2-CaO-MgO-5mol%Na_2O system by calculating the composition dependence of the Gibbs energy curves in the super-cooled liquid phase as shown in Fig.3. In addition, Figure 4 shows one example of micro-structure in spinodal decomposition in the SiO_2-CaO-Al_2O_3-Na_2O-B_2O_3 system and porous structure obtained from leaching of one of the separated phases in the spinodal decomposition.

Figure 2 Concept of formation of porous glass materials from spinodal decomposition

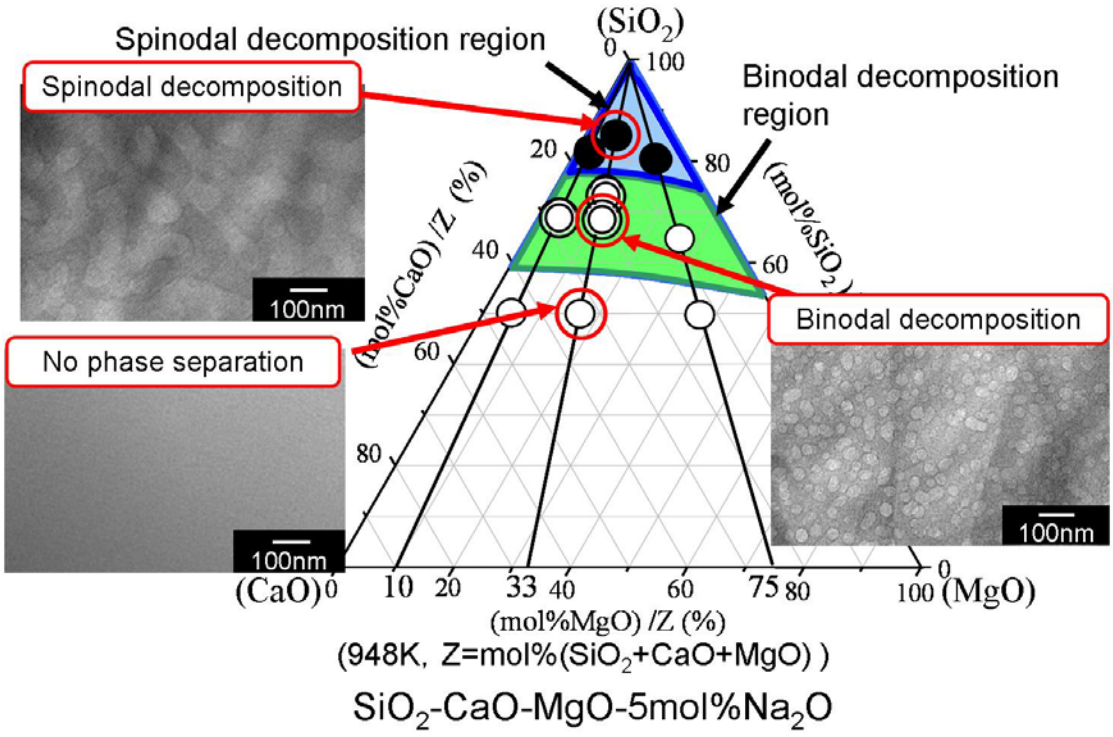


Figure 3　Comparison of thermodynamic calculation of phase decomposition regions with the experimental observation of micro-structures in various composition regions in SiO_2-CaO-MgO-5mol%Na_2O systems

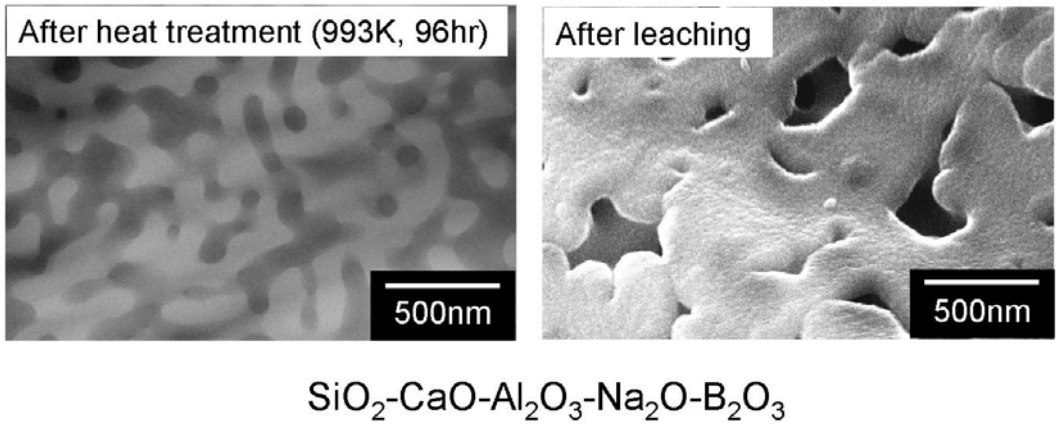


Figure 4　TEM observation of micro-structures of spinodal phase decomposition and porous structure obtained from leaching of one of the decomposition phases in SiO_2-CaO-Al_2O_3-Na_2O-B_2O_3 systems

2 Porous glass materials made by hydrothermal reaction

To make porous materials from slag or glass from the view point of no emission of CO_2 and low energy consumption, the authors have focused on the application of hydrothermal reactions to produce functional materials. Hydrothermal reactions occur for liquid H_2O under high pressure, that is to say, water at 120～350 oC as shown in Fig.5. This temperature can be obtained from exhausted heat coming out of iron & steelmaking processes or a waste melting furnace etc.

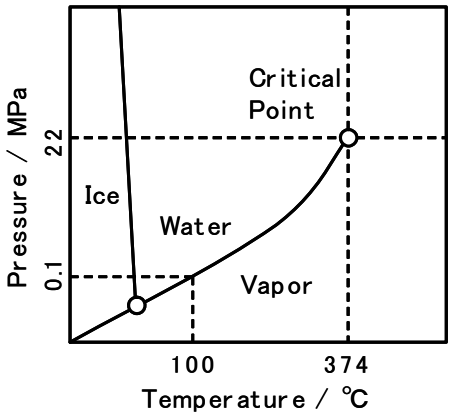


Figure 5 Phase diagram of H_2O

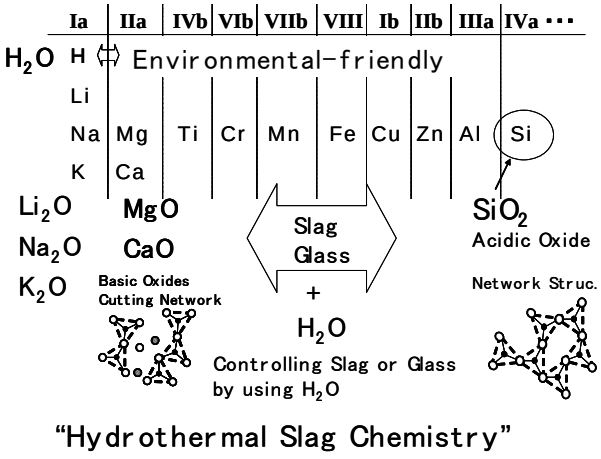


Figure 6 Concept of "Hyrothermal Slag Chemistry"

The application of the hydrothermal reactions is an environmental-friendly method for coping with issues of recycling slag as Jung, Hashida, Ishida, Yamasaki et al. have pointed out [5] and they have already applied the hydrothermal reactions to solidify slag powder with the use of some additives. The microstructure of molten slag, which mainly consists of a SiO_2 based network structure, is controlled by the addition of alkaline or alkaline-earth oxides to change the chemical and physical properties of molten slag such as basicity and viscosity in iron & steelmaking processes at high temperature. This scientific field refered to as "Slag Chemistry". Under hydrothermal conditions, the microstructure of slag might be controlled by H_2O and we have named this new approach "Hydrothermal Slag Chemistry" as shown in Fig.6[6].

3.1 Sintering of slag or glass powder at low temperature around 2500C by hydrothermal reaction

We have used two kinds of experimental apparatuses for hydrothermal reactions. One of them is a "Hydrothermal Hot Pressing (HHP)" machine, and the other is a normal autoclave. Figure 7 shows the schematic diagram of a hydrothermal hot pressing machine designed by Yamazaki et al.[5]. After mixing some amounts of water and slag powders, we set a sample between the pistons in the autoclave cylinder of the hot pressing machine. We applied high pressure of about 40MPa mechanically to the sample, and then heated the sample up to 250-350 oC to react the materials in hydrothermal conditions.

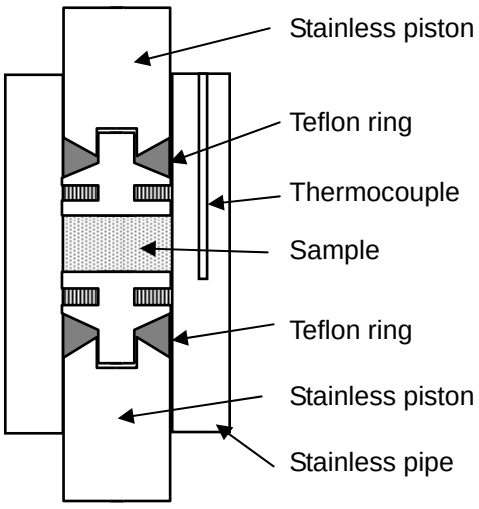


Figure 7 Schematic diagram of Hydrothermal hot pressing (HHP) machine

Figure 8 shows an example of the change in microstructure of SiO_2-Na_2O based glass powders with the addition of H_2O during hydrothermal reactions. As the holding time under the hydrothermal condition (300 oC, 30MPa) increased, it was found that the glass particles reacted with H_2O and the diameters of the particles decreased gradually.

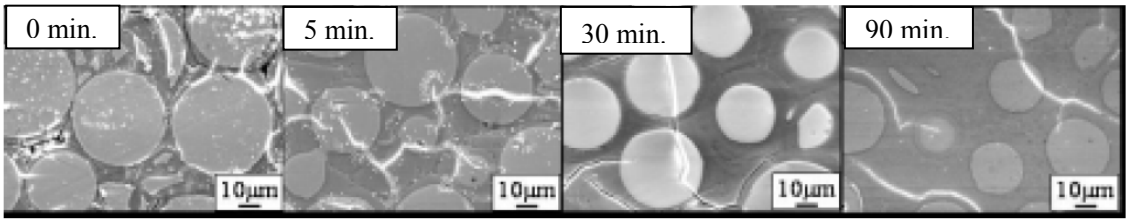


Figure 8 Progress of hydrothermal reaction of glass particles with H2O

Figure 9 shows two examples of solidified slag in dense (a) and porous (b) ceramics from hydrothermal hot pressing of blast furnace slag.

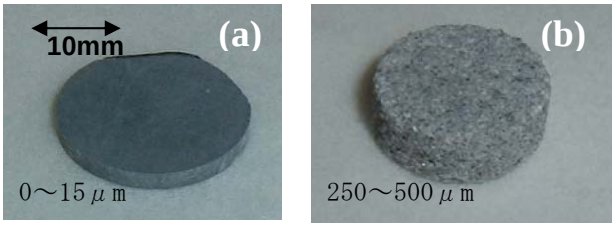


Figure 9 Examples of solidified slag after hydrothermal hot pressing of fine powders (a) and course powder (b) of blast furnace slag

3.2 Emission of H_2O from glass containing H_2O prepared by hydrothermal reactions to create porous glassy materials.

Figure 10 shows an example of microstructure in glass material (63mass% SiO_2-27mass% Na_2O-10mass%B_2O_3) after hydrothermal hot-pressing (a) and the material after H_2O release (b)[7]. In the sample after hydrothermal hot-pressing, H_2O dissolved into glass particles to form a reaction phase with H_2O around the glass particles. The sample after H_2O release has a porous structure as shown in Fig.15(b).

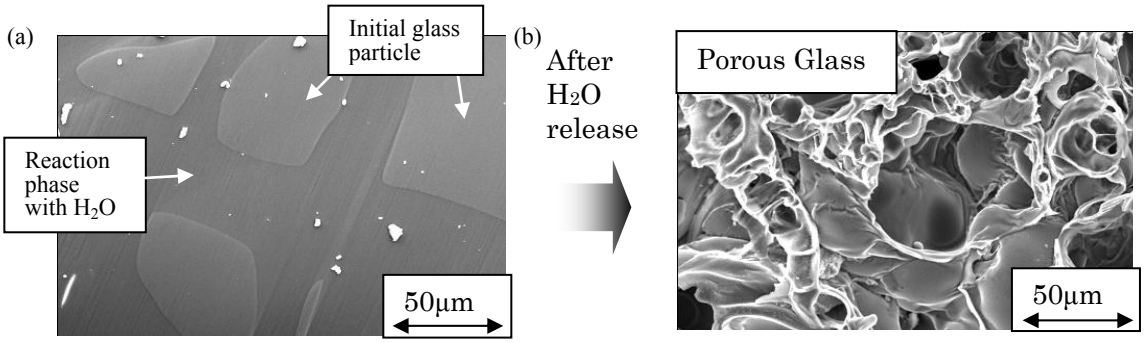


Figure 10 SEM images of (a) microstructure in glass materials after hydrothermal hot-pressing and (b) porous structure after water release

Matamoros-Veloza et al. [8] introduced water to waste glass mainly composed of SiO_2, Na2O and CaO by hydrothermal synthesis and obtained a hydrated glass compact. When the prepared glass was heated, it started to expand and foam around 923 K with the release of water and became a porous material. For the practical use of foaming glass, however, a foaming behavior at a lower temperature would be beneficial. For the fabrication of low temperature foaming glass, the above-mentioned 63mass%SiO_2-27mass%Na_2O-10mass%B_2O_3 glass, which exhibited adequately low glass transition temperature around 453K after the hydrothermal treatment [9], was subjected to hydrothermal treatment at 523 K and its water releasing and foaming behavior with heat treatment at 423 – 673 K was investigated [9,10].

Finally, we observed macroscopic expansion, i.e., foaming, of hydrated glass for samples heated in excess of 473 K as shown in Fig.11. Higher firing temperature resulted in a larger expansion of the glass materials. Here, a low temperature foaming was successfully achieved at around 473K [9,10], which was a lower temperature than the foaming temperature previously reported by Matamoros-Veloza et al. of 923K [8] using soda-lime silicate glass. The lowest apparent density of 0.25g /cm3 was obtained when the heat treatment was conducted at 673 K.

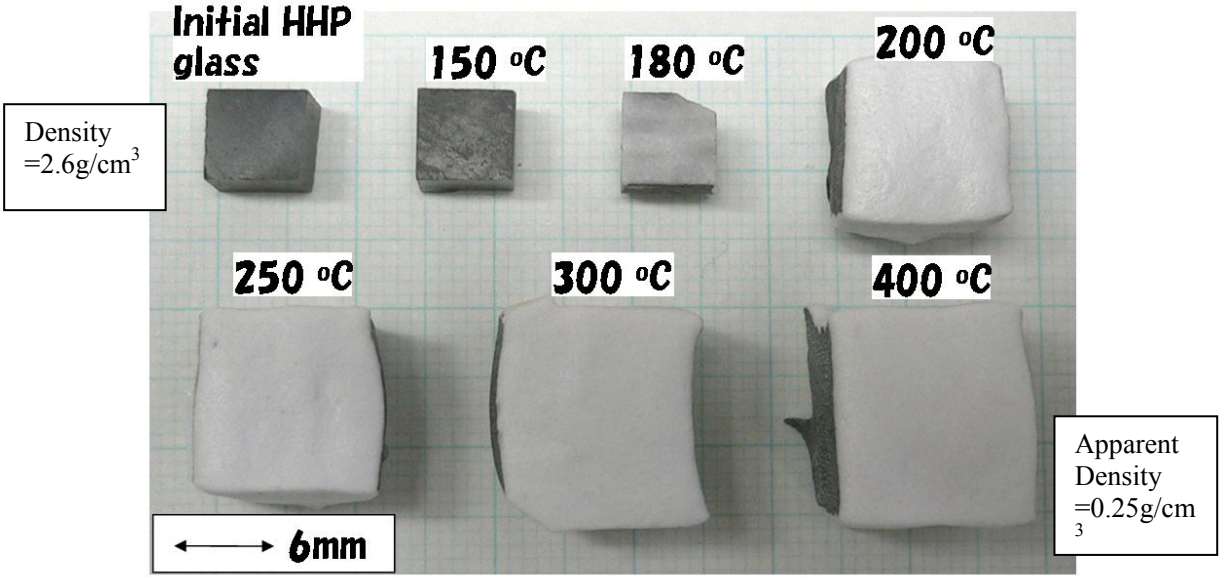


Figure 11 Expansion of glass containing H_2O by Hydrothermal Hot Pressing after re-heating at various temperatures

4 Conclusion

Some examples were explained to produce porous materials even from slag or glass. From the view point of "exergy", it has been considered very difficult to convert slag or glass to value-added materials; however, if we could convert slag or glass to porous materials, then we could have a new way of using them in an eco-society. In particular, if we could use H_2O in slag or glass as an "oxide", we may be able to develop a new technology or materials. The use of a hydrothermal reaction may be one of approach to achieve this goal.

(Professor, Osaka University)

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Lost in Transmission

by Akira Nakajima

Communication is the transmission and sharing of information. This all too apparent fact becomes not so clear cut as it may seem when we take into account the question of the filter that the communicators at each end employ when they send and receive. Both sides have a certain bias when they select what to send and when they interpret what they receive.

A good example is when a full autumn moon prompts a man to say "Isn't it beautiful?" to which the woman next to him responds and says "Yes, isn't it so." This of course is in a Japanese setting. On surface, the two have come to share the fact that the moon they were admiring was indeed very pretty. In reality, the true message they exchanged was that they cared about each other.

One side chooses an affirmation and an interrogation as the vehicle for the message to be transmitted and the other side responds positively. A negative response would naturally be to say something like "I'm hungry."

Why does this subtle kind of communication work? Because both communicators share the same filter with which they process the communication. This filter is above all cultural.

Pierre Daninos in "Les Carnets de Major Thompson" contrasted the British understatement against French exaggeration. The same incident could become a slight inconvenience or a major catastrophe depending on this or that side of the English Channel. If the filters are not the same, the message will not go through.

If misunderstandings are just a source of a pleasant joke, one could ignore them altogether. But men act on and react to the information they receive and if they are misinterpreted this could well give rise to a genuine catastrophe. For the sending side as well, a message prone to misinterpretation is not a good message and will not serve its purpose. This is why we ought to be mindful of the filters that intercede when we either deliver or receive a communication.

These filters vary according to age groups, regions, individual interests, but they are also different because of cultural differences. Cross cultural communication occurs daily in this global world, and one cannot emphasize too much the importance of the need to acknowledge cultural differences. A mere recognition that we are different culturally would help a great deal.

Additionally, we need to be mindful of various filters when we go about in the business of translation. A mere mechanical translation that ignores the context runs the risk of being incomprehensible and accordingly the cultural as well as factual context should be borne in mind for the message to be sent with the minimum of bias. Translators should live in two worlds and should not hesitate to adjust the message that travels between these two worlds so that it will not be misinterpreted by the recipient's cultural filter.

A proviso, however, to complement the story. Sometimes, the message is a mixture of multiple sentiments tossed together in one line that any amount of translation will not suffice to decipher. For example, on a theatrical scene an actor would shout "Mother!" and this would mean a whole number of feelings bunched together in one word. Likewise, you cannot translate poetry. If you are fond of foreign poems, a good idea would be to learn about the language in which they are written. In this way we would come to avoid some loss in transmission.

(Japan's Ambassador to Sweden)

Festival (5)

Sapporo Yuki Matsuri – Snow Festival

by Lisa-Mi Swartz

The Sapporo Snow & Ice Festival is one of the largest winter events in Japan and an event not to be missed. The festival takes place in early February for 7 days. During the festival hundreds of snow and ice sculptures are created in three areas of Sapporo.

Odori Koen - Sapporo's central park & playground which hosts the artistic snow sculptures is the festival's launching place, and holds much of the live music and other entertainment. This section is open all day and illuminated each night.

Satoland - the only site not located in the center of the city. Satoland especially caters to the children with its gigantic snow-slides.

Susukino - the nightlife area which hosts the ice festival, where sculptures are carved using chainsaws and other power tools. Open day and night but best viewed after dark.

The Sapporo Snow Festival began spontaneously in 1950. A group of 6 local high school students started to build snow sculptures in Odori Koen. The activities of the students gained publicity in the local media, and many locals took their enthusiasm to heart. It only took a couple of years for the festival to become extremely popular in the local area. In 1955, soldiers from the Makomanai base of the newly established Self-Defense Force also began to participate. Initially this was done partly in order to give the men something to do, but it was quickly understood that making the sculptures was proving to be an excellent team work building exercise and a good way to test the leadership. The base itself, became one of the main festival sites. The involvement of the JGSDF was probably what secured the festival's long term success, as it was the soldiers who first built the now famous giant statues, and the wonderful snow slides for children and also the theme sculptures which helped the festival grow, and it was largely due to these attractions that the *yuki masturi* became widely known throughout Japan by media. In 2006 the Makomanai base site was replaced by Satoland. Community groups are now organizing all of the Satoland site, so the military only provides technical support and some assistance with logistics, while continuing to provide the large scale support still needed for the Odori Koen site.

In 1972 Sapporo Snow Festival coincided with the 11th Winter Olympic Games. The giant sculptures received enormous television coverage, and almost overnight the festival suddenly became known internationally. To uphold the great interest, the importance of making sure that the festival was professionally organized and managed was quickly understood. Sapporo City consolidated the international interest by starting the International Snow Statue Competition in 1974, which has become one of the most popular sections of the festival. There are now about twenty teams from as many countries participating each year, even from places such as Australia and Singapore. This year, 2010, Sweden was represented by the sculpture *Mormors dockskåp* (Grandmother's doll-cabinet) and Finland by the sculpture "Sauna, sisu and Sibelius".

Today the festival has grown to become the biggest winter attraction in Hokkaido drawing more than 2 million visitors each year. If you have the opportunity to go to Sapporo at this time of year, make sure you take it.

(Assistant, JSPS Stockholm Office)

Ice fantasy

Sound and light

Ice slide

Miso Soup

by Elisabeth Sano

During the 7th century, Buddhist priests brought from China to Japan the progenitor of today *miso*. It originated in China about 2500 years ago and it was called *chiang*. Later Japanese craftsmen transformed *chiang* into *miso* and soy sauce, which are now very different from the Chinese product.

About 700 years ago, samurai warriors took power from the nobility. They created a new national cuisine reflecting the frugality and simplicity of their life-style. *Miso* soup became popular in Japan and it appeared with grains on the table at each meal. Cooked vegetables, tofu and sometimes fish and shell-fish were also part of the meal. *Miso* has long been important in Zen temple and tea ceremony cuisine, which represent the two main schools of Japanese haute cusine.

The German scientists and traveler, Englebert Kaempfer, first described the methods for making *miso* in his book, *"Exotic novelties"* written in 1712. He lived in Japan from 1690 to 1692. He was the first Westerner to study and write about the soybean and soybean products. Through his works, the Western world could understand its utilization as food. In 1775, the Swedish doctor and botanist, Carl Thunberg wrote about *miso* in his book "Travels in Japan". But the first Westerner who studied the process of making *miso* scientifically was a German, Oscar J. Kellner. He published a detailed article on the subject in 1893.

Dr. Shinichiro Akizuki wrote in 1965 a book called *"Physical Constitution and Food"*. He was born with a weak constitution and has devoted his career to researching the use of food as preventive medicine. He continually applied the findings of his experimentation and research to his own life thus trying to develop a strong physical constitution. His diet consisted mainly of *miso* soup and brown rice. He experienced a steady rejuvenation, physical strength and resistance to disease.

Now *miso* soup is always served in the traditional Japanese breakfast. It usually accompanies a bowl of rice or rice porridge and it is garnished with *nori* (sea laver), *umeboshi* (salt plum) or *tsukemono* (pickled vegetables).

For many Japanese, the aroma of *miso* soup evokes the warm feeling of home cooking just as a loaf of home-baked bread coming right out of the oven would do to most Westerners.

A Japanese proverb says that a bowl of *miso* soup each day keeps the doctor away. *Miso* is valued as a medicine. It is said to cure colds, clear the skin, improve metabolism. In East Asian nutritional source books, basic foods are divided into two categories, alkaline and acidic. *Miso's* alkalinizing and cleansing effects are believed to be very important in the development of an alkaline constitution which is thought to promote resistance to disease and to neutralize the effects of smoking and air pollution.

Some people trust that *miso* soup is the perfect coffee substitute. It contains abundant nutrients, it wakes up the nervous system gently and effectively by alkalizing the blood stream and providing a steady flow of energy throughout the morning.

*

Miso soup is quick and easy to prepare and almost any ingredient can be used in it. A typical serving is very rich in essential nutrients. The tofu (soybean curd) and *wakame* (sea weed) give abundant calcium and minerals, the fresh vegetables provide vitamins and the *miso* supplies salt.

One can easily prepare a different type of *miso* soup everyday of the year by using seasonal, fresh vegetables and by choosing and combining different types of *miso*. Here I introduce a basic *miso* soup. You can add any vegetable you like, carrots, leeks, potatoes, onions, green beans etc.

Tofu and Wakame Miso Soup

Photograph 1

Ingredients (photograph 1)

- 500 g fresh tofu cut into small cubes
- 100 g fresh or reconstituted wakame cut into small pieces
- 2 – 3 tablespoons miso of your choice.
- 1/4 teaspoon salt
- Green onions, grated ginger, red pepper.

Soup stock (dashi)

- 1 liter fresh cold water, 15 – 20 cm kombu (dried kelp) - optional
- To make the soup stock, place the kombu in a large saucepan, cover with cold water and bring into a boil over high heat. When it starts boiling, remove the kelp immediately and keep it for another use.

Methods

In a pan, bring the basic soup stock or water to a simmer and season with salt (at this point add any vegetable you like and cook for a while. Add the chopped *wakame* and cook over low heat for 2 to 3 minutes. In a bowl, cream the *miso* with a little of the hot broth and add it with the tofu to the saucepan. Cook the soup over low heat for another minute but do not boil it. Serve hot, garnish with sliced green onions and/or grated ginger or with a sprinkling of red pepper (photograph 2).

Photograph 2

Note: Overcooking spoils the flavor of the *miso* and also destroys microorganisms and enzymes which aid digestion.

To use the *kombu* (kelp), slice and fry it in a little sesame oil. Add 1/2 teaspoon soy sauce, mix well. Serve hot or cold on rice.

Nature Watch (2)

Sakura

Fujiyama, Sakura and *Geisha* have been symbolic words to represent Japan for foreign visitors for over 100 years. Among them, perhaps the only word still valid today is *Sakura*, or cherry blossom, which gives visitors a great impression and pleasure at the time of flowering in spring.

The common *Sakura* (*Somei-yoshino, Prunus yedoensis*) seen everywhere in Japanese towns was created by breeders in the late 19th century after crossing two conventional varieties. The resulting original stock or clone is said to be only one. This explains its synchronous blooming, which has made people organize and enjoy the *Hanami* (flower watching) festival (see an article by Lisa-Mi Swartz in the No. 3 issue of this journal).

In nature, there is a wild cherry tree, named *Yama-zakura* (mountain *sakura, Prunus jamasakura*). It is originally found in Japanese islands, and people have enjoyed its blossom since as early as the 9th century. The tree grows in hilly areas forming a mixed wood together with pine and oak families. The wood has been utilized for furniture, instruments, buildings, carvings and chips to smoke meat and fish. Due to its distribution and genetic diversity, the blooming period and place vary. During hiking, you may unexpectedly encounter this tree in blossom.

On stony mountains,
Amid the sombre pine-trunks
The wild pink cherry
Light with springing shafts of sun
Long storm-clouds, the winter tree
(James Kirkup, British poet)

(Hiroshi Sano)

Promenade (5)

Hiking Looking for Stone Deities

by Hiroshi Sano

Usually an old milestone attracts our attention sometimes conveying a feeling of nostalgia. It is primarily used by travelers to identify their position, and it is also used by inhabitants to locate the place. Milestones were commonly used in Europe since Roman age (the 3rd century BC), and in Asian countries such as China (the 2nd century BC) and Japan (the 9th century). Milestones are essentially made of stone obelisks in Europe, and they take the form of a tree or a mound in Asia. Several hundred years old milestones are considered historical monuments.

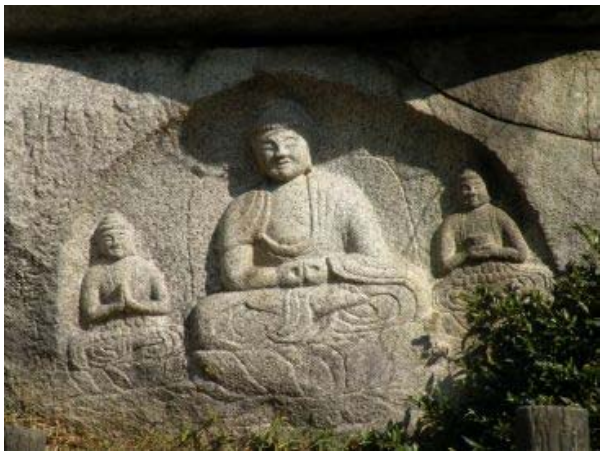
In Japan, milestones *(ichiri-zuka)* were placed approximately every 4 km along the major streets. In addition, small posts were set between them. The image they represented was often a guardian deity, either in the form of a relief on the rock or a statue. As the road system developed after the 16th century, connecting villages, stone deities were made not only for practical use, but they were also regarded as spiritual symbols: soothing various spirits in nature, preventing evils to enter the village, soliciting health and peace and sometimes praying God for help.

The form of stone statues *(ishi-botoke)* varied depending on the aim. The most common and popular style is the stone guardian *(jizou*) often affectionately called ojizou-san, featuring a child form. The Goddess of mercy *(kan-non bosatsu)* is also popular, as the symbol of salvation. They were diligently made in great numbers in western Japan, particularly in the Kansai area (including Kyoto, Osaka and Nara districts). Today, they are still "on duty", and we can observe many samples silently standing on the roadside even near large towns.

Here I briefly introduce a hiking course, where you can encounter many historical stone deities *(ishi-botoke)* near Nara city. Among various ways, a course connecting *Joruri-ji* temple with *Gansen-ji* temple is rich in *ishi-botoke*. These two temples, situated in quiet woods, are also worthy for visiting. They were founded in the 8th century, and possess many Buddhist image statues, some are assigned as national treasures. The main hall and the three-story pagoda of the *Joruri-ji*, both being constructed during the 13th century, are also designated as national treasures. You can start the excursion at *Joruri-ji* and terminating it at *Gansen-ji.* The

walking distance is approximately 2 km for one-way.

Take the bus #112 at the bus stop post #13 in front of Kintetsu-Nara Station (the frequency is about one every hour



between 8 am and 3 pm). After a 21-minutes ride, you will arrive at *Joruri-ji*. Walk further about 200 m through a paved road, and turn right at the first three-forked junction, where a stone lantern stands *(Atago-toro).*

A path named "*Ishi-botoke course*" starts from this point, going through woody hills. You will encounter several stone statues carved on large rocks. The first one is "Two Amitabha Tathagata" *(amida-nyorai)*, made in 1343. Further walking a sloping road, you will see the second and the most famous relief, "Three Amitabha Tathagata" *(amida-nyorai san-zon).* Because of their mild smiling expression, they are called "*warai-botoke*" (laughing Buddhas) and attract many visitors. The carving is dated 1299. You can choose any course from here up to *Gansen-ji,* watching several similar stone images in the wood and on the roadside.

This course is also well suitable for nature watching. In spring, you can enjoy wild cherry and plum tree blossoms. A heterotrophic plant, *Pyrola japonica (ichiyaku-so*), is growing on the roadside. In late summer, you can discover another heterotrophic plant, *Monotropastrum humile* (*ginryo-so*), also rather rare in Japan. In autumn, you can view chestnuts and persimmons. It is also a pleasure to purchase fresh vegetables and fruits produced by neighboring farmers at self-service stands on the roadside.

After visiting *Gansen-ji*, you can come back to *Joruri-ji* through the same or other courses, or you can take a bus to Kamo-Station, from where you can take a JR train back to Nara or Kyoto. Because of the low frequency, you had better check the time schedule for both bus and train services *(Director, JSPS Stockholm Office).*

IV. News & Announcements

Fellowship Information

If you are planning to visit and perform research in Japan, the JSPS Stockholm Office is ready to provide you with useful information on the JSPS fellowship programs. The JSPS fellows are usually recruited in each fiscal year (beginning in April and terminating in March of the following year).

Two ways of applications are available. The main route is (A) to prepare application forms through your host researcher at the host-university or institution in Japan. The host will send all documents to the JSPS Head Office, Tokyo. You may be able to ask your host researcher in Japan to apply for it in advance. This route is open for researchers in almost all countries outside of Japan. JSPS have about 10 awardees for each call. As for the deadline of each application, please find the table as below.

The other route is (B) to apply through the nomination system in relevant countries, where the applicant lives. In this case, the country must be assigned as a partner country by JSPS (note that not all countries are assigned as JSPS partner). This route is in principal, open only for researcher who is a national of such country.

For example, if you are a Swedish researcher, you can apply through the nomination system of the following programs, depending on your career and research field: Post-doctoral fellowship (Long-term and Short-term.) or Invitation fellowship (Short-term. Application deadline is announced by VINNOVA).

You can find necessary information through the website of JSPS Head Office (as below) or JSPS Stockholm Office (http://www.jsps-sto.com/ →Menu :Fellowship). *(Hitomi Yasui, JSPS Stockholm)*

Program	Duration	Application Dead line(※1)	Commencement of fellowships (※2)
JSPS Postdoctoral Fellowship Programs http://www.jsps.go.jp/english/e-fellow/postdoctoral.html ＃long *For Young post-doctor etc.*	(Standard) 12 to 24 months	<2nd Call> 2010.May6-12	2010. September 1 ～ 2010. November 30
	(Short-term) 1 to 12 months	<4th Call> 2010. April 5-9	2010. August 1 ～ 2011.March 31
		<5th Call> 2010. May 6-12	2010. September 1 ～ 2011.March 31
		<6th Call> 2010. August 2-6	2010. December 1 ～ 2011.March 31
Invitation Fellowship Programs for research in Japan http://www.jsps.go.jp/english/e-inv/main.htm *For Professor or mid-career Researchers etc.*	(Short-term) 14 to 60 days	<2nd Call> 2010.May 6-12	2010.October1 ～ 2011.March31

※1 These deadlines are for the head of the host institution to submit the application to JSPS Head Office; the time frames for applicants (host researchers)to submit their applications are normally earlier.

※2 Successful candidates must start the Fellowship in Japan during these periods.

BRIDGE – JSPS Re-Invitation Program

JSPS new re-invitation program, BRIDGE, for former fellows, was called for the first time winter 2009/2010. There has been a great interest for this program and JSPS is happy to see so many former fellows continuing to have an active interest in Japan. Next call will take place during spring 2010 and necessary information and application form will be published on our web-page, http://www.jsps.go.jp/english/e-plaza/21_invitation.html. *(Lisa-Mi Swartz, JSPS Stockholm office)*

JSPS Alumni Club General Assembly & Seminar

Monday 22 March 2010

Venue: KTH, Teknikringen 72, hall V23

JSPS Sweden Alumni Club General Assembly

Seminar: Life without crystals – is this possible in XXI century?

Tentative Programme

11.00-12.00 JSPS Sweden Alumni Club General Assembly

Seminar

13.00-13.45	**Crystalas in the history of the humanity** Jan Sedzik
13.45-14.30	**Protein nucleation & crystal growth: A crossing point of physics, chemistry & life sciences** Mitsuo Ataka
14.30-15.0	**Coffee Break**
15.00-15.45	**Photonic crystals & light** Masaya Notomi
15.45-16.30	**2D crystals of membrane proteins** Hans Herbert

To register, e-mail (info@jsps-sto.com) or fax (+46-(0)8-31 38 86) to JSPS Stockholm Office by 15th March, 2010

***Registration is free of charge** ***The seminar is open to all.**

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