

Japan the Horned Islands

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Japan Society for the Promotion of Science Stockholm Office

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Momiji (maple, *Acer palmatum* Thunberg)



Horyuji Temple, Nara

The newsletter can be accessed at the JSPS Stockholm homepage www.jspss-to.com

I. Preface

Silk Road by Hiroshi Sano

A treasure box is always fascinating for all generations throughout history. Children have enjoyed small boxes, and adults have made large containers. Among those, the largest ones could be the Egyptian pyramids and the mausolea of ancient China.

Although being not so large, a treasure storehouse (Shoso-in) in Nara, Japan is a representative container. The wooden building constructed in 759 has maintained more than 9000 treasures collected by the Emperor Shomu (701-756) and the Todai-ji temple during the 8th and 10th centuries. Items are diverse, including documents, stationery, furniture, armory, tableware, cloth and ornament, incense and medicine and musical instruments. Many of them are of foreign origin, but now they can only be found in the Shoso-in, due to “extinction” in their places of origin during a long history of unrest. Typical examples are the five-stringed lute made in India and the transparent cut-glass ware made in Persia.

These treasures were mostly brought back by the Japanese envoys to China during the Tang Dynasty (6th to 10th centuries). At that period, the Tang Empire was one of the most advanced cultural centers in the world, and people and goods traveled between China and the West; Persia, India and the Mediterranean countries. The Shoso-in, as the final destination of the transportation route accumulated a large number of trading materials.

The trade route was long, spanning over 9,000 km. It began on the Mediterranean coast and reached Chang’an, the capital of the Tang Empire (known today as Sian). Since the route was set via central Asia passing near the Takla Makan desert, most merchandize was carried by caravans. The major goods were ordinary utensils to China and silk to the West. Accordingly, the caravan route is known now as the “Silk Road” (Ferdinand von Richthofen, 1877).

A typical caravan consisted of 300 camels and donkeys, and moved about 40 km a day. It must have taken years for a successful transportation of goods

between the West and China, and more years to bring them to Japan. The Shoso-in is therefore referred as the “Terminal of the Silk Road”, and confers a special exotic and nostalgic feeling upon the Japanese people.

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Perhaps one of the causes that made the “Silk Road” so popular in Japan is the expeditions performed by Sven Hedin, a Swedish explorer (1865-1952). He was stimulated by the lecture of the German geographer von Richthofen, who pointed to uncertain locations of lakes near the Takla Makan desert. He performed five expeditions and found and proved in 1934 that the Lake Lop-Nur changed its location every 1600 years, calling it a “wandering lake” (currently his theory is somehow questioned). In addition to this finding, he identified a ruin of an ancient city called Loulan, which was located in the midst of the Silk Road near the Lake Lop-Nur. In the cemetery, he found a coffin containing a well conserved mummy of a young princess, who wore a silk dress and ornaments (Den Vandrande Sjon, 1937).

His reports on the Silk Road drew much attention, interest and dream among Japanese scientists, writers and painters. For example, Yasushi Inoue (1907-1991) wrote a fine novel “Rouran” (Loulan) with a romantic interpretation of the “Loulan Beauty”. Ikuo Hirayama (1930-) has continuously been painting a series of the Silk Road and related objects. Many tourists can now easily visit places on the Silk Road, and it became quite popular among ordinary people.

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The Museum of Ethnography in Stockholm possesses a huge amount of Hedin’s collection, photographs and documents. A part of these treasures is exhibited, and looking at them, we can imagine his life and the Silk Road. Hedin has certainly contributed to a better understanding between West and East. He passed away on November 26, 1952 in Stockholm, and his monument and tombstone are in the Adolf Fredrik Church, Stockholm (Director of the JSPS Stockholm Office).
(Director, JSPS Stockholm Office)



Adolf Fredrik Church, Stockholm



Sven Hedin monument at Adolf Fredrik Church

II. Reports

JSPS Colloquium – “Sun and Earth”

by Masatoshi Yamauchi

A Japanese-Swedish joint colloquium of "Sun and Earth", which was organized by JSPS and KVA (royal academy of science), was held on 10-11 March 2009. The purpose of the colloquium was (1) to overview the field of space physics only by Japanese and Swedish scientists and (2) to enhance the scientific collaboration in the field of space physics and solar-planetary science. The scientific program, defined by members of IRF (Swedish Institute of Space Physics) Kiruna division, covers entire pathways of space plasma from the Sun to the Earth and the planets. Although the plasma carries only 2% of the total energy from the Sun (which is mainly carried as radiation), this 2% is large enough to cause many dynamic phenomena on the planets and to substantially affect the planetary evolution. Since space research requires expensive infrastructure such as satellite and ionospheric radar, and since space phenomena expand globally requiring worldwide deployment of observation points, international collaboration has been a long tradition in this research field. In addition, Sweden has the highest number of Japanese space scientists in Europe. Out of eight Japanese scientists (four senior scientists) in the entire European space community, four scientists (two senior scientists) are working in Sweden. This personal infrastructure makes both the Japanese side and the Swedish side mentally easy to contact to each other, leading to the present strong Japan-Sweden collaboration, particularly in the field of in-situ measurements using spacecraft.

On the other hand, some sub-fields have rooms for improved collaborations such as Solar physics, Numerical simulations, and Ground-based observations. Considering the good personal infrastructure, more Japanese scientists than the present level could have started direct collaborations a long time ago. The reason that such collaborations did not start is simply that everybody is busy, which is natural for all active scientists. The colloquium provided a good opportunity for those "wish-list" scientists to come to Sweden, particularly to IRF-Kiruna where three Japanese scientists are working (largest number of Japanese at one place in the abroad in the field of space physics).

Since the space science requires international collaboration by its nature, all countries have their own expertise. The environment for collaboration is quite different from the field of biology, chemistry, astronomy, or physics. From this respect, it is nearly impossible that only two countries can cover all area of the space physics. Furthermore, many Japanese scientists could not accept the invitation for the invited lecture simply because of conflict of schedule. March is not normally the best time to have meetings for Japanese scientists. Yet, attended scientists from only two country covered most the field with cutting-edge results: the plasma environment of Solar atmosphere, the plasma environment of the Earth-type (inner) planets and their moon, the plasma environment of the Giant planets and their moon,

the Earth's magnetosphere and ionosphere, and the laboratory plasma. Those subjects are described using observations (both from ground-based observation and from spacecraft) and numerical simulations, and at all scale sizes from billion year evolution scale to milli/micro-second level high frequency phenomena. This fact is surprising.



Colloquium participants

After the end of presentations, we discussed the tactics to enhance the fruitful collaboration. Fruitful means that we should find an efficient way since everybody is busy. Among several proposals for such tactics, the exchange of young scientist and student exchanges are further discussed. From our long experience of successful collaboration between Sweden and Japan, we know that sending young scientists for a few years is the best collaboration method.

The detail of the talks are found in the proceeding PDF slides at <http://www.irf.se/link/jspk-kva-colloquim-2009>. Since the world tendency is toward avoiding proceeding papers and since we should not make a special issue of review papers from only two countries' scientists in our field, we decided to make the invited presentation slides open to access after removing sensitive figures that might cause troubles with Nature and Science journals.

After the colloquium which was held in Stockholm, attendants visited Kiruna where many space-related facilities are located: IRF main division, Esrange space center, EISCAT head quarter, and EU-Space Master office, and Space high school. Because of concentrated space facilities, Sweden is proposing Kiruna to become Europeans Space and Environment Center, and in fact Swedish Prime Minister visited IRF three weeks before the colloquium. The Space master students and the Space high-school students appreciated two special seminars presented by Japanese invited speakers to the Colloquium (Prof Ichimoto and Prof Nakamura). As a direct consequence of the colloquium, Prof Watanabe and Prof Lundin, the chairs for this discussion session, decided to hold 5th Alfvén conference in Hokkaido, Japan (4-8 October 2010). The website is already open:

<http://www.ep.sci.hokudai.ac.jp/~alfven5/>
(PhD, IRF, Kiruna)

European Board Meeting in Stockholm, Sweden 2009

by Jan Sedzik

This year's European Board of JSPS Alumni Club meeting took place in Stockholm, Sweden on March 9th, 2009, the venue was the historic building of the Royal Academy of Science in Frescati, the place where every year since 1901 the Nobel Prize has been announced for achievements in physics and chemistry. The Nobel Prize is an international award administered by the Nobel Foundation in Stockholm, Sweden. The Swedish Royal Academy of Sciences was founded 1739, the aims were: "..... to generate and spread knowledge in mathematics, natural science, economy, trade and useful arts and manufacturing" with adopted the motto: "..... to advance of science, in particular mathematics and natural sciences".

The other occasion of the meeting was the Colloquium organized by the JSPS Stockholm office, with the cooperation of the Swedish Royal Academy of Science, and IRF, the title of this 2009 Space Colloquium was "Sun and Earth Connections". The connected excursion, a visit to the Stockholm Observatory was a unforgettable experience for all of us.

The JSPS European Board meeting of the national Alumni Clubs was chaired by the Mr. Kato from the JSPS headquarter in Tokyo, Japan with the assistance of Ms Naoko Yamaoka responsible for world wide JSPS exchange program. Mr. Kato presented plans of the JSPS to reactivate/refresh the former alumni their scientific contact with Japan. The program is supported financially and targeted only to the previous alumni of JSPS and will be activated later this year.

The European meeting was attended by the Chairmen of JSPS AC in German, Prof. Heinrich Menkhau; Prof. Marie-Clair Lett, Chair of French association; Dr. Hugo Dobson from United Kingdom; Profs. Antero Laitanen and Matts Roos from Finland; for the first time representative of the recently established JSPS Alumni Association of Egypt was represented by the Chair Prof. Dr. Hany Abdel-Aziz El-Shemy and Director of JSPS Cairo Research Station Prof. Yuji Oishi; Sweden was represented by me, Jan Sedzik the Chair of the Swedish JSPS Alumni Club Association and the

board members Ma-Li Svensson and Stig Allenmark. JSPS Stockholm office was represented by Director Hiroshi Sano, Lisa-Mi Swartz and Hitomi Yasui.



Alumni Club's Chairs and JSPS staff

Each delegate reported briefly of the previous activities of the club with plans for the future. The activities of the Swedish Club in 2008 were as follows: 2 published Newsletter, with four contributions of the members, two seminars were organized in Stockholm (April 14) on "Caffeine and cell-phone's impact on our health" and in Göteborg (October 3) on "Marine toxins", there was also one General Assembly for all members, and three Board meetings. As of December 2008 there are 94 members of the Swedish JSPS association. Our plan for the future: to increase members, organize two seminars, contribute to the Newsletter, and disseminate widely information about JSPS exchange program, for students, post docs and senior researchers.

The catering was in KVA restaurant, the food was very tasty and very healthy. The next meeting 2010 of the European Board of JSPS Alumni will be held in Strasbourg, France.

(Chair, JSPS Sweden Alumni Club)

Finland Alumni Club

by Matts Roos

The Finland Alumni Club (FAC) started on a very modest scale. The first members forming the board had to clarify for themselves the mission of the Club.

Why does the Club exist? What is its purpose? Who is the Club for?

A broad answer to this is to promote scientific exchange

between Finland and Japan.

How should we realize this? Well, we have to approach people who might want to become members. Why would they want to? What motivates the alumni? How do we find out their wishes? And what can we offer our members? It is not in general useful to offer people an

empty bucket, and then ask them what to fill it with.

We had a short list of persons from Finland who had been in Japan on JSPS support, and we wrote them about our vague plans. We received several positive answers (from people willing to fill empty buckets with purposes), and we met some of them at our first Annual Seminar and at our first General Assembly. The membership has now grown to 33 full members and 7 associate members, the latest ones accepted by the board at its meeting in Helsinki on 28 January 2009.

When we know a little bit about whom the members are, we can get hints on what their wishes might be. The most direct way to realize this is simply to ask them. The activities of the Club should be based on reciprocity so that all the members would have an active part in shaping and forming the Club. Each member should be provided an opportunity to express their own motivation and ways in which they would like to participate in and contribute to the activities of the Club. Encouraging as well as providing opportunities for the members to speak their minds is essential to creating a club which genuinely exists on its members' terms. This means creating simple and direct ways of communicating and including the members in the process of strategic development of the Club. It also means establishing forms of activity and procedures which are flexible and responsive to changing demands.

A first step in this direction was decided at the January board meeting when planning for the 2009 Annual Seminar in Turku started. The board member in Turku, Eija Säilynoja, entered into contact with all the five members in that region, persons not known to her before. This group met and started to collaborate on the project, came with specific plans for the program, possible speakers, dates and the site of the meeting. There was no lack of ideas and proposals, indeed!

The Club has received a proposal from the Finland Institute in Japan to advertise membership in the Club to persons in their files, eligible for FAC membership. The January board meeting discussed this, but noted that FAC lacked manpower and resources to handle a large growth in the number of members. Solutions to this could be to ask for help from JSPS Stockholm, or to find funding for secretarial work in Finland. A possibility is help from the Finland Institute in Japan.

Having just returned from a long voyage, I note a bonus JSPS has given me. Whenever I meet Japanese and mention my activity in the FAC, I am immediately treated as having some special "Japanese value". I'm not just an arbitrary foreigner.

(Board Member, JSPS Finland Alumni Club)

Each Wave Turning Over -Challenges to the Coastal Engineer in Japan and Elsewhere- by Magnus Larson

Japan consists of four main islands, Hokkaido, Honshu, Shikoku, and Kyushu, with a total length of coastline of almost 35,000 km (Horikawa, 1996). Most of the islands are dominated by mountainous regions, which together with hilly areas cover over 70% of the total land mass. In fact the densely populated land include only about 13% of Japan and this land is located adjacent to the coast, around the major bays, for example, Tokyo Bay, Ise Bay, and Osaka Bay.

Thus, from early times Japanese practitioners and engineers were dealing with the forces of the sea and how to ensure that man-made structures could exist and human activities take place in the coastal areas in a safe, economic, and environmentally acceptable manner. All the issues relating to ensuring such conditions belong to the field of coastal engineering, and Japan has a long and proud tradition in this field.

This tradition inspired me to travel to Japan on a JSPS Fellowship in 1988 as a fresh Ph.D. in engineering science from the Faculty of Engineering at Lund University. During my first visit, I spent two months in Japan; about six weeks at Tsukuba University doing laboratory

experiment with my host Professor Tsuguo Sunamura, a distinguished coastal geomorphologist, and two weeks traveling around the country, kindly being introduced to all major Japanese researchers in the field by my host. To a young researcher this naturally opened my eyes to many new and exciting challenges, stimulating me to pursue an academic career and develop long-lasting relationships with Japanese researchers and Japan as a country.

Before going to Japan, I already had some experience of working together with Japanese researchers. In 1985, at the U.S. Army Field Research Facility (FRF) for coastal studies in Duck, North Carolina, I joined a major field experiment focusing on waves, currents, and sediment transport in the coastal area. A key person in the research team was Professor Shintaro Hotta from Nihon University, who was a pioneer in developing photographic techniques for measuring properties of waves close to shore (Figure 1), especially in the zone where the waves are breaking (surf zone). The surf zone is where most of the energy in the incoming waves is dissipated, implying large impacts in terms of forces and associated changes (Figure 2). The following year, I went back to United States to work on my Ph.D. research at the U.S. Army Waterways Experiment

Station (USAWES) in Vicksburg, Mississippi, one of the major research laboratories in the world for water-related and environmental subjects, including coastal engineering. During the 1.5-year period I spent in Vicksburg I had the opportunity to join another field experiment at the FRF, where Professor Hotta also participated. In several studies during the 1990's I employed data we collected during the two field experiments.

My background is in fluid mechanics, and when I enrolled as a doctoral student in 1983 I initially worked on a wide range of topics belonging to this field. However, because of the long-term cooperation our department had with USAWES, and the opportunity this cooperation offered, I decided after two years to focus my research towards coastal engineering. The subject for my Ph.D. research became mathematical modeling of the effects extreme storms may have on a beach profile, particularly regarding erosion. During such storms high waves and water levels are common causing severe damage to coastal infrastructure and activities. Direct wave impact, flooding, and erosion are some of the problems associated with extreme storms, and being able to forecast potential damage is useful and economically valuable, aiding in formulating evacuation plans and defining setback lines to be applied in insurance matters. The hurricanes regularly occurring on the US east coast that originates in the tropics fit into the category of extreme storms. In Japan these types of storms are known as a typhoon, and on the average 17 typhoons are generated every year in the northwest Pacific of which around 2 make landfall in Japan with potential large damages to life and property (Elsner and Liu 2003).

Mathematical models describing how a coastal area changes under the action of the sea typically consists of a number of distinct modules to calculate waves, currents, sediment transport, and bed topography changes. The calculations are done in sequence and for many different times, implying a highly coupled and difficult system to handle ensuring robust and reliable physical and computational behavior. Since developing the beach profile change model, which at present is used by numerous engineers around the world to assess storm impact on beaches, I have worked on many other mathematical models of coastal processes. At present I am involved in developing models of long-term coastal change, where the objective is to predict the response of the coast over centuries.

My second visit to Japan, 1990, was also to Tsukuba University and I had the opportunity to conclude my work with Professor Sunamura. Already 1988 I had met several Japanese colleagues from University of Tokyo (UT) and 1991 I had the chance to visit the Coastal Engineering Laboratory (CEL) at UT. Professor Masahiko Isobe was my host at that time, as for all subsequent visits through the years to CEL. Since 1991 I have been back at UT almost every year, including a two-year visit 1994-95. Many times I went as a JSPS scholar, but I have also been sponsored by various private Swedish foundations and different Japanese universities. In total I have spent about 4 years in Japan, with longer research visits also at the Disaster Prevention Research Institute, Kyoto University, Advanced Research Institute for Humanities and Science, Nihon University, and Center for Water Environment Studies, Ibaraki University.

My early travels and work in Japan generated an interest for Asia in general and coastal engineering problems there in particular. Since the middle of the 1990's I have together with colleagues been involved in research projects dealing with sediment transport and associated problems in Vietnam, China, and Sri Lanka, and interacted with researchers in most of the other countries in the region. At the same time I have had extensive involvement in a number a large European Union funded research projects on marine science and technology, since Sweden became a member in 1995.

Parallel to my interest in the achievements of the research community in Japan, I have always been fascinated by the Japanese culture and society (Figure 3). To understand and appreciate the latter is a continuing process which I am very much still taking part in, even 20 years after my first visit. The frustration, as well as prime motivation and enjoyment, learning things and developing constantly, is that this is a process you will not experience the end of but can only hope to follow to its highest possible level.

References: Elsner, J.B. and Liu, K.-B. 2003. "Examining the ENSO-typhoon hypothesis," *Climate Research*, Vol. 25, pp 43-54. Horikawa, K. 1996. "History of coastal engineering in Japan," In: *History and Heritage of Coastal Engineering* (Ed. Kraus, N.C), American Society of Civil Engineers, New York, pp 336-374.

(*Vice Chair, JSPS Sweden Alumni Club, Professor, Lund University*)



Prof. Hotta during DUCK85



The author enjoying Japanese culture at its best.

III. Science & Culture

What Ever Became of Darwin's "Warm Little Pond"?

by Richard Egel

In the Darwin bicentennial year 2009, this brief note addresses a casual remark on the ultimate origin of biological evolution, which Charles Darwin himself had never mentioned in public. Posthumously his third son, Francis, collected private letters of his father's in a book, containing the following passage on how all life on earth once may have started.

" It is often said that all the conditions for the first production of a living organism are now present, which could ever have been present. But if (and oh! what a big if!) we could conceive in some warm little pond, with all sorts of ammonia and phosphoric salts, light, heat, electricity, &c., present, that a proteine compound was chemically formed ready to undergo still more complex changes, at the present day such matter would be instantly devoured or absorbed, which would not have been the case before living creatures were formed."

A keen and prescient notion indeed it was, and "Darwin's warm little pond" has thus become a cherished metaphor for the still enigmatic origin of life. What else can we add today to speculation on this matter with any degree of academic confidence? From background in molecular genetics, I shall not digress into geophysical conditions of the pristine earth, on which I have no deeper knowledge. Suffice it to say, there was no molecular oxygen present in the prebiotic atmosphere, and the abundance of organic molecules in the environment was certainly quite different from today. In the following I take the real experts' word for granted that numerous amino acids were freely available from abiotic sources and rather short peptide-like oligomers would likely have been formed in more or less random sequences. In contrast, nucleic acid precursors would not form easily at all, and if they could have been made, they would be forbiddingly unstable. This leaves us stranded at a conceptual road block, since genetic information in modern cells flows top down from genes to enzymes. If coding genes were so hard to come by, could primitive enzymes perhaps have done without genes early on?

When Darwin devised his concept of natural selection, to fit evolving species into different ecological niches, he had no factual knowledge about genetic mechanisms, such as DNA replication, chromosome segregation, mRNA-encoded protein synthesis, gene mutation or recombination. Still he was essentially correct with his reasoning in general terms, whereas the modern synthesis of Darwinian evolution with Mendelian genetics and, eventually, molecular cell biology came very much later, from the 1930ies and onwards. With all the molecular knowledge

we have today about how living matter functions within cells, we are in a better position than Darwin to speculate how the incredible transition from haphazard geochemical reactions to self-organized propagation of the living state may have taken place. Nevertheless, a standard model on which most experts can agree has not yet emerged.

Two books, in particular, have redirected my personal thoughts in this regard substantially: "The Origins of Order" by Stuart Kauffmanⁱⁱ, and "Origins of Life" by Freeman Dysonⁱⁱⁱ. Notably, both authors are theoretical physicists, taking calculational approaches to substantiate the possibility that large abiotic associations of quasi-random protein-like oligomers could have organized complex networks of reactions, a proto-metabolism so to speak. For Kauffman the leading concept assumes that every reaction to form a particular quasi-peptide is catalysed by one or more other members in the network. A set of quasi-proteins qualifying for this condition is termed "catalytically closed". The system as a whole can then grow and evolve by autocatalytic amplification, even though no individual component has to be autocatalytic on its own. Thus, Kauffman's principle of "catalytic closure" is for the self-organization of complex protein-like sets what Darwin's principle of "natural selection" is for the evolution of biological species, communities and ecosystems – a plausible mechanism for a complex and enigmatic phenomenon.

By such an axiomatic principle alone – provided with a food set of precursor molecules and a lasting source of energy flow – a quite large, yet finite set of catalytically active quasi-proteins could grow in number and diversify without the need for replicating genes, at least to start with. As a very large number of low-efficiency catalysts would cooperate on partly overlapping activities, the entire system should be remarkably tolerable to change of individual components. There is one type of drastic change, however, that could seriously threaten the long-term stability of a prebiotic molecular ecosystem of that kind: if a few components would short-cut some higher-efficiency feedback loops for selfish reasons. According to Dyson, just that might have happened when the ability to make RNA emerged in a world of quasi-proteins. The novel class of RNA molecules combined a high potential for faithful replication with catalytic capabilities as ribozymes and could have raided the preexisting quasi-protein world as the "oldest and most incurable parasitic disease". Eventually, most uncoded protein-like catalysts were indeed wiped out, but for to survive in the long run, RNA had to reinvent the wheel by making proteins anew as

coded versions of old activities. As an added benefit, the gene-encoded true proteins could rapidly evolve to much higher levels of specificity and catalytic efficiency in their particular reactions. Such a genetic takeover would have seized most of the preexisting proto-metabolism and revolutionized the prebiotic ecosystem of molecular communities into the more effective and competitive system of individualized, living cells, as still abounding in the modern biosphere.

As for my personal interest in early evolution, this only turned into a serious affair when retirement from a research career on meiosis and mating-type switching in fission yeast gave leisure to ponder more general questions: How might meiosis have started to evolve? What might the common ancestors of all eukaryotes have been like, and where had that ancestry derived from? How might protein-dominated membranes have come into existence? – Conventionally, the second question is answered by assuming that prokaryotic, bacteria-like ancestors have evolved into more complex cells of eukaryotic organization. However, I am not at all convinced by that interpretation, and I rather incline to the dissident view that the very specialized and efficient prokaryotes derived from more complex, eukaryote-like ancestors by reductive evolution. The third question,

eventually, pointed me to yet another dissident opinion, this time on very early evolution. If non-ribosomally formed polypeptides indeed could have preceded the genomic era of nucleic acid replicators, then bilayered, protein-dominated membranes should likewise go back in time to the pre-RNA world of quasi-proteins. This is because lipophilic peptides can readily form bilayered membranes on their own, not even requiring lipids to this end.

Thus, trying to find tentative answers to a few very basic questions has led me on a contorted path through an enormous number of relevant research papers, which I could not possibly have cited all in this informal note. Some more elaborate manuscripts on these topics are still in preparation. As for evolutionary trends in my personal state of mind, the efforts spent on this endeavor have indeed been worth my while.

1 Darwin, Francis ed. 1887. *The Life and Letters of Charles Darwin, Including an Autobiographical Chapter*. London: Murray, Vol.3:18, 11 Kauffman SA. 1993. *The Origins of Order*. Oxford: Oxford University Press, 111 Dyson F. 1999. *Origins of Life - revised edition*. Cambridge University Press.

(Professor Emeritus, University of Copenhagen)

Climate Change Between Japan and China: Problems and Prospects

by Linus Hagström

China's rapid economic development has benefited Japan a great deal; it is one important factor behind signs of recovery in the Japanese economy in recent years. Top-level dialogue in the Sino-Japanese relationship over the past two years must also be acknowledged. This is undoubtedly the only way to build a future-oriented relationship between the two countries. If Asia's two "tigers" could indeed learn to share "one mountain" (in opposition to the old Chinese proverb), it would greatly facilitate cooperation over issues of global concern such as energy conservation and climate change, or the North Korean nuclear issue. To hope that judicious leaders and economic interdependence are able to stabilise the relationship on a continuous basis into the future, however, is not the same as turning a blind eye to the substantial problems that remain unresolved and that could escalate under unfavourable conditions.

Although the Sino-Japanese relationship has now seemingly developed beyond the animosity of Junichiro Koizumi's stint as Japanese prime minister (2001–2006), it is premature to declare "peace for our time" or to entertain any serious hopes for the early construction of an "East Asian Community," such as is sometimes hailed by analysts of this region. The Sino-Japanese relationship continues to accommodate a number of divisive issues over territory and history interpretation—none of which

has been resolved either by protracted economic interdependence or by recent attempts to mend fences at the top political level. Moreover, nationalist discourses and practices on both sides may seem less influential right now, but major undercurrents of nationalism remain in both countries and could again come to the surface and reignite feelings of mutual mistrust. Developments in the last few years have amply demonstrated that national identities in Japan and China tend to be constitutive of one another, so there is always a risk that "memories" and "identities" could be re-politicised on a large scale.

It is also important to remember that deepening economic integration has not prevented the development of mutual suspicions in the past, and there is little hope that it will do so in the future. In an interview that I made in the fall of 2007, an analyst at Japan's Ministry of Defense emphasized that economic interdependence will also not be sufficient to prevent a possible conflict over the disputed Pinnacle (Senkaku/Diaoyu) Islands and other disputed areas in the East China Sea, and that it is also not enough to forestall a possible war between China and Taiwan. Japan attacked Pearl Harbor 68 years ago despite its dependence on the US economy. In another interview from the spring of 2008, Shoichi Nakagawa—LDP parliament member and just resigned finance minister—specifically warned that China's expanding military

presence in the region can produce a security dilemma, because Japan will have to respond to it. He personally admitted to being one of the forces behind attempts to dilute the Japanese “nuclear taboo.”

Other Japanese interviewees cautioned against the idea that the currently high level of economic interdependence is to be seen only as part of a solution; under some circumstances it could cause new problems in the relationship (over and above the obvious fear of “hollowing out” when manufacturing capacity moves from Japan to China). A former minister at the Japanese Embassy in Beijing, interviewed in the fall of 2007, emphasised the importance of keeping the relationship interdependent. Japan would become very vulnerable if it began to need China more than China needs Japan. Other observers expressed concern about what would happen if the Chinese economy suddenly stagnated. In such a scenario the Chinese leadership could again be inclined to encourage negative images of Japan as a way to check criticism or counteract separatism, and to maintain some degree of legitimacy.

Both governments will probably do their utmost to maintain a calm relationship in the short term; but what are the medium- to long-term prospects? Although the likelihood of war or violence between Japan and China may not be very high, the magnitude of the danger if war or violence did break out is very considerable. In an interview in the spring of 2008, a senior foreign policy adviser to Prime Minister Fukuda warned of a possible change in the climate of the relationship: “winter can

arrive soon again if both sides don’t make sufficient efforts.”

The governments of Japan and China should thus continue their attempts to build the best relationship possible. The kind of grass-root exchanges that are currently promoted by the two governments are one important step in that endeavour, but if Tokyo and Beijing wish to foster more long-term reconciliation they would probably also have to secure the foundation of their relationship by dealing publicly and in earnest with the issues that most upset the counterpart. For the Japanese government this would involve addressing the “history issues” by making an apology that is qualitatively different from those that have been offered in the past—one that is less calculating and hence also less prone to be seen as retracted or forfeited as nationalistic senior politicians again make revisionist “slips of the tongue.” For the Chinese government it would require significantly enhanced transparency and accountability in regard to all military matters.

At the same time as they try to create optimal conditions for reconciliation, Tokyo and Beijing should also develop strategies to militate against the worst-case scenarios that could be brought about by clashes of interest between a rising state (China) and an allegedly “normalising” one (Japan). Outsiders are best advised to do the same.

(Senior Research Fellow, Swedish Institute of International Affairs, Research Fellow, Royal Swedish Academy of Letters, History and Antiquities)

Festival (3)

Hanami

by Lisa-Mi Swartz

The spring is the time for hanami - blossom viewing, and with blossom it means sakura – cherry blossoms.

The practice of hanami is many centuries old. The custom is said to have started during the Nara Period (710–784) when the Chinese Tang Dynasty influenced Japan in many ways, one of which was the custom of enjoying flowers. Though it was ume-plum blossoms that people admired in the beginning, the custom of cherry blossom viewing has existed since the Heian Period (794–1185). From then on, in Japanese poetry (tanka and haiku), “flowers” meant “sakura.” Sakura originally was used to divine that year’s harvest as well as an announcer of the rice-planting season. People believed in gods’ existence inside the trees and made offerings at the root of

sakura

花見

Hana = flower and *mi* = see.

trees. Afterwards, they partook of the offering with sake. Emperor Saga of the Heian Period adopted this practice, and held flower-viewing parties with sake and feasts underneath the blossoming boughs of cherry trees in the Imperial Court in Kyoto. The trees are different from cherry trees in other countries as they do not yield fruit. Poems would be written praising the delicate flowers, which were seen as a metaphor for life itself, luminous and beautiful yet

fleeting and ephemeral, not leaving anything behind. The custom soon spread to samurai society where the beauty of the cherry blossom became a symbol of the samurai and the code they lived by. In the Edo Period the cherry blossom viewing spread to the common people as well. Tokugawa Yoshimune planted areas of cherry blossom trees to encourage this. Under the sakura trees, people had lunch and drank sake in cheerful feasts.



Lantern at yozakura, Ueno park, Tokyo

At the end of the period, the new leadership under Emperor Meiji, ordered the cherry trees to be cut down as he wanted no reminder of the old feudal period. Fortunately, the tradition has returned and is one of the most enjoyable times in Japan. During spring, hanami parties and cherry blossom festivals are now held all over Japan. Hanami is one of the most popular events of spring. From late March to early May, sakura bloom all over Japan. The blossom forecast (sakurazensen-cherry blossom front) is announced each year by the weather



Hanami at Yoyogi park, Tokyo

bureau, and is watched carefully by those planning hanami as the blossoms only last a week or two. In modern-day Japan, hanami mostly consists of having an outdoor party beneath the cherry blossoms during daytime or at night. Hanami at night is called yozakura-night cherry blossom. In many places, such as Ueno Park, temporary paper lanterns are hung for the purpose of yozakura.

People bring food and drink and enjoy chatting with friends, sipping sake, writing poems, singing songs. One of the most popular foods is dango, a chewy snack food made from rice flour.

In a big part of Japan, the cherry blossoming period coincides with the beginning of the scholastic and fiscal years, and so welcoming parties are often opened with hanami. In very popular places such as Ueno park and Aoyama Cemetery in Tokyo the competition for prime picnic spots is intense. Company groups and family members claim spots by arriving very early in the morning and sitting all day long, usually on plastic tarps, until the real celebrations begin in the evening. It is not unusual to see a young man in a business suit sitting under a cherry tree early in the morning reserving a space for his company. The new employees are traditionally given this job of sitting all day long to reserve space for the company celebration. Crowds of people - families, groups of friends, and groups from companies will slowly start to fill the parks, and by the evening the party under the fully open cherry blossoms is in full action.

There are dozens of different cherry trees throughout Japan and the beautiful blossoms bloom at different times. People flock to castles, shrines, temples, parks, and local neighborhoods to enjoy the pleasure of hanami. The tradition of hanami is still very much alive and the Japanese people continue to gather in great numbers wherever the flowering trees are found.

(Assistant, JSPS Stockholm Office)



Hanami dango; Hello Kitty style

Promenade (3)

Akame Cascade Hiking

by Hiroshi Sano

“Wet, wet, wet. I cannot bear the rainy season in Japan with 120% humidity” complain many European visitors. So do many Japanese natives for over 500 years.

Until 30 years ago, few houses were equipped with air conditioners, and people overcame the hot summer days with traditional “technology”, which was developed and settled in the 18th century. Taking a tub-bath (gyozui), cruising on a river, sprinkling water on the road, listening to the wind-bells (furin) and the crickets twittering, taking a hot sweet drink made of fermented rice (amazake) and many “passive” ways to avoid and forget the heat. However, the best way to pass the summer was not to work too much. In the evening, people enjoyed chattering and playing games sitting on a small bench set in front of their house.

In contrast to modern cities, where streets are paved and buildings are made of concrete, traditional Japanese towns consisted of wooden houses, unpaved roads and plenty of vegetation. These factors helped to maintain the dwelling temperature at the same level with the surrounding nature; around 30oC in day time and below 25oC at night even in the hottest season. Energy consumption for cooling was null, which is ideal for an “ecological life”.

Cooling effects by vegetation is due to active transpiration during photosynthesis, which absorbs carbon dioxide and emits oxygen together with water vapor. Entering the forest, we immediately feel the cool air produced by young trees and shrubs. In Japan, people enjoy breathing forest air and refer to it as “forest bathing” (Shinrin-yoku). Here I introduce one of the best places for it.

*



Akame Cascade (Waterfalls) (Akame Shiju-hachi Taki) is located in the Iga mountainous area, being accessible within 1 hour and half from Osaka, Kyoto, Nara or



Nagoya by train (Kintetsu Line). As its name tells (48 waterfalls), there are numerous waterfalls along a deep V-shaped gorge, the Takikawa valley, where deciduous trees and rockwall plants are abundant.

Get off the local Kintetsu train at Akame-guchi station, take a bus and you will be able to reach the Akame valley within 15 min (check the bus schedule). Walk pass the souvenir shops to the entrance of the Salamander Aquarium (Sansho-uo center), where you pay an entrance fee (300 yen) for maintenance of both the museum and the valley. After looking at the various salamanders, you will find a hiking course at the left bank of the Takikawa stream.

After walking about 5-10 minutes, you will encounter the waterfalls with the average height of 15-30 meters and the average width of 4-10 meters. You can enjoy the cool air at the basin of falls.

You will see various living things, plants, insects, birds and salamanders. Many of them are specific to this valley. For example, rockwall-specific *Conandron ramondioides* (iwa-tabako) are abundant and bloom purple-red flowers in June-July. Several species of *Arisaema* family (mamushi-kusa, jack-in-the-pulpit) are also abundant and flower during April-May.

Stream-specific birds such as *Troglodytes troglodytes* (misosazai, wren) and *Cinclus pallasii* (kawagarasu, dipper) will keep you busy. If you are lucky, you will find a large *Andrias japonicus* (ohsansho-uo, salamander) under a rock, but they are nocturnal and difficult to find during the day.

There are 22 major waterfalls within 4 km, and it takes 3 hours for a round-trip. However, it will take twice as much time if you are observing nature and “bathing in the forest”. If you wish to take a quiet walk, you should avoid week-ends during early summer (long holidays in May) and mid autumn (the red foliage of maple trees).

(Director, JSPS Stockholm Office)

East Meets West on a Plate (2)

Fried Tofu by Elisabeth Sano

Dairy products and meat are the main elements in the western diet but tofu can be served in much the same way at meals. Many people realize that a meat-centered diet is a load on the food resources of the earth and they are looking for nutritionally and ecologically viable alternatives. Tofu is a suitable solution. In order to meet human needs on a worldwide scale, soybeans are considered to be the appropriate source of low cost and high quality protein available in large quantity. It is well known that a meatless diet, low in cholesterol and saturated fats, leads to good health and to a feeling of physical well being. Tofu, being rich in high quality protein, minerals and vitamins and low in saturated fats and cholesterol is easy to digest and is an ideal diet food. Soy and grain proteins complement each other. For example, when tofu and rice or whole grain bread are served at the same meal, a new protein is created at no extra cost. Many Japanese doctors advise their patients to turn to tofu and soymilk in curative diets for diabetes, health disease, hardening of the arteries and other circulatory problems.

When buying tofu, check the label on the package

to make sure it is free of preservatives and other chemical additives. The best traditional style tofu is solidified with nigari – it is the mineral rich substance that remains after natural sea salt is extracted from sea water. Calcium sulfate is also used as a solidifier. The fresh tofu has the best flavor. If you do not use it on the day of purchase, you should open the container, drain off the water and rinse the tofu well. If you plan to use it within 24 hours, transfer it to a container without adding water and refrigerate. If you intend to serve it later, drain the tofu, add fresh water which should be changed daily. It can be stored in this manner, in the refrigerator, for about a week without spoiling. Tofu is easily obtainable in many natural and health food stores and in East-Asian markets.

In Japan, several types of tofu can be purchased at supermarkets: Regular tofu (*momen-tofu*), silken tofu (*kinugoshi-tofu*), grilled tofu (*yaki-tofu*), dried frozen tofu (*Koya-tofu* or *koori-tofu*), deep-fried tofu burgers – minced vegetables are added (*ganmodoki*), thin deep fried tofu (*abura-age*), thick deep fried tofu (*atsu-age*).

Fried Tofu

Ingredients (photograph 1)

One tofu about 500 g
2 cloves garlic
A small piece of ginger
2 or 3 green onions,
One beaten egg
Flour, salt, soy sauce, sesame oil

Methods:

- (1) Drain the tofu for several hours or overnight in the refrigerator.
- (2) Mince the garlic, ginger, green onions and set aside.
- (3) Cut the tofu in 1 cm slices and coat it with flour, dip in the salted beaten egg and fry on both sides in a little sesame oil.
- (4) When it is light brown, add the minced garlic, ginger and green onions.
- (5) Add water to cover the bottom of the pan and 2 tablespoons soy sauce.
- (6) Cook on low heat, turning the tofu until the liquid evaporates (photograph 2).
- (7) Serve hot with your favorite vegetables (photograph 3).



photograph 1



photograph 2



photograph 3

IV. News & Announcements

JSPS Colloquium on Frontiers in Nanobiotechnology from Engineering to Application for Cells

The JSPS Stockholm Office presents a Sweden-Japan joint colloquium on “Frontiers in Nanobiotechnology From Engineering to Application for Cells”. The colloquium will be held at the Albanova University Center, Royal Institute of Technology (KTH), on the 4th of June 2009. The presentations will feature cutting-edge researches in a wide range of areas including cell biomechanics, biomaterials for cell and tissue engineering, bio-actuated microsystems, microfluidic technology and nanobiotechnology for single cell analysis, and materials science with applications in cell biology, and promote a shared understanding of the scope and content in the area relating to cellular research.

There has been a continuous and growing interest in this field, ranging from cell biomechanics to applications for cell analysis such as integrated microanalysis systems. Particularly, nanotechnology offers valuable elements for the development of miniaturized integrated devices with applications in biology, medicine and many forms of engineering, and recent advances in cell biology and cell biomechanics have impelled the growth of the subarea of nanobiotechnology. This is a clear indication that these areas are interrelated and share the goals of contributing to human health and well-being. Since these multidisciplinary areas are diverging and expanding rapidly, the overall objectives of this colloquium are to provide a forum where researchers can inform others of their interests and potential contribution of their knowledge and techniques through interdisciplinary discussions, and give future directions for development and applications in these areas.

There will be 10 invited oral presentations by distinguished young professors, 5 from Sweden and 5 from Japan, and more than 20 poster presentations by Ph.D. students from both countries to encourage students to present their research projects

and to build relationships with each other. Lunch, coffee break, and mixing at buffet dinner will also be arranged. After the colloquium, the outcome of the colloquium will be submitted to a special issue of Journal of Biomechanical Science and Engineering (JBSE) published as the official journal of the Japan Society of mechanical Engineers (JSME) in the beginning of 2010.

The colloquium poster will be released in the end of April 2009. We look forward to welcoming you to this exciting colloquium in June 2009.



The main entrance of the Albanova University Center, KTH.

Organizers:

Helene Andersson-Svahn, Ph.D., Professor
School of Biotechnology
Royal Institute of Technology, Sweden

Toshiro Ohashi, Ph.D., Associate Professor
Graduate School of Engineering
Tohoku University, Japan

New JSPS Stockholm Office Staff



Hitomi Yasui (Accounting Officer)

Hi, I am the successor of Mr. Saruhashi, and I come from Mie University. After my graduation from the Nanzan University, Nagoya, Japan, I was teaching Japanese to foreigners in other Asian countries. I started working for Mie University in 2005 and was in charge of managing inbound and outbound students. I am a kind of person who takes pleasure in helping others and I like the communication between people. This is my first time to live in a Nordic country. I enjoy to 'fika' (*Swed; coffee break*) and walking around the city with my camera in weekends. I used to play the saxophone, so I wish to go to Jazz club to listen to nice music while I am here.

JSPS Fellowships Information

by Rumiko Mouri

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 (A) is 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 Tokyo Office. This route is open for researchers in almost all countries outside of Japan. As for the deadline of each application, please find the table as below.

The other route is to apply through the nomination system (B) 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 HP of JSPS Head Office (as below) or JSPS Stockholm Office (<http://www.jsps-sto.com/> →Menu :Fellowship).

(Rumiko Mouri, Deputy Director, JSPS Stockholm Office)

| 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 <i>For Young post-doctor etc.</i> | (Standard) 12 to 24 months | <1 st Call> 2009.August31-Sep.4 | 2010.April1 ~ 2010.Sep.30 |
| | | <2 nd Call> 2010.May6-12 | 2010. Sep.1 ~ 2010. Nov.30 |
| | (Short-term) 1 to 12 months | <6 th Call> 2009.August 3-7 | 2009.Dec. ~ 2010.March 31 |
| | | <1 st Call> 2009.October 5-9 | 2010.April 1 ~ 2011.March 31 |
| Invitation Fellowship Programs for research in Japan http://www.jsps.go.jp/english/e-inv/main.htm <i>For Professor or mid-career Researchers etc.</i> | (Long-term) 61 days to 10 montshs | 2009.August31-Sep4 | 2010.April1 ~ 2011.March31 |
| | (Short-term) 14 to 60 days | <1 st Call> 2009.August31-Sep4 | 2010.April1 ~ 2011.March31 |
| | | <2 nd Call> 2010.May6-12 | 2010.Oct. ~ 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.



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