Japan Society for the Promotion of Science (JSPS) and
U.S.-Japan Research Institute (USJI) Symposium

Risk Management
-From natural disaster to economy-

Date/Time: Friday, March 9, 2012 Registration 8:30; Symposium:9:00am-6:15pm; Reception: 6:30pm
Venue: Powell Room of Cosmos Club, 2121Massachusetts Avenue, NW, Washington, DC 20008

8:30-9:00	**Registration**		
9:00-9:40	**Opening Remarks**	**Hirotaka Sugawara**	*Director, JSPS Washington Office*
	Welcome Address	**Ichiro Fujisaki**	*Ambassador, Embassy of Japan in the U.S.A.*
9:40-10:10	Keynote Speech 1	**Akito Arima**	*Chancellor, Musashi Gakuen/Former Minister of Education, Science, Sports and Culture in Japan*
10:10-10:40	Keynote Speech 2	**Frank von Hippel**	*Professor of Princeton University*
10:40-11:00	Coffee Break		

Session 1 Natural Disaster

Moderator/Speaker			
11:00-11:25		**Yoshimitsu Okada**	*President of National Research Institute for Earth Science and Disaster Prevention(NIED)*
11:25-11:50	Speakers	**Ross Stein**	*US Geological Survey*
11:50-12:15		**Hiroyuki Fujiwara**	*National Research Institute for Earth Science and Disaster Prevention(NIED)*
12:15-13:00	Panel Discussion and Q&A		
13:00-14:00	Lunch Break		

Session 2 Reactor safety and the consequences of the Fukushima accident

Moderator		**Frank von Hippel**	*Professor of Princeton University*
14:00-14:25	Speakers	**Richard Meserve**	*President of the Carnegie Institution, and chair of the IAEA's International Nuclear Safety Group, and former chairman of the Nuclear Regulatory Commission*
14:25-14:50		**Richard Garwin**	*IBM Fellow Emeritus, and member of the Committee on International Security and Arms Control, National Academy of Science*
14:50-15:15		**Otsura Niwa**	*Professor Emeritus of Kyoto University, CEO, Bio Medics Japan Inc.*
15:15-16:00	Panel Discussion and Q&A		
16:00-16:15	Coffee Break		

Session 3 Reconstruction and Challenge of the Japanese Economy after the 3/11 disaster

Moderator/Speaker		**Takatoshi Ito**	*Professor of the University of Tokyo*
16:15-16:35			
16:35-16:55	Speakers	**Junichi Mori**	*Professor, Kyoto University*
16:55-17:15		**Etsuro Shioji**	*Visiting Professor, Columbia University*
17:15-17:35		**Martin Neil Baily**	*Senior Fellow, Economic Studies Bernard L. Schwartz Chair in Economic Policy Development, The Brookings Institution*
17:35-18:10	Panel Discussion and Q&A		
18:10-18:15	**Closing Remarks**	**Akihiko Tanaka**	*Chairman of U.S.-Japan Research Institute*
18:30-	**Reception**	**Reception Remarks**	**Ichiro Fujisaki** *Ambassador, Embassy of Japan* **and others**

Organized by: Japan Society for the Promotion of Science (JSPS) and U.S.-JAPAN Research Institute (USJI)

Ambassador Ichiro Fujisaki

Present
Ambassador Extraordinary and Plenipotentiary of Japan to the United States of America

Professional Career

1994 Deputy Director-General, Asian Affairs Bureau, Ministry of Foreign Affairs

1995 Minister (Political), Embassy of Japan to the United States of America

1999 Director-General, North American Affairs Bureau, Ministry of Foreign Affairs

2002 Deputy Minister for Foreign Affairs (including Prime Minister's personal representative (Sherpa) to the G8 Summit, Japan's chief negotiator for FTA)

2005 Ambassador Extraordinary and Plenipotentiary, Permanent Representative of Japan to the International Organizations in Geneva

Hirotaka Sugawara

Present
Director, JSPS Washington Office
Professor Emeritus, High Energy Accelerator Research Organization (KEK)

Education
1961 B.S. Physics Department, University of Tokyo, Japan
1963 M.A. Physics Department, University of Tokyo, Japan
1966 PhD, Physics Department, University of Tokyo, Japan

Professional Experience
1966－ Research Associate, Physics Departments, Cornell University
1966－1967 University of California at Berkeley
1967－1968 University of Chicago
1968－1971 Tokyo University of Education
1971－1975 Associate Professor, Institute of Nuclear Study, University of Tokyo
1975－2003 Professor, KEK Japanese National Laboratory for High Energy Physics, and University of Tokyo
1978－1983 Chair, Theoretical Physics Department, KEK Japanese National Laboratory for High Energy Physics
1983－1989 Director, Institute of Particle and Nuclear Physics, KEK Japanese National Laboratory for High Energy Physics
1989－2003 Director General, KEK Japanese National Laboratory for High Energy Physics
2003－2004 Dai Ho Chun Distinguished Chair in Arts and Sciences, University of Hawaii
2004－2008 Executive Director, Sokendai Graduate University for Advanced Studies
2008－ Director, Washington DC Office, Japanese Society for the Promotion of Science (JSPS)

Visiting Positions
1968, 1969, 1970 International Center for Theoretical Physics (UNESCO), Trieste
1972 New York University
1972－2001 University of Hawaii
1973－1974 University of Chicago
1977, 1985 Ecole Polytechnique, Paris

Awards
1971 Nishina Memorial Prize
1996 Toray Science and Technology Prize
1999 Medal of Honor with Purple Ribbon, Japanese Government

Risk management learned from the accident at Fukushima Daiichi Nuclear Power Plant

Akito Arima
Chancellor, Musashi Gakuen

Prior to the accident at the TEPCO'S Fukushima Daiichi Nuclear Power Plant, the criticality accident at the JCO Nuclear Fabrication Plant in Japan occurred in 1999. At this time, I was in charge of this accident response as the Minister of Education and the Minister for Science and Technology responsible for the safety regulations of this facility. In this accident, we were able to cease the critical state by withdrawing water from outer jacket of the sedimentation tank which was in critical condition, after 19 hours 40 minutes from the generation of a critical state. This was done without big confusion due to a united cooperation of related organizations and persons.

On the other hand, the accident at the Fukushima Daiichi Nuclear Power Plant, there are following different characteristics from previous accidents in the world, a) the earthquake and tsunami damaged the foundation of transportation of infrastructure, communications and measurements significantly, b) the severe accident of core melt was caused, c) the accident was caused at the same time in the reactor more than one d) the hydrogen explosion occurred, e) the accidents has continued for a long time, and f) a large amount of the radioactive material has been released into the surrounding . Under these circumstances, united cooperation done at the JCO accident was difficult to obtain in response to this accident at Fukushima Daiichi Nuclear Power Plant. In addition to that, lack of cooperation between related organizations or lack of appropriate mobilization of experienced personnel has interfered with cooperation in this accident.

From the viewpoint of risk management, a countermeasure to tsunami should be taken up in the first place. Safety measures against natural disasters in nuclear power plants in our country, while for earthquake measures have been taken on the assumption sufficiently severe earthquake, for the tsunami, the measures did not come enough like an earthquake. We should assume appropriate frequency and adequate height of tsunamis in consideration of a sufficient recurrence period for attaining a safety goal.

Effective use of probabilistic safety assessment (PSA) is effective in risk management of nuclear power plants. However in Japan PSA has not always been effectively utilized in the overall reviewing processes or in risk reduction efforts at nuclear power plants. We should further actively and swiftly utilize PSA while developing improvements to safety measures, including effective accident management measures, based on PSA.

Risk management system in a matter of organization is important. We should establish a system of crisis management, including swift mobilization of experts who are familiar with nuclear power plants technology and responses to the accident utilizing all the knowledge of those experts.
Renewable energy and nuclear energy must be utilized as a solution to two major problems of global warming and the depletion of fossil fuels.

Nuclear power is what mankind has been evolved with a step by step over a long period of time by its wisdom. We should accept our responsibility by overcoming the accident at Fukushima Daiichi Nuclear Power Plants in collecting our every wisdom and aim to furthering the development of nuclear power.

Akito Arima

Present
Chancellor, Musashi Gakuen

Education
1953 Graduation from University of Tokyo
1956 Completion of Graduate Course, Dept. of Physics, Univ. of Tokyo
1958 Dr. of Science from Univ. of Tokyo

Academic Career

1956	Research Associate, Institute for Nuclear Studies (INS), Univ. of Tokyo
1959	Research Associate, Argonne National Laboratory
1960	Lecturer, Dept. of Physics, Univ. of Tokyo
1964	Associate Professor, Dept. of Physics, Univ. of Tokyo
1967 – 1968	Visiting Professor, Rutgers Univ., New Jersey and Princeton Univ.
1971 – 1973	Professor, State Univ. of New York at Stony Brook
1975	Professor, Dept. of Physics, Univ. of Tokyo
1981	Director of Computer Center, Univ. of Tokyo
1981 – 1982	Director, The Physical Society of Japan
1985 – 1987	Dean of Faculty of Science, Univ. of Tokyo
1987 – 1989	Vice President, Univ. of Tokyo
1989 –1993	President, Univ. of Tokyo
1993 –1998	President, The Institute of Physical and Chemical Research(RIKEN)
1995 –1998	Chairman of the Central Council for Education
1996 – 1998	Member of the Administrative Reform Council
1998 – 2004	House of Councilors member
1998 – 1999	Minister of Education, Science, Sports and Culture
1999 –1999	Minister of State for Science and Technology
2000 June –	Chairman, Japan Science Foundation
2006 Apr –	Chancellor, Musashi Gakuen
2010 Apr –	Chairperson, Shizuoka University of Art and Culture

Awards and Honor
1978 Dec. Nishina Memorial Prize
1993 Apr. Bonner Prize, American Physical Society
1993 Jun. The Japan Academy Prize
1998 Jun. au grade d'officier dans l'ordre national de la Legion d'Honneur, France
2002 Sept. Knight Commander of the British Empire, U.K.
2010 Nov. Order of Culture

The other risk from nuclear energy: nuclear-weapon proliferation

Frank N. von Hippel
Professor, Woodrow Wilson School of Public and International Affairs, Princeton University

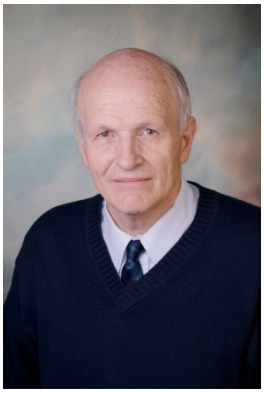
The most important challenge associated with nuclear energy is to prevent it spreading nuclear weapons. Thus far, this effort has been only partially successful. The U.S., Russia, UK, China and Israel all acquired nuclear weapons before they built nuclear power plants. The nuclear programs of France, India, Pakistan and North Korea, however, were initially ambiguous. They all built nuclear power plants before they tested nuclear weapons. A number of other countries also have used their nuclear-energy programs as covers for nuclear weapon programs but then changed their minds due to internal political change or external pressure or both. These countries include: Argentina, Brazil, Iran, South Africa South Korea, Sweden, Switzerland, and Taiwan. Thus, more than a third of the 30 countries with nuclear power plants today used their nuclear-power programs as fronts for nuclear-weapon programs.

Nuclear-weapon and nuclear-energy programs intersect in uranium enrichment and plutonium separation. In Iran, the world is confronting today the fact that a nominally civilian uranium enrichment program, deployed to produce low-enriched uranium for nuclear power reactor fuel, could be quickly converted to produce highly enriched uranium for weapons. A number of other non-weapon states have such facilities: Argentina, Brazil, Germany, Japan, the Netherlands, and South Africa. Additional non-weapon states – including, since North Korea's nuclear test of May 2009, South Korea -- are insisting, like Iran, on their "inalienable rights" to acquire uranium enrichment plants. After Iran's program was discovered, Mohammed ElBaradei revived the idea that uranium enrichment plants should be placed under multinational control but thus far no country other than Iran has volunteered to do so. Japan, however, appears to be seriously considering this idea.

With India's nuclear test of 1974, the world was confronted with the fact that a nominally civilian spent fuel reprocessing program could be misused to acquire plutonium for nuclear weapons. Indeed, in East Asia, because of its reprocessing plant, Japan, the only non-weapon state that reprocesses today, is seen as a "virtual nuclear weapon state." In its negotiations over a new Agreement of Nuclear Cooperation with Japan, South Korea is demanding recognition that it has the same right to reprocess as Japan. Fortunately, reprocessing increases the cost of nuclear power; all but six countries have abandoned it; and one of the six (the UK) has decided to do so. After the Fukushima accident, Japan, also is considering abandoning reprocessing.

Frank von Hippel has, for 35 years, worked at Princeton University to develop the technical basis for initiatives that will advance nuclear disarmament and nonproliferation and has trained scientists from many countries to do the same.

FRANK VON HIPPEL



Present
Professor of Public and International Affairs, Princeton University

Education

1955-59	Massachusetts Institute of Technology B.S. in Physics, Obtained SB
1959-62	Oxford University Graduate Student of Physics, Obtained D Phil.

Academic Career

1962-64	Post-Doctoral Fellow, Fermi Institute, University of Chicago
1964-66	Post-Doctoral Fellow, Newman Laboratory of Nuclear Science, Cornell University
1966-69	Assistant Professor of Physics, Stanford University
1969-70	Sloan Fellow, University of California, Berkely
1970-73	Associate Physicist, High Energy Physics Division, Argonne National Laboratory
1973-74	Resident Fellow, National Academy of Sciences
1974-83	Senior Research Physicist, Center for Energy and Environmental Studies, Princeton University
1983-2013	Professor of Public and International Affairs, Princeton University
1993-94	Assistant Director for National Security, White House Office of Science and Technology Policy

Academic awards

1977	American Physical Society Forum Award for Promoting the Understanding of the Relationship of Physics and Society
1989	Federation of American Scientists Public Service Award
1993-98	MacArthur Prize Fellowship Science, Arms Control and International Security
1994	American Association for the Advancement of Science Hilliard Roderick Prize in Science, Arms Control and International Security
2004	George F. Kennan Distinguished Peace Leadership Award
2010	American Physical Society Leo Szilard Lectureship Award for “outstanding work and leadership in using physics to illuminate public policy in the areas of nuclear arms control and nonproliferation, nuclear energy, and energy efficiency.”

2011 East Japan Earthquake and lessons learned from it

Yoshimitsu Okada
President, National Research Institute for Earth Science and Disaster Prevention, Japan

In March 11, 2011, “off the Pacific coast of Tohoku Earthquake” was generated with a magnitude 9.0, which recorded the largest in the history of seismic observation in Japan. The greatest disaster on record was brought by huge tsunami with nearly 20 thousand killed or missing people. Main shock occurred as an inter-plate thrust-type earthquake between the Pacific and the North American plates with a large focal area of about 500km by 200km.

Associated with this earthquake, extensive crustal deformation was observed in the wide area of eastern Japan, as well as a numerous number of aftershocks with a variety of focal mechanisms. All the fault models proposed by strong-motion records, broadband seismic records, tsunami, and crustal deformation are suggesting that a large slip of 40-50m occurred around the Japan Trench.

Although this earthquake accompanied a foreshock of M7.3 two days before the main shock, no alarm was issued to the following mega-quake. Nor the possibility of such a gigantic earthquake was estimated in the long-term forecast of the inter-plate earthquakes in the off Tohoku region.

In the coastal area, only the people who evacuated to higher place with a mind of safety-first were relieved. On the contrary, those who did not evacuate neglecting tsunami warning or over-relying on coastal barrier based on the tsunami hazard assessment were sacrificed. Also, those who evacuated to the planned level believing quick warning or prior assessment lost their lives. The lessons learned from these facts can be summarized as follows.

Lesson 1: Disaster education is very important to avoid preventable death.
Lesson 2: Reasonable and accurate hazard assessment is vital for anti-disaster planning.
Lesson 3: Improvement of warning system is inevitable to assure successful evacuation.

Basic observation of the natural phenomena is the first step to reduce natural disasters. Our institute has made a continuous effort to construct extensive seismic networks in Japan. In early 1980’s, we have completed a dense observation network for micro-earthquake and ground tilt covering the Kanto and the Tokai districts, central Japan. The target of the network was the hypothetical Tokai Earthquake and the earthquakes beneath the Tokyo Metropolis.

Disastrous Kobe Earthquake in 1995 promoted us to make up several nation-wide seismic networks, i.e. Hi-net (high-sensitivity seismograph net work), F-net (broadband seismograph network), and K-NET/KiK-net (strong-motion seismograph network). They are continuously providing valuable data for monitoring of seismic activity around Japan and for earthquake researches, as well as contributing to the operation of Earthquake Early Warning system.

In 2011, triggered by the East Japan Earthquake, we have newly started the construction of an ocean bottom seismic and tsunami observation network along the Japan Trench. We are hoping that these seismic networks will contribute to monitor large earthquakes and tsunamis around Japan and to transfer prompt and precise warnings to the public.

Yoshimitsu Okada

Present
President, National Research Institute for Earth Science and Disaster Prevention (NIED), Tsukuba, Japan

Education
1963 - 1967 Geophysics Course, Faculty of Science, University of Tokyo, Tokyo, Japan,
Obtained B.Sc.
1967 - 1969 Graduate School (Geophysics), University of Tokyo, Tokyo, Japan,
Obtained M.Sc. (Thesis advisor; Prof. Toshi Asada)
1980 Obtained Ph.D., University of Tokyo (Thesis advisor; Prof. Ryosuke Sato)
[Dr. Thesis: Theoretical strain seismogram and its applications]

Academic Career
1970 - 1980 Assistant, Fujigawa Geophysical Observatory, Earthquake Research Institute, University of Tokyo
1980 - 1985 Chief, Crustal Dynamics Laboratory, 2nd Research Division, National Research Center for Disaster Prevention (NRCDP)
1985 - 1987 Chief, Earthquake Precursor Laboratory, 2nd Research Division, NRCDP
1987 - 1988 Chief, Seismic Activity Laboratory, 2nd Research Division, NRCDP
1988 - 1990 Principal Researcher, 2nd Research Division, NRCDP
1990 - 1993 Director, Earthquake and Volcanic Eruption Prediction Research, Solid Earth Science Division, NIED
1993 - 1996 Director, Research Center for Earthquake Prediction, NIED
1996 - 2001 Director, Earthquake Research Center, NIED
2001 - 2006 Director, Strategic Planning Department, NIED
2006 - President, NIED

Academic awards
2003 Research Achievement Award by Minister of Science and Technology Agency (Tokyo, Japan) with “Research on theoretical crustal deformation associated to magma intrusion and modeling of volcanic activity”
2006 Medal with purple ribbon (Tokyo, Japan) with “Development of quantitative model to evaluate crustal deformation”

Hard lessons learned from great earthquakes since 2004, the need for the Global Earthquake Model, and why Japan should help lead it

Ross S. Stein
Chair, GEM Scientific Board
Geophysicist, U.S. Geological Survey, Menlo Park, CA

The 2004 M=9.2 Sumatra, 2010 M=8.8 Maule, and 2011 M=9.0 Tohoku earthquakes have yielded an unprecedented record of the seismic rupture and aftershocks. For all three events, our expectations of the maximum earthquake magnitude and segmentation were proved generally inadequate. The northern end of the 1400-km-long Sumatra rupture does not correspond to a known past event or to a segmentation boundary. The southern end of the Maule rupture overlapped the 1960 M=9.5 rupture by 100 km, and the northern end fell 200 km short of the major tear in the subducting slab thought to be a segment boundary. The Japanese government was expecting nothing larger than an M=8.2 event at Tohoku, and nothing larger than a M=7.5 event at the base of the 2011 Tohoku rupture zone. In retrospect, we should assume that any subduction zone is capable of a full end-to-end rupture and thus an M≥9 earthquake, and we should not expect earthquakes to respect our segment boundaries.

So, what is the way forward? One answer is global seismic hazard models and global testing of probabilistic seismic hazard assessment. This is the mission of the Global Earthquake Model, which was launched by the OECD in 2009. GEM is supported by a growing group of twelve public and eight private sponsors, all of whom are committed to non-proprietary, open source information produced for the public good and made useful and understandable to all. In addition, the World Bank, OECD, UN ISDR, and the international societies for earthquake engineering (IAEE), structural engineering (IstructE), and seismology (IAESPEI) sit on GEM's Governing Board.

GEM's main objective is to develop a truly open-source platform, OpenGEM, that will allow stakeholders to analyze seismic risk, including the consequences of earthquakes on society and economy, measured over space and time. The Global Earthquake Model is being designed and built by experts and practitioners around the world, and will reflect the needs and knowledge of a variety of prospective users and beneficiaries through GEM's extended partner-network, whereby contributing to increased risk awareness and risk mitigation. A first fully-featured version is scheduled for the end for 2013.

There are five reasons why Japan should consider joining GEM. First, to understand Japan's—or any nation's—hazard, we must study earthquakes globally. No record of earthquakes in any one region is rich enough to be representative. Second, the 2011 M=9.0 Tohoku oki earthquake is a lesson for Japan to share with the world. Thanks to Japan's superb monitoring networks and dedicated scientists, it is the best recorded great earthquake ever to strike the planet. Third, Japan could strengthen its support for regional risk reduction programs among its allies through GEM. Finally, as pioneers in earthquake research and understanding, Japan should help lead and guide GEM to investigate and communicate earthquake risk to the world.

Ross S. Stein

Present

Fellow of the American Geophysical Union and the Geological Society of America

Education

1975 Sc.B. Magna cum Laude and with Honors from Brown University
1980 Ph.D. from Stanford University
1981 Observatory Post-Doctoral Fellow at Columbia University

Academic Career

1986 – 1989 Editor, Journal of Geophysical Research
2004 – 2006 Chair, Board of Journal Editors, American Geophysical Union
2006 Co-founded the Global Earthquake Model Foundation
2006 - Present Chair, Global Earthquake Model Scientific Board

Academic awards

1991 Outstanding Contributions and Cooperation in Geoscience Award from National Oceanic and Atmospheric Administration
1999 Excellence in Outreach Award of the Southern California Earthquake Center
2000 Eugene M. Shoemaker Distinguished Achievement Award of the U.S. Geological Survey
2003 Science Citation Index, reported as the second most-cited author in earthquake science during the preceding decade

Appearances

Smithsonian Institution for the Presidential Awards for Excellence in Mathematics and Science Teaching
American Geophysical Union's Francis Birch Lecture
Frontiers of Geophysics Lecture
Killer Quake (NOVA, 1995; Emmy-nominated documentary)
Great Quakes series (Discovery, 1997-2001)
Forces of Nature (National Geographic IMAX movie, 2004)

Seismic hazard assessment for Japan after the 2011 Tohoku earthquake

Hiroyuki Fujiwara
(Director, Social system research department, National Research Institute for earth science and disaster prevention)

Abstract

The Tohoku-oki earthquake (Mw 9.0) of March 11, 2011, was the largest event in the history of Japan. This magnitude 9.0 mega-thrust earthquake initiated approximately 100 km off-shore of Miyagi prefecture and the rupture extended 400 - 500 km along the Pacific plate. Due to the strong ground motions and tsunami associated by this event, approximately twenty thousand people were killed or missing and more than 220 thousands houses and buildings were totally or partially destroyed. This mega-thrust earthquake was not considered in the national seismic hazard maps for Japan that was published by the headquarters for earthquake research promotion of Japan (HERP). By comparing the results of the seismic hazard assessment and observed strong ground motions, we understand that the results of assessment were underestimated in Fukushima prefecture and northern part of Ibaraki prefecture. Its cause primarily lies in that it failed to evaluate the M9.0 mega-thrust earthquake in the long-term evaluation for seismic activities. On the other hand, another cause is that we could not make the functional framework which is prepared for treatment of uncertainty for probabilistic seismic hazard assessment work fully. Based on the lessons learned from this earthquake disaster and the experience that we have engaged in the seismic hazard mapping project of Japan, we consider problems and issues to be resolved for probabilistic seismic hazard assessment and make new proposals to improve probabilistic seismic hazard assessment for Japan. We propose the following four issues to be solved for improvement of seismic hazard assessment for Japan.

1) Modeling of seismic activity with no oversight to low-probability earthquakes.
2) Preparation of strong ground motion maps considering low-probability earthquakes.
3) Development of methodology for selecting appropriate scenario earthquakes from probabilistic seismicity model.
4) Development of methodology for prediction of strong ground motions for mega-thrust earthquakes.

Toward the reduction of earthquake disaster, I have been conducting research on the followings.

1) Research on numerical simulation methods for earthquake ground motions.
2) Construction of nationwide strong motion observation network, K-NET.
3) Preparation of the National Seismic Hazard Maps for Japan.
4) Development of seismic hazard information station, J-SHIS.
5) Development of Integrated Geophysical and Geological Information Database System.
6) Development of disaster risk information platform.

Hiroyuki Fujiwara

Present

Director, Social System Research Department, National Research Institute for Earth Science and Disaster prevention (NIED)

Education

1988 Undergraduate Student in the Faculty of Science, Kyoto University
1989 Graduate Student in the Department of Science, Kyoto University,
1996 Ph.D. (Kyoto University) (Thesis advisor; Prof. Kojiro Irikura)

Academic Career

1989 - Researcher, NIED
1997-1998 Visiting Researcher, Australian National University
2001 - Head of strong motion observation network laboratory, NIED
2006 - Project director, Disaster prevention system research center, NIED
2011 - Director, Social system research department, NIED

Academic awards

2006 Prize for Science and Technology (Research Category),
(The Commendation for Science and Technology by the MEXT)

Richard A. Meserve
President of the Carnegie Institution for Science
Chairman of the International Nuclear Safety Group chartered by the IAEA

Dr. Meserve recently returned from Japan, where he participated in meetings of two of the commissions that are investigating the accident at the Fukushima Diaichi NPP -- the commission chaired by Dr. Hatamura that was established by the former Prime Minister and the commission chaired by Dr. Kurokawa that was launched by the Diet. Dr. Meserve will discuss the advice that he has provided to these two commissions.

Richard A. Meserve

Present

President of the Carnegie Institution for Science
Chairman of the International Nuclear Safety Group chartered by the IAEA

Education

1966	Tufts University
	B.A.
1975	Harvard Law School
	J.D.
1976	Stanford University
	Ph.D. in applied physics

Professional Career

1977 – 1981	Legal Counsel to the President's Science and Technology Adviser
1981 -	Partner, Covington & Burling LLP
1999 – 2003	Chairman of the U.S. Nuclear Regulatory Commission
2003 – Present	President, Carnegie Institution for Science
2004 – Present	Senior of Counsel, Covington & Burling LLP
	Board of Trustees, Universities Reach Association, Inc.
2006 – Present	Director, PG&E Corporation
2008 – 2010	Director, Luminant
2010 – Present	Chair, Nuclear Committee of Energy Future Holdings Corporation

Memberships and Affiliations

National Academy of Engineering, Member
American Academy of Arts and Sciences, Fellow
American Philosophical Society, Member
American Physical Society, Fellow
American Association for the Advancement of Science, Fellow
Sigma Xi, Member
Phi Beta Kappa, Member

Evaluating and Managing Risk in the Nuclear Power Sector

Richard L. Garwin
IBM Fellow Emeritus, IBM Thomas J. Watson Research Center

Civil nuclear power can be a miraculous gift to society, now producing nearly 20% of the world's electrical energy. As demonstrated by Chernobyl and now by Fukushima Dai-ichi, it can also be a curse. It has also a link to nuclear weaponry and to proliferation of nuclear weapons, through common elements in the fuel cycle, including enrichment of fuel and reprocessing and separation of plutonium. These questions of safety and proliferation have been recognized from the very beginning. More recently, security of the nuclear power sector has become a recognized problem, to keep it safe from intentional, catalytic harm.

I propose that current organizations such as the Institute of Nuclear Power Operators (INPO) in the United States and the World Association of Nuclear Operators (WANO) be strengthened to carry out and to lead the way on detailed analysis of potential events and hazards in the nuclear power sector, including a frank evaluation of the societal costs of exposure of societies to relatively low doses of radioactive materials that could be disseminated in reactor accidents.

Looking ahead, I propose that IAEA be given the responsibility to certify and monitor mined geological repositories and the packaged waste forms to be shipped there, to enable the creation of competitive, commercial repositories available to all members of the NPT

A fuller biography is at www.fas.org/RLG/. More particularly, I have posted there both current and historical papers and presentations, mostly in the public policy area. I work primarily on national security and technology, especially in the nuclear power sector. I am concerned also with maintaining the integrity of the electrical power grid and other infrastructure against interruption geomagnetic storms and other insults. I have long been concerned with the energy sector, having chaired in 1975 a National Academies Committee on the Solar Energy Research Institute (Nation Renewable Energy Laboratory), published in 1977-79 a number of paper on "The Proper Role o the Breeder Reactor," given much testimony to congressional committees over the years on technology and security.

I have published several books on energy and nuclear power, beginning as a coauthor of an American Physical Society study in 1975, "Report to the APS by the Study Group on Light-wate Reactor Safety," in 1977 "Nuclear Power: Issues and Choices," in 1979 "Energy: The Next Twe Years." More recently I published in 1997 with Georges Charpak, "Feux Follets et Champignon Nucleaires," in 2001 and 2002, "Megawatts and Megatons …", in 2005, "De Tchernobyl en tchernobyls" (with Georges Charpak and Venance Journe) , and am completing updating that volume for early 2012 publication perhaps with the title, "De Tchernobyl en Fukushima Dai-ichi

I work with advisory groups to the U.S. government, including the National Academies of Scienc and elements of the government itself.

Richard L. Garwin

Present
IBM Fellow Emeritus, Thomas J. Watson Research Center

Education

1944 - 1947 Undergraduate Student at what is now Case Western Reserve University. Obtained B.S. in Physics.

1947 - 1949 Graduate Student in the Department of Physics, University of Chicago. Obtained Ph.D. (Thesis advisor, Prof. Enrico Fermi).

Academic Career

1949 - 1952 Instructor and Assistant Professor in the Department of Physics, University of Chicago

1952 - 1993 Staff Member and IBM Fellow at the IBM Watson Scientific Laboratory (Columbia University) and the Thomas J. Watson Research Center
At times, Professor of Public Policy at Harvard University and
Adjunct Professor of Physics, Columbia University

Academic awards

1996 R.V. Jones Foreign Intelligence Award (USA)
1996 Enrico Fermi Award (USA)
2003 National Medal of Science (USA)

Memberships

National Academy of Sciences
National Academy of Engineering
Institute of Medicine
American Philosophical Society
American Association for the Advancement of Science (AAAS)
American Academy of Arts and Sciences
American Physical Society
Council on Foreign Relations

Radiation protection of exposures from the Nuclear accident

Ohtsura Niwa
Emeritus Professor, Kyoto University

The ICRP's system of radiation protection is designed to contribute to an appropriate level of protection for people from radiation exposures without unduly limiting the desirable human activities. Tools to attain this objective is "optimization", "xxx" and " ".Health effects are the primary factor for the protection while the effects on the other dimension of human activities such daily life of individuals and culture and economy of a society are the factor of importance under certain circumstances.

The ICRP recommendation published in 2007 (ICRP 2007a) grouped various exposure situations into three; ,planned, emergency and existing. The planned exposure situations are those encountered in daily life in which radiation protection can be planned in advance of the introduction of radiation sources. Doses to people in planned exposure situations are generally low and the only health effects of concern in this circumstance is stochastic effects such as cancer. Emergency exposure situations occur unexpectedly and the doses to people can be sometime very high even to kill those from acute deterministic effects such as failures of bone marrow intestinal mucosa. Existing exposure situations can be typified for the situation after emergency stage has ended, but the leftover radiation sources still exist. In this lecture, radiation protection for the latter two situations is discussed in relation to the Fukushima Daiichi NPP. this lecture.

In the emergency phase of the Fukushima Daiichi NPP, the control over a source was lost. As a consequence, a large amount of radioactive elements spread through the wind and precipitated with rain and snow. Evacuation was necessary for the residents of heavily contaminated areas which gave a strong physical and psychological trauma to those people. In the NPP sites, actions were taken to regain the control of the sources which inevitably exposed emergency workers to relatively high doses such as a few hundred mSv. In the emergency exposure situation, the role of government is vital in ordering evacuation for the areas near the NPP and asking the workers to take recovery actions under relatively high dose rate environment of the destroyed NPP site. Indeed, evacuation was ordered in the areas within 20 km from the site, and additional areas northwest of the NPP was also ordered to evacuate since the fallout dose was higher than 20 mSv/year. Also, the dose limit in the planned exposure situation for the workers is set as 20 mSv/year, but this was temporarily raised to 250 mSv/year for emergency workers of the NPP site.

Radiation doses outside of the evacuation areas are below 20 mSv/year, so that these areas are regarded as being under the existing exposure situation. In the areas of the existing exposure situation, the health effects were not expected to be significant. However, problems for the inhabitants of these areas are even more difficult. Although the health effects if any were non-detectable, inhabitants were facing a whole range of social problems, including strong stigma by outside communities, economical breakdown due to the bias toward their agricultural products and fleeing of younger generations and the resulting community structure skewed toward higher ages. These problems cannot be solved by governmental actions. Rather, the problems can only be solved by empowerment of the people of the areas. The empowerment can only be possible by solidarity with the communities outside of the areas, and empathy of the people in the unaffected areas. In the end, living together is the only way for the recovery of long term contaminated territories.

My major interest focuses on the indirect mechanisms of radiation mutagenesis and its relation to radiation carcinogenesis
The first indirect mechanism studied was the activation of f mouse endogenous retrovirus elements. Mouse and human genomes carry numerous retrovirus elements and their activation by radiation results in formation of retroviral particles wl then infect neighboring cells. This infection leads to insertion of retrovirus elements into new sites of the infected cellular genome, thus resulting in a genomic change not by radiation by itself but indirectly by the induced retroviral elements. We found that endogenous retrovirus genome is suppressed by DNA methylation and irradiation activates retrovirus by de-methylation.
Next mechanism I studied was the instability of minisatellite sequences in mouse germ cells. Minisatellite sequences are highly mutable in mouse germline cells and the frequency of minsatellite mutation was found to be much higher than that predicted by the number of DNA double strand breaks introduced by radiation. In order to prove the indirect nature of minsatellite mutagenesis, F1 mice born to irradiated spermatozoa were analyzed. It was found that the frequency of minisatellite mutation was elevated at the irradiated paternal genome. In addition, the frequency was elevated at the unirradiated maternal gemome., demonstrating the indirect nature of this mutation. Further analyses demonstrated that minisatellite mutation is dependent on the p53 mediated S checkpoint which is activated by radiation.

Ohtsura Niwa

Present
Emeritus Professor, Kyoto University, Japan

Education
1963 - 1967 Undergraduate Student in the Faculty of Science, Kyoto University
B.Sc.

1967 - 1971· Graduate Student in the Department of Zoology,

1971 - 1975 Graduate student, Biophysics Program, Stanford University
Ph.D. (Thesis advisor; Drs. Henry S. Kaplan, Philip C. Hanawalt)

Academic Career
1975 – 1984 Research Assistant, Department of Radiation Medicine,
Kyoto University Medical School
University of ○○ (Dr. ○○'s laboratory)

1984 – 1991 Assistant Professor at the Research Institute of Radiation Medicine and Biology
Hiroshima University

1991 – 1999 Professor at the Research Institute of Radiation Medicine and Biology
Hiroshima University

1999 – 2009 Professor at the Radiation Biology Center, Kyoto University

Academic awards
2005 Roentgen Medal (City Rhemscheid, Germany)

The Short- and Long-term Effects of the 2011 Great East Japan Earthquake on Japanese Economy and Society

Junichi Mori
Vice President for International Relations, Kyoto University

The 2011 Tohoku earthquake and tsunami disaster had great impacts on the Japanese economy. In the short-term, the three consecutive supplementary spending budgets enacted by the Japanese government will have positive impacts, and the domestic economy will keep growing throughout 2012. However, many risk factors, including Europe's debt problems, will cause the Japanese economy to remain fragile. The first question which must be answered is whether Japan's nuclear power plants will be restarted. The operation of many plants has been stopped to enable regular inspections. Regional governments are unwilling to restart the plants due to concerns over negative public sentiment. I believe, however, that the Japanese economy will not be negatively affected by the stopped power plants.

In the mid- to long-term, the Japanese economy will face serious interconnected challenges:

1. The fiscal deficit of the central and regional governments. The funding for recovery from the earthquake and tsunami disaster will be funded with 25-year maturity bonds. The government will not have difficulty in issuing these bonds, but other huge funding needs, for general purposes in coming years, such as social security expenditure, will be problematic.
2. The persistent deflationary pressure that has damaged the Japanese economy for two decades. A review of the Bank of Japan's monetary policy will be necessary to address this issue.
3. The ageing society in Japan, and the consequently decreasing savings rate.
4. The weakening international competitiveness of Japanese corporations and the delay in the decision to participate in regional free trade areas (e.g. the PPT).

I believe that Japanese society has the capacity to meet these challenges proactively. In the areas of industry and higher education, for example, Japanese corporations have begun to focus on hiring more international talent, and likewise, Japanese universities have begun to examine new possibilities for change in the country's traditional education system. The government is also placing an emphasis on nurturing internationally-minded graduates, and the term "global human resources" has become a buzzword in Japan.

As chief economist of several economic research institutes, I have undertaken research into international monetary affairs and the global economy. Recently, the continuing appreciation of the Japanese yen and the resulting deflationary pressure in Japan has been of particular interest.

Following my employment by Kyoto University in 2004, I have been heavily involved in the university's internationalization efforts. I am currently director-general of the university's Organization for the Promotion of International Relations (OPIR). The OPIR coordinates international operations on a university-wide level, and through my work I have a great deal of contact with others who are engaged in the international aspects of education.

One of the many challenges being faced in the wake of the 2011 Great East Japan Earthquake is the education of future leaders with the ability to guide Japan and the world in a rapidly changing environment.

Junichi Mori

Present

Vice-President for International Relations
Director-General, The Organization for Promotion of International Relations, Kyoto University

Education

March 1973 Faculty of Economics, Hitotsubashi University

Professional Career:

April 1973	Bank of Tokyo, Ltd. Tokyo
August 1976	Research Student, University of Muenster, Germany
January 1985	Vice-President, Capital Markets Group, New York Office
August 1988	Director, Capital Markets Department Bank of Tokyo (Deutschland) AG, Frankfurt
March 1991	Board Member, Bank of Tokyo (Deutschland) AG, Frankfurt
April 1997	Chief Officer, Research Division, The Bank of Tokyo-Mitsubishi
April 2000	Director, Institute for International Monetary Affairs
April 2004	Professor, The International Center, Kyoto University
April 2007	Director and Professor, The International Center, Kyoto University
April 2009	Vice-President for International Relations, Kyoto University

Notable Publications in English:

"Development of Capital Markets and Surveillance in East Asia with Particular Reference to Bond Markets" (Feb. 2002, published in the IIMA's report "Strengthening Financial Cooperation and Surveillance" for the Kobe Research Project, commissioned by the Ministry of Finance of Japan)

"China's WTO Accession and its Impact on China's Financial System" (Feb. 2003, presented at the International Symposium on China's Economic Development and Structural Change in East Asia, in commemoration of the foundation of the Shanghai Center for Economic Research, Kyoto University)

Economic Policies for the Post 3.11 Era in Japan

Etsuro Shioji
Professor, Department of Economics, Hitotsubashi University
(Visiting Scholar, Columbia University)

In this presentation, I will argue that Japanese fiscal policy will be playing crucial roles in shaping the future course of the Japanese economy. A prudent energy policy and an open trade policy would also help.

Japan in the post 3.11 era faces five significant challenges with respect to economic policies. First, it will have to find an effective way to re-build the disaster-afflicted areas. Second, it will have to determine a future path of its energy policy in the midst of a heightened scepticism toward nuclear energy. Third, credibility in the government's long term fiscal sustainability needs to be restored. Fourth, it is desirable to re-balance intergenerational inequalities in incomes and opportunities in a rapidly aging society. Fifth, in the middle of all these adversities, it will have to somehow find a way to get back to the two per cent long run growth path for its productivity.

Economists are divided on how best to reconstruct the Tohoku area. Some have proposed building new "compact cities" at places sufficiently above the sea level, by consolidating existing local communities along coastal lines. I will discuss pros and cons of this proposal. Either way, it will be costly to re-build the area in a forward looking manner and also to properly cope with anxieties with potential food and soil contamination due to radiation.

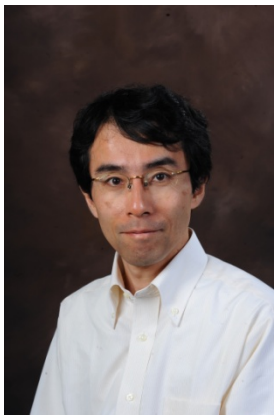
And this comes at a time when the long term solvency of the Japanese government budget is in question. I will argue that efforts need to be made quickly to convince the financial market (and the general public alike) that the government has committed to a workable plan on restoring fiscal solvency (when to implement this is another matter).
However, raising taxes (and perhaps cutting some existing spending) just enough to maintain long run fiscal balance is not likely to be sufficient. A fiscal expansion is needed, partly to give a short run stimulus to the economy that is stuck at the zero lower bound of the nominal interest rate, but more importantly to promote inter-sectoral reallocation of resources and to accelerate long run productivity growth.

Current research activities: Etsuro Shioji specializes in macroeconomics. He is currently investigating the following three research questions.

(1) The Japanese economy experienced the largest loss of output among major industrialized countries af the Lehman crisis. This happened despite that its financial system remained more or less stable. Why? Japan particularly "export dependent" in some sense?
(2) How does the advancement of emerging market firms in the global market affect price dynamics in developed countries? For example, has the dramatic increase in imported textiles from China made the prices of clothing in Japan more susceptible to exchange rate fluctuation
(3) Why has the effect of public investment on output (apparently) declined in recent years? Does the size of the effect change in the aftermath of a large-scale destruction of both private and public capital (such as the Great East Japan Earthquake in 2011)?

He is also writing a chapter for a forthcoming handbook on the Japanese asset price bubble in the 1980s and the long lasting impact of its collapse.

Etsuro Shioji



Present

Professor, Department of Economics, Hitotsubashi University
(Visiting Scholar, Program for Economic Research and Center on Japanese Economy and Business, Columbia University)

Education

1983 - 1987	Undergraduate student, Department of Economics, University of Tokyo (B.A.)
1987 - 1990	Graduate student, Department of Economics, University of Tokyo
1990 - 1995	Graduate student, Department of Economics, Yale University (Ph.D.; Thesis adviser Dr. Xavier Sala-i-Martin)

Academic Career

1994 - 1997	Assistant Professor, Department of Economics, Universitat Pompeu Fabra
1997 - 2006	Associate Professor, Department of Economics, Yokohama National University
2006 - 2007	Associate Professor, Department of Economics, Hitotsubashi University
2007 -	Current position

Academic awards

2002	APFA/PACAP/FMA Finance conference best paper award
2011	Fulbright Scholarship
2011 - 2012	Abe Fellowship

Challenges facing the American Economy

Martin Neil Baily
Senior Fellow and Bernard L. Schwartz Chair, Brookings

The effects of the deep recession of 2008-09 have not been reversed; instead there has been slow and variable growth in this weak recovery. This is despite the fact that the Federal Reserve has kept interest rates close to zero and used quantitative easing. A sizeable fiscal stimulus was introduced in 2009 and it probably helped avert an even more serious recession. However, the very large budget deficits make it difficult to enact a new large stimulus and, in any case, political gridlock makes it difficult to take any active steps to help growth. Most economists would support a serious plan to balance the budget over the long run together with a modest additional stimulus in 2012, but this is very unlikely to happen.

Balancing the US budget over the long term will involve both tax or revenue increases as well as curbs on spending. Federal health care spending is one key to controlling overall government spending. The United States spends over 17 percent of its GDP on health care and the government contributes around a half of this. Other countries provide more comprehensive coverage to their citizens at half the cost. The Administration introduced some serious cost cutting measures into the Affordable Care Act and if these provisions are enforced they would dampen the growth of hospital spending. In addition, it is necessary to move away from the fee-for-service payment system in order to reduce over-treatment and provide better incentives to doctors and other health care providers.

Provided Europe does not return to crisis, I expect the US economy to grow at a 2 to 3 percent growth rate in 2012. Only after the housing market has recovered will there be a stronger recovery.

Martin Neil Baily

Present

Senior Fellow and Bernard L. Schwartz Chair, Brookings
Senior Advisor to McKinsey & Company
Economic Adviser to the Congressional Budget Office
Director of The Phoenix Companies
Co-chair of the Financial Reform Task Froce

Education

1968	Simon Fraser University in Canada
	M.A. in Economics and Econometrics
1970	Cambridge University
	M.A. in Economics with a minor in natural sciences
1972	Massachusetts Institute of Technology
	Ph.D. in Economics

Academic Career

1989 - 1996	University of Maryland
	Professor of Economics

Professional Career

1994 – 1996	Member, President's Council of Economic Advisers
1996 – 1999	Principal, McKinsey & Company
1999 – 2001	Chairman, Council of Economic Advisers
2001 – 2007	Senior Fellow, Peterson Institute

Richard M. Krause, M.D.

Present
Contractor, Kelly Services, Inc.
Senior Investigator (retired)
NIAID, DIR, OD

Education

1947	B.A. Marietta College, Marietta, Ohio
1952	M.D. Western Reserve University School of Medicine, Cleveland, Ohio

Academic Career

1950 – 1951	Fellow, Department of Preventive Medicine, Western Reserve University School of Medicine, Cleveland, Ohio, assigned to the Streptococcal Disease Laboratory, Warren Air Force Base, Cheyenne, Wyoming.
1952 – 1954	Intern and Asst. Resident, Internal Medicine, Ward Medical Service, Barnes Hospital, Washington University, St. Louis, Missouri.
1954 – 1975	successively Asst. Prof., Assoc. Prof., and Professor, Rockefeller University; and Associate Physician, and Senior Physician to the Hospital, New York, NY.
1975 – 1984	Director, NIAID, NIH, Bethesda, MD.
1989 – Present	Senior Scientific Advisor, Fogarty International Center, NIH, Bethesda, MD.
1984 – 1988	Dean, Emory University School of Medicine and Robert W. Woodruff Professor of Medicine, Atlanta, Georgia.
2000 – 2007	Senior Investigator, NIAID, NIH, Bethesda, MD.
2004 –2005	Acting Executive Director of the Regional Emerging Diseases Intervention (REDI) Center in Singapore, jointly supported by Office of the Secretary, DHHS, USA; and Ministry of Health, Singapore.
2007 – 2009	Investigator Emeritus, NIAID, DIR, OD, NIH, Bethesda, MD.
2009 – Present	Investigator Emeritus (retired), Contractor, Kelly Services Inc., NIAID, DIR, OD, NIH, Bethesda, MD.

Academic Awards

1977	Member, U.S. National Academy of Sciences, Washington, DC
1978	D.Sc. (h.c.), Marietta College, Marietta, Ohio
1979	D.Sc. (h.c.), University of Rochester, Rochester, NY
1980	Republic of Egypt, Order of Gumhuria Award from President Sadat
1981	Member, Institute of Medicine, Washington, DC
1981	D.Sc. (h.c.), Medical College of Ohio, Toledo, Ohio
1982	D.Lld (h.c.), Thomas Jefferson University, Philadelphia, PA
1982	D.Sc. (h.c.), The Hahnemann Medical College, Philadelphia, PA
1984	Robert Koch Gold Medal, Robert Koch Foundation, Berlin, Germany
1986	Senior U.S. Scientist Award, Alexander von Humboldt Foundation, Germany
1997	Order of Merit, from the President, Federal Republic of Germany
2003	D.Sc. (h.c.), Case Western Reserve University, Cleveland, Ohio
2004	Order of the Rising Sun, Gold and Silver Star from the Emperor of Japan

Akihiko Tanaka

Present

Chair, USJI / Vice President, Professor, The University of Tokyo

Education

1971	B. A. University of Tokyo (International Relations)
1981	Ph.D. Massachusetts Institute of Technology (Political Science)

Academic Career

1981-1983	Researcher, Research Institute for Peace and Security
1983-1984	Research Associate, Department of Social and International Relations, The University of Tokyo
1984-1990	Associate Professor, Department of Social and International Relations, The University of Tokyo
1986-1987	Visiting Professor, Rhur-Universitaet Bochum
1987-	Research Associate, Research Institute for Peace and Security
1990-1998	Associate Professor, Institute of Oriental Culture, The University of Tokyo
1994-1995	Senior Associate Member, St Antony's College, Oxford
1994-1995	Visiting Scholar, Nissan Institute of Japanese Studies, Oxford
1998-	Professor, Institute of Oriental Culture, The University of Tokyo
2002-2006	Director, Institute of Oriental Culture, The University of Tokyo
2000-2002, 2006-	Professor, Interfaculty Initiative in Information Studies, The University of Tokyo
2008-	Director, Division for International Relations, The University of Tokyo
2009-2010	Executive Vice President, The University of Tokyo
2011-	Vice President, The University of Tokyo

Academic awards

1996	Suntory Academic Prize (for *Atarashii chusei*)
2001	Yomiuri Yoshino Sakuzo Prize (for *Wado Politikkusu*)