May 2008 Newsletter

Views and opinions expressed in articles are those of the authors and are not necessarily shared by the editor or the APS/FIP. We reserve the right to withhold names of authors in order to reduce the risk of additional personal hardship, for instance for speaking out on human rights issues.

Satoshi Ozaki *

View from the Chair

As the 2008 Chair of FIP, I welcome you all to the FIP Newsletter. Thanks to the effort of our editor, Laszlo Baksay, and the illustrious group of authors, we now have the spring issue of the Newsletter. I would also like to acknowledge effort by members of the FIP Executive Committee who worked hard to soliciting or writing articles for the Newsletter. Following the trend of various newsletters and because of financial considerations, we have decided to issue this Newsletter in a downloadable electronic form. However, knowing that a hard copy of the Newsletter, delivered to you by mail, is preferable; our current plan, however, is to publish the next one as a printed version, in parallel with the electronic version, late this year.

FIP Activities in 2008 to date:

New Slate of FIP Officers:

A new slate of officers was installed in January, with the chair line moving one step forward. I would like take this opportunity to thank Herman Winick, the Past Chair, for his dynamic leadership of the Forum with enhanced activities throughout the year, such as addressing a number of international issues with a high level of sensitivity. I welcome the new members of the Executive Committee: Noemie Koeller (Vice-Chair), Department of Physics and Astronomy, Rutgers University; Cherrill Spencer, International Linear Collider Department, Stanford Linear Accelerator Center; and Paul Gueye, Physics Department of Hampton University and Physics Division of Jefferson Laboratory. We were very fortunate to have Noemi Mirkin, Biophysics Department at the University of Michigan, continue to serve as the Secretary/Treasurer. We are highly indebted to Noemi for many years of service in this capacity in maintaining the continuity of the Forum finance and business matters, which is not an easy task.

FIP Invited Speakers Sessions at the 2008 APS Meetings:

FIP's major undertaking every year goes to organizing sessions at the March and April Meeting of APS. For 2008, FIP had four such sessions, two during March and two during April. Program and abstracts of the talks, as well as the presentation of most of the speakers can be found at:

http://www.aps.org/units/fip/meetings/index.cfm
(To open a presentation, select and click a desired meeting on the right column, and then click the selected title with underline in the session program.)

This year we have taken the gender equality in the physics work place in various parts of the world as the principal theme for our invited sessions. At the March Meeting in New Orleans, we had a panel discussion that was co-sponsored by the APS Committee on the Status of Women in Physics (CSWP) with the title of "International Gender Issues in Physics". This panel session was chaired and moderated by Beverly Hartline from Delaware State University with participation of such internationally well known speakers on this subject as Arthur Bienenstock from Stanford University (current President of APS); Barbara Sandow from Freie Universitat Berlin, Germany; Laura Greene from University of Illinois at Urbana-Champaign; Ling-An Wu from the Chinese Academy of Science at Beijing, China; and Dalia Satkovskiene from Vilnius University, Lithuania, the winner of the 2008 Marshak Lectureship Award. Here, I would like express my admiration of Bev Hartline for her passion on the issues and her outstanding ability to organize a panel discussion.

At the April St. Louis Meeting, we again had a panel discussion with the same title and co-sponsored this time by the APS Forum on Physics and Society (FPS). The illustrious invited speakers were Giulia Pancheri from INFN Frascati National Laboratories, Italy, Meg Urry from Yale University, and Marcia Barbosa from Universidade Federal Do Rio Grande Do Sul, Brazil. Unfortunately, cancellation of flights by massive grounding of MD88 type aircraft by American Airlines made it impossible for Meg Urry to reach St. Louis, and her talk was presented by one of the Executive Committee members, Betty Tsang. We were very fortunate to have had Arthur Bienenstock, President of APS who has a very keen interest in the gender equality issue, not only speak at the March session but also chair and moderate the April session. Both of these sessions were well attended with about 100 people and with many serious and lively discussions.

The other FIP invited session in March was entitled "Making the Invisible Scientist Visible: Science in Emergent Countries". This session addressed one of those important issues in discovering highly talented scientists who are hidden under a thicket of bureaucracy that often exists in an emergent society. This panel session was moderated by

Anita Mehta from S.N. Bose National Centre in Kolkata, India, who is a member of our Executive Committee. Other Participants were Ayse Eazan from Istanbul Technical University, Turkey; Venkatesh Narayanamurti from Harvard University; and Monica De la Cruz from Northwestern University. This session was also well attended with lively discussions.

The second FIP invited session in April was co-sponsored by the APS Division of the Physics and Beams (DPB), and entitled "Impact of Major Accelerator Projects on the Development of Emergent Countries" with the idea to survey how a major accelerator project impacts the technical and economic development of emergent countries. Invited speakers were Vinod Sahni from Raja Ramanna Center for Advanced Technology, Indore, India who were addressing impacts of their participation in the LHC Project at CERN; Won Namkung from Pohang University of Science and Technology who addressed the case with the Pohang Synchrotron Light Source where an industrial investment triggered governmental engagement in the science and technology development; and Herman Winick from SLAC who addressed the case of SESAME that intends to open the doors of the Middle-East toward the future of science and technology. Unfortunately, due to a delay in securing the US visa, Dr. Sahni could not come to St. Louis in time, and the talk was presented by his colleague from India, Shekhar Mishra who is at Fermilab.

Another highlight from the April Meeting was the presentation of the 2008 Andrei Sakharov Prize to Prof. Liangying Xu from China. Back in 2004, the FIP contributed seed money to the APS to initiate this bi-annual prize. This event is covered by Betty Tsang elsewhere in this Newsletter.

FIP Outreach:

Following an initiative in 2006 by Irving Lerch, then FIP chair, we continued the tradition of having a joint reception with groups of physicists with roots abroad and working in the US, including the Overseas Chinese Physics Association (OCPA), the American Chapter of the Indian Physics Association (ACIPA), the Association of Korean Physicists in America (AKPA), and the Iranian-American Physicists (IrAP) Network Group. These outreach efforts are important for FIP as it looks forward to a harmonious practice in physics through out the world. Extending this outreach in geographical dimension, we intend to promote the outreach also in the age domain by extending our invitation to the APS Forum on Graduate Student Affairs (FGSA), which, I am certain, will share similar international concerns with us.

APS Fellows:

With good work by the Fellowship nomination committee, the FIP was able to nominate nine deserving candidates for APS fellowship, and we are pleased to announce that all nine of them were chosen by the APS Fellowship Committee. The Fellowship certificate and Pin" were awarded to the newly elected Fellows at the March reception held jointly with our expatriate organization and in April at the time of the FIP Executive Committee meeting. The names and citations for new awardees can be found in the December 2007 FIP Newsletter.

Activities to Come:

Now that the 2008 APS Meetings with FIP sponsored invited sessions were successfully concluded, our activities are shifting to preparing for the balance of 2008 and 2009. They are as follows:

- The 2009 programs for the FIP sponsored sessions during the March and April APS Meetings are being formulated by the Program Committee under the Chairpersonship of our President-Elect, John Clark.
- The International Travel Grant Award Program (ITGAP), which was initiated with significant seed money from FIP has been enlarged with financial contributions from other units of the APS and is now managed by the APS Committee on International Scientific Affairs (CISA). The Chair of the ITGAP Selection Committee for 2008 is Noemie Koeller, our Vice-Chair, joined by Cherrill Spencer, Lidia Smentek, as well as other representatives from Units that are contributing to the ITGAP. We thank John Clark and his committee for their good selection of four recipients for the 2007 program.
- APS Fellowship nomination is open with the nomination deadline of May 15. The qualification criteria are a physicist with outstanding accomplishments in his/her scientific field and in addition, with recognized contributions, related to the mission of the FIP. FIP members are encouraged to nominate deserving colleagues using the APS on-line nominating procedure.
- The time has come to prepare the slate of candidates for the election of officers of the FIP, i.e., one Vice Chair and two Members at Large. FIP members are encouraged to contact the Nomination Committee, chaired by Herman Winick (the FIP Past-Chair) for the nomination, deadline for which is July 15, 2008. (winnick@slac.stanford.edu)
- Membership Drive: Increasing membership is very important to our Unit because it will help enhance the consciousness on international affairs among the members of the APS, it will allow us to maintain FIP's presence at the APS Council, and most importantly it can increase the membership income from APS to support our ever increasing level of activities. The FIP Executive Committee established a Membership Drive Task Force, which

is led by Galileo Violini together with Betty Tsang, Herman Winick and Anita Mehta as members, aiming at a sizable increase by the end of 2008. I take this opportunity to appeal to all FIP members to invite his/her friends and colleagues to join the FIP by online membership registration.

- Lastly, and very importantly, the FIP Executive Committee recognizes the importance of communication with FIP members and we will try to do our best to improve this. Namely, we are in the process of establishing working groups for the FIP website and for the Newsletter.

- Satoshi Ozaki is Chair, Executive Committee, Forum on International Physics and also Senior Advisor for Brookhaven's NSLS-II synchrotron light-source project.

Science and a World in Transition

Selected memories of an international science bureaucrat

(Episode 1 + 2)

Irving A. Lerch*

1. Mamma Ligga in the Rilla Mountains—

On my arrival in Vienna at the IAEA in January, 1973, my assigned territory included east-central Europe (home of the "evil empire" of the day), the Middle East, Africa and parts of Asia. One of my first excursions was to Sofia, Bulgaria, where I was to help set up a radiation biophysics lab for both research and biomedical service to the central university radiation oncology department.

When I arrived at the airport I proudly laid my sky-blue UN Laissez-Passer before the customs official and he stared at it without moving for fully 10 minutes. I got nervous—certain that I was about to be whisked to an interrogation chamber. Then he bestirred himself, looked up and asked me for my American passport. I handed it to him and he stamped it and ushered me through customs without hesitation—so much for my diplomatic status.

I was met by Bulgarian colleagues who drove me to a government ministry. I presumed my task was to assure delivery of equipment and help my colleagues set it up and begin their experimental program. Instead I found myself confronting two government ministers—the minister of health and the minister of science, technology and higher education. They sat me down at a large conference table and stared at me. It dawned on me that I was supposed to make a statement. I began to talk in English when the big barrel-chested minister of S&T interrupted and demanded to know if I spoke Russian. No. What languages did I speak? German and French. Good, said S&T, we speak German and you speak French with my colleague.

I began again and for 2-3 hours relying on my wholly inadequate vocabulary and grammar, argued facilities, university appointments, schedules and pay. In the end, S&T turned to me and asked if I liked "mama ligga" (corn meal mush in Yiddish). I was stunned and stammered yes (perhaps out of politesse because I know of no living creature who will voluntarily request the stuff). He then invited me into his black Mariah and we drove for an hour and a half up Mount Vitosha until we came to a huge rustic restaurant—mostly empty. We went inside and he ordered something from the waitress. She arrived with one bowl of mush and put it in front of me. I asked the minister whether he wanted some and he sniffed and said no. He hated the stuff. During the war that was all they could eat when battling the Nazis in the Rilla Mountains.

2. Atomic aspirations in West Africa and the fall of Saigon—

Californium-252 is a radionuclide first discovered in nuclear transformation reactions in cyclotron experiments by Glen Seaborg and his colleagues in 1950 and subsequently in the debris of the Pacific tests of the hydrogen bomb. It is unusual in that it decays by nuclear fission, emitting neutron and alpha radiation. Also it is relatively easy to produce in nuclear reactors—much as Plutonium. Because of its unique radiological properties, the US Atomic Energy Commission decided to make the isotope for research purposes, with an eye on industrial and medical applications.

On my arrival in Vienna, the US had offered the Agency the loan of Californium sources for use in its outreach programs worldwide. In reality, the sources were being returned to the Department of Energy when radioactive decay had reduced their usefulness (it decays to half its activity in 2.6 years). The brilliant idea was to garner international gratitude by proffering the sources as a "gift." The problem was that no one in Vienna knew what to do with them. I was told that since I was an American and, presumably an expert on radiation, I should come up with a program (so as

not to offend the US Administration or allow the Agency staff to appear ineffectual). And, by the way, there was little —in reality *no*—money.

My immediate response was to circulate an announcement inviting research proposals. Preference would be given to scientists from developing countries although partnerships with institutions in industrial countries were encouraged. The fact that these were dangerous radioactive materials requiring special shipping containers and monitoring equipment was set aside for the moment.

The response was immediate and I arranged programs in South Vietnam (there was a nuclear center not far from Cam Ranh Bay), Ghana, West Africa, Egypt, Israel, and numerous other countries. With the help of the US Resident Representative in Vienna, the Hungarian Atomic Energy Commission and others, I was able to put together a program.

The only question was: How do you make delicate radiological measurements in a rain forest? I had to find out.

Hungarian colleagues at the Budapest standards institute helped by producing extremely robust, sensitive and accurate dosimetry equipment and I designed the shielded shipping containers and experimental chambers that were constructed by the IAEA laboratory in Seibersdorf, Austria.

The University of Legon, located outside the Capital, Accra, is the largest of five institutes of higher learning in Ghana. Adjacent to the university is the nuclear research center—the brain-child of Ghana's first President, Kwame Nkrumah, who was deposed in the 1960s. Nkrumah was a Russian client and had invited Soviet scientists and technicians to build a nuclear research center with as its centerpiece a small "swimming-pool" research reactor. When I arrived, the infrastructure was crumbling and decayed plumbing and insulation hung from the ceiling of the reactor building. However a few outbuildings were serviced with electricity and one even had a window air-conditioning unit where we set up shop.

Two physics professors had decided to collaborate on neutron dosimetry experiments. They had been trained in Germany and had good credentials but were frustrated—as was true of so many African scientists and engineers—by the lack of equipment and research opportunities. By the end of the decade of the 1970s, fully 10,000 highest trained scientists and engineers would emigrate to the West or the Soviet Union to be followed by 100,000 skilled workers of all stripes annually.

The time in Ghana was exhilarating and I learned to like kenke (fermented cornmeal in a banana leaf—a higher form of "mamma ligga"), West African High Life (the wonderful lilting music that gave birth to Caribbean Reggae, spicy ground nut soup (wonderful when used as a sauce on fou-fou, the pounded cooked gelatinous cassava) and a group of dedicated scholars who were both optimistic and certain that they could better their country. Around the corner, however, was a civil storm that would deluge West Africa and undermine all that was or could be accomplished for generations.

On Thursday, April 31, 1975, I convened a research meeting at the Karlsruhe Nuclear Research Center in Germany for the purpose of bringing all of the scientists working with Californium together to discuss their results. I learned that morning that Saigon had just fallen and presumed that my colleague from South Vietnam would not attend. During the morning session, however, I was called to the phone. The Vietnamese physicist was calling from Paris and was profusely apologetic for missing the opening of the conference.

I told him not to worry, and not to try to come to Karlsruhe. He had taken one of the last commercial flights out of Saigon without his family and I told him that we would wire money. I asked him to contact the large expatriate Vietnamese community in Paris and seek help. He insisted on coming and presenting his report which he did the following day. He then disappeared and I never saw nor heard from him again.

Years later when the North Vietnamese government official who had taken his position visited me in Washington, DC, I asked about him and his fate but received no reply.

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* Irving Lerch has been Chair, Executive Committee, FIP, and Director, Office of International Affairs, APS

POLISH PHYSICAL SOCIETY
Polskie Towarzystwo Fizyczne

It took World War I, with the Central Powers losing to the Western Allies, the chaos of the Russian Revolution and the Treaty of Versailles, that officially ended World War I, to restore Poland's independence. Independence gained again in 1918 gave the impetus for the rapid development of the natural and technical sciences. In 1919 a new era started when the Polish State was emerging after being absent from the political map of Europe since its partitions. In the newly free state the citizens were able to establish new organizations, societies and associations.

In 1913 construction of the building for the Physics Department of the Tsar Warsaw University started, but the beginning of the War World I suspended it. When Polish Warsaw University was reborn, the Physics Department was developing under the leadership of physicist Józef Wierusz-Kowalski, who had returned from Switzerland. He was a student of Roentgen, and previously served as a professor and Rector of the University in Swiss Fryburg. Wierusz-Kowalski was a historical person himself. He was the one who in Paris introduced Piotr Curie to a young physicist Maria Skłodowska, a close friend of his wife from the time she had spent in Warsaw.

In January 1919 Józef Wierusz-Kowalski initiated the organization of the Warsaw Physical Society, although he was a very active member of the Warsaw Scientific Society (WSS) established in 1907, which was a crucial force behind the creation of the Warsaw Technical University (where Wierusz-Kowalski became a professor). The Third Division of WSS devoted to basic science (in contrast to the applied sciences) was the association of outstanding scientists among whom in addition to Wierusz-Kowalski there was a chemist - Józef J. Boguski, a cousin of Maria Skłodowska-Curie and her first teacher of physics and chemistry prior to her travel to Paris - and the mathematician Kazimierz Żórawski. He, while a student of the Jagiellonian University in Cracow, was Maria's object of innocent affection when she was the governess at his parents' estate earning money for her future study. Only the negative attitude of the Żórawskis, who disapproved the friendship of their son with Maria, was the reason that she left the estate, went back to Warsaw and in 1891 left for the Sorbonne to complete her education.

On January 13th, 1919 the first meeting of the new Physical Society was held at Warsaw Technical University. A few days later, on the 29th of January, during the next meeting, the bylaws and the board were officially accepted.

On the 11th of April, 1920, on the initiative of the Warsaw Physical Society the first Convention of the Polish Physical Society was held. Four regional chapters were recognized: Vilnius (March 1920), Warsaw (May 1920), Cracow (1920) and Lvov (1921) (at that time Vilnius and Lvov belonged to Poland). The first National Meeting of the Polish Physical Society was organized in April 1923 in Warsaw and was attended by about 200 members. The next meeting was in Cracow in 1924; its participant Professor Aleksander Jabłoński, the author of the famous Jabłoński diagram of luminescence and the founder of the Physics Department of Copernicus University in Toruń (in 1945), and the President of the PPS in (1957-1961), wrote in his Reminiscences of the activities of the Polish Physical Society (presented in Poznań in 1969 on the occasion of the 50th anniversary of the Society):

"I would like to point out that before World War II the majority of the physicists considered the role of the Society of great importance. It was impossible to imagine that somebody could skip volunteer work for the Society. Such an activity was treated as beneficial for Polish Science, and through this, to the benefit of Poland. In national meetings organized by the Society almost every active physicist, with few exceptions, took part, and this participation was the measure of the scientific activity of various institutions".

These are the roots of the Polish Physical Society, its place in the history of Polish science, its value and sprit. Due to this spirit and strength gained from the camaraderie and unity of the scientists, it was possible for the Society to also function in the underground during the dark period of 1939-1945, the time of the war and the German occupation of Poland. After the war, as mentioned by Professor Jabłoński in the same address cited above, the role of the Society

was belittled by the new order in the country. However since 1947 when the leadership was in the hands of the outstanding physicists Professor Wojciech Rubinowicz its pre-war status was again rebuilt.

The first paragraph of the bylaws defines the goal of the Polish Physical Society (PPS) stating that *"The objective of the Polish Physical Society is to merge in common work activities of persons, who deal with research in physics or related sciences, or who devote their time in teaching and disseminating these sciences in Poland…"* One of the next paragraphs states how the goal should be achieved, i.e. by organizing conferences, lectures, exhibitions and excursions, by international cooperation, by founding libraries and laboratories, and by publishing reports and journals. It is stressed also that the Polish Physical Society should award grants and prizes as well as send memoranda to the authorities, disseminating opinions and information.

The goal and the methods of work of the Polish Physical Society are the same presently as in the past, although the number of the members has changed. At the end of the twenties, when the Society was developing it consisted of two hundred and six members; today there are two thousand fifty six members.

PPS organizes exhibitions, lectures, meetings and conferences. Since 1923 it has published the "Reports", which in 1932 was changed to "*Acta Physica Polonica*". At the beginning the scientific papers where written in Polish with the abstracts in foreign languages, but since 1933, all publications are written in a foreign language (before the WWII with Polish abstracts).

The official journal of the Polish Physical Society is the magazine *Advances in Physics* (Postępy Fizyki) founded in 1949. This magazine is addressed to the Polish community of physicists and is published bimonthly in Polish with English abstracts. It presents the latest results of the research in physics, as well as reports on important events, and reviews of academic publications and notebooks.

An additional five journals, although not published by PPS, are edited in collaboration with the Polish Physical Society. *Delta* is a popular natural science journal published monthly since 1974, and it is primarily addressed to high school students; *Photon* (Foton) has been published since 1991, and it is devoted to science at the level of the secondary school; *Physics at School* (Fizyka w Szkole), published bimonthly, is addressed to science teachers, while *Physics and Nature* (Fizyka i Przyroda) and *My Physics* (Moja Fizyka) are prepared for both students and teachers.

Today the structure of the Polish Physical Society is similar to that from the time when the society was founded. There is a strong Teacher's Section, which popularizes physics, organizes exhibitions and shows. PPS experts evaluate handbooks and school programs. One of the most interesting initiatives of the Teachers Section is the "***Physics Olympiad***" organized 57 times since the program started in 1950. The Olympiad is organized for students of high schools; the winners of the competition have guaranteed admission to the best Polish Universities. This idea has spread in the Physics Community, and since 1967 there are International Physics Olympiads organized all over the world. The first international Olympiad took place in Warsaw in 1967, and it was organized in a manner similar to the national one. In this first competition of talented students only representatives from Czechoslovakia, Bulgaria, Hungary, Romania and Poland took part.

The Polish Physical Society through its Section of the Young, is working with and for university and high school students as well as for young researchers. Since the methods of physics are used in modern times not only in the basic research of physics but also in economy and sociology, the section of "Physics in Economy and Social Sciences" is a chapter working within the Polish Physical Society in addition to the Optics Section, which is devoted to the modern aspects of photonics.

In addition to the Sections there are eleven Committees permanently working within the mission of the Society; there are Committees of Physics Education in Schools, of International Cooperation, Didactic Rewards, Large Research Facilities and History of Physics, among others.

The most important and most prestigious award presented by the Polish Physical Society is the Marian Smoluchowski Medal. It is named after the outstanding Polish physicist (1917-1972) who is recognized as a pioneer of statistical physics, and whose work Albert Einstein applied in his kinetic theory of Brownian motion.

The Polish Physical Society, in order to recognize the outstanding scientific achievements of various world-renowned scientists, established a list of honorary members; it includes: Maria Skłodowska – Curie, Frederic Joliot – Curie, Alfred Kastler, Aleksander Jabłoński.

Przemysław Dereń
Member of the Executive Board of the PPS
Institute of Low Temerature and Structural Research
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Wrocław, Poland

Lidia Smentek
APS, FIP, Member-at-Large
PPS

Defusing the Nuclear Threat

Martin E. Hellman
Professor Emeritus of Electrical Engineering
Stanford University

Especially in recent years, whenever perturbations on our nuclear weapons posture are proposed they are rejected as too risky. The underlying societal belief is often expressed as, "We haven't had a world war in 63 years – a record run. Nuclear deterrence has kept the peace, so let's not mess with success."

But how risky is our current posture? Despite a literature search and consulting with experts on risk analysis, national security, and nuclear weapons, I was unable to find any studies that estimated the failure rate of nuclear deterrence. How can alternative strategies be rejected as too risky if the baseline risk is unknown?

I therefore did a preliminary analysis based on just one potential failure mechanism, and found an estimated range of 0.02% to 0.5% per year for the failure rate of deterrence resulting in a full-scale nuclear war. Because this analysis considered only one potential failure mechanism, its estimated range is only a lower bound on the failure rate. Even so, the risk is orders of magnitude greater than society is willing to tolerate in related areas with less severe consequences.

The catastrophic failure rate for a modern nuclear power plant is less than 0.0001% per year. Hence, my preliminary analysis indicates that you are at as much risk from a failure of nuclear deterrence as if at least 200 to 5,000 nuclear power plants were built surrounding your home. For details see the appendix of my paper "Risk Analysis of Nuclear Deterrence," which appeared in the Spring 2008 issue of *The Bent of Tau Beta Pi*, the magazine of the national engineering honor society.

A related statement endorsed by the following individuals,

* Prof. Kenneth Arrow, Stanford University, 1972 Nobel Laureate in Economics

* Mr. D. James Bidzos, Chairman of the Board, VeriSign Inc.

* Dr. Richard Garwin, IBM Fellow Emeritus, former member President's Science Advisory Committee and Defense Science Board

* Adm. Bobby R. Inman, USN (Ret.), University of Texas at Austin, former Director National Security Agency and Deputy Director CIA

* Prof. William Kays, former Dean of Engineering, Stanford University

* Prof. Donald Kennedy, President Emeritus of Stanford University, former head of FDA

* Prof. Martin Perl, Stanford University, 1995 Nobel Laureate in Physics

concludes

> We, the undersigned, therefore urgently petition the international scientific community to undertake in-depth risk analyses of nuclear deterrence and, if the results so indicate, to raise an alarm alerting society to the unacceptable risk it faces as well as initiating a second phase effort to identify potential solutions.

The proposed studies serve three purposes. First, they will determine if society's inaction is warranted. Second, if they confirm that action is urgently needed, they will help bring attention to the issue. And, third, they will identify the most likely failure mechanisms, thereby allowing the second phase effort to proceed most expeditiously.

The proposed studies also combine two critically needed qualities that, until now, seemed mutually exclusive. On the one hand, while defenders of the nuclear *status quo* have criticized a Comprehensive Test Ban Treaty and similar measures as too risky, I see no way to similarly attack studies to learn the risk we face from our current approach. As expressed in *Animal House* by Farber College's motto: "Knowledge is good." On the other hand, if the studies confirm that the risk from nuclear deterrence is thousands of times greater than society can tolerate, they will show that the solution involves a long-term effort that cannot be dropped at the first partial success, as occurred at the end of the Cold War.

More information on the project, its approach, and the role that individuals play is available at NuclearRisk.org. That web site also has links to the paper and statement.

In Memory of Professor Gallieno Denardo

K.R. Sreenivasan*, Abdus Salam Research Professor, Director, ICTP

Professor Gallieno Denardo worked for a good part of his scientific career at the University of Trieste, being a student and physics professor, doing research on problems of general relativity. He wrote his research papers for professional journals such as Classical and Quantum Gravity and Nuclear Physics.

At some point in his life, Gallieno became attached to the International Center for International Physics (ICTP), and the event seems to have changed his life. He, in turn, changed ICTP. I would like to mention a little about both aspects. My views are personal and cannot be regarded as professional in a proper historical sense: I knew Gallieno well (and he played a key role in my deciding to move to ICTP), but our interactions lasted for only four years and a few months. I believe, however, that the bond we developed was stronger than might be suggested by the duration of these interactions.

Gallieno was moved deeply by the difficulties that scientists in some developing countries face in their pursuit of scholarly work. He saw that ICTP provided the opportunity for doing something constructive about this difficult situation, and went about the process in a methodical way.

Gallieno played a key role in nurturing ICTP's Office of External Activities; in this role, he kept close and personal contacts with many scientists, especially in Africa. He gave as much attention as needed to everyone with whom he was involved. I know that many scientists from developing countries felt that he was giving each of them his full attention. He was keenly aware of their difficulties ─ but he also knew what measures would be appropriate to solve them. He played a key role in the process of building the ICTP Affiliate Centers and other projects in developing countries in Africa, Asia and Latin America.

In particular, Gallieno saw optics, especially its experimental aspects, as an important ingredient needed for building the research infrastructure and teaching capacity of physicists in developing countries. Even though his own field of research was not optics, he saw its relevance for several areas of basic sciences, and, through the involvement of a number of interested people over the world, created a large optics community at ICTP. In particular, he used the ICTP College on Optics as a key mechanism for promoting research as well as training and educational activities in this broad field. His mode of operation was exemplary: he co-opted most optics societies of the world in this effort and was relentless in promoting the subject without being pushy. It is amazing that he built up lasting enthusiasm for the subject at ICTP, considering that the Centre did not have much local expertise; I believe that his modus operandi was most effective under the circumstances.

Gallieno assumed many other roles at ICTP. For instance, he had a special interest in Eastern Europe, with strong empathy for Central European cultures, particularly Slavic (he spoke fluent Slovenian) ─ and he devoted much energy to create working links with ICTP. Naturally, he had many friends in that part of the world. He was keen to nurture ICTP's relationships with the International Atomic Energy Agency (IAEA) in Vienna, which he regarded as vital and strategic. He built up programs of Sandwich Ph.D. degrees for students whose official registration would be in a developing country but with co-supervisors either at ICTP or in one of the other collaborating institutions.

In all these instances, Gallieno's vision was not grandiose but pragmatic and practical.

Last year, ICTP celebrated “Africa Day” at the instance of the Africa Department of the Italian Ministry of Foreign Affairs. Several African scientists, young and old, spoke at the meeting. For those who knew Gallieno’s involvement in Africa, it came as no surprise that the meeting turned out, unplanned, to be a celebration of his contributions to African science. Nearly everyone acknowledged the warmth and personal involvement that he evinced on ICTP’s projects in Africa. In his unassuming way, he brushed off this honor simply by saying that people were exaggerating, and that he “could not have done anything without ICTP”. Those who knew the details were aware that Gallieno deserved everything that was said of him that day.

Recently, ICTP organized a memorial day for Gallieno Denardo recently and released all the condolence messages and articles written about him. These messages can be found at the website: http://portal.ictp.it/denardo The Centre also dedicated a classroom to his memory and converted the prize jointly given with the International Commission for Optics from its former name of ICO-ICTP Prize to ICO-ICTP-Gallieno Denardo Prize. This prize is given annually to recognize outstanding and young optics researchers in developing countries.

If we at ICTP (and others elsewhere) continue to emulate the traits that Gallieno Denardo exemplified through his steady work, we will have served his memory well.

* K.R. Sreenivasan is Abdus Salam Research Professor and Director of the International Center for Theoretical Physics, Trieste, Italy

On the importance of scientific communication between Iranian and Western scientists

Reza Mansouri
Sharif University of Technology, Tehran Iran and
Iranian National Telescope (INO), project director

There are many good reasons for scientific collaboration between Iran, or any other Moslem country, and the West. The obvious one is the international nature of science, and another is the simple fact that there is lot to learn from the West, certainly as far as science is concerned. In the lexicon of international organizations, such as the World Bank, one can find many expressions indicating the importance of science communication with the West, such as the catchy new slogan "knowledge is development". However, at least in the case of the Islamic World, the reality is not so simple.

For example, when we hear or use words like knowledge, science, or scientific collaboration, do we all understand the same thing? I am convinced that we do not. And the situation is exactly the same for many of the neologisms that have been coined in the past two centuries of the scientific era. Let me illustrate with an extreme example from political science—terrorism. The West calls the activities of Hezbollah in Lebanon a “terrorist act.” But that is not the opinion in the Moslem world. I am probably not far off in claiming that some 80% of the people in predominantly Moslem countries would call the U.S. involvement in the Middle East, if not a terrorist act, at least a humiliating intervention. Far from wanting to be political, I mention this only to emphasize my point that the same words or expressions have very different impacts in the West and in Islamic countries, such as Iran. It is further important to note that the technological superiority of the West does not at all mean to a Moslem that the West also enjoys a cultural superiority. For a Moslem, the West, by definition, still has much to learn from the Moslem world; furthermore, Western political and social concepts are vague and unclear terms, and as a result there is no need to pay attention to them. Al Hurra television or Radio Sawa may provide occasional entertainment, but the bulk of their broadcasting is just nonsense. The Moslem world is deeply rooted in its own culture and still ignorant of the cultural values of the West, be they political, social, or scientific. The West, especially the U.S., does not even try to understand this manifest reality, and continues to repeat the failures of the past centuries.

With respect to science, we have to realize that history has conditioned the mind of a Moslem in a very specific way, whether or not he is actively practicing his religion.

Science is identified unconsciously with theology and the same words are used for both. Science, which is referred to as “elm,” becomes simply a part of the theological sciences. What is not theological science is called ”fazl”, meaning good to know, but just not necessary. This situation is in no way to be compared with that in Europe in the seventeenth century, because the natural philosophers, the European scientists of the time, tried to draw clear lines of demarcation between science and religion in order to protect themselves. Moslems today, leaving aside some rare cases not comparable to what we witness in the U.S., are ready to accept any “scientific knowledge” without seeing any religious contradiction. In fact, the identification of science with religion is a vivid experience in the Moslem world. If one asks about science from a young Moslem boy or girl trained in one of the seminaries or educational outreach programs organized by Moslem clerics, he or she would answer by reciting some of the disciplines taught in the

seminaries, and consider anything else to be a bit of diverting philosophy. If one observes university life in any Moslem country, it will be apparent that the way of teaching and practicing science is totally in conformance with the concept of religious knowledge. Science (read Elm), is something that exists and worth knowing. It is not produced or created, it is just somewhere. Therefore, reading books, as in a seminary, is the essential part of scientific life. Everything outside of religious knowledge, such as physics or astronomy, is just "fazl", good to know, but it is not science. We "modern" academics may not admit it, but we do act like that. When the president of Sharif University was recently asked why his institution is not among the top 200 universities of the world, he said it was because of the political criteria being chosen to rate universities in the West, and that Iran has to define its own criteria. This is certainly one of the reasons why Moslem scientists educated in the West may have fine careers there, but on returning to their home countries fail to succeed as science managers or administrators. In the West they can be normal scientific workers and do not need to be administrators. In fact, too often we do witness a kind of schizophrenic behavior of scientists in our countries. When they practice their science and solve problems theoretically or experimentally, they behave have more or less like any other scientist in the modern world; but once they try to administer science, they behave like a traditional "Olama", meaning that they act according to a very obsolete concept of science. That is why they may be successful in an industrial environment where there are professional managers to administer science, but fail in a Moslem country to succeed as science policy makers or scientific administrators based on the modern concept of science. Inter-Moslem institutions like COMSTECH (Committee on Scientific and Technological Cooperation), IAS (Islamic Academy of Sciences) and ISESCO (Islamic Educational, Scientific, and Cultural Organization) may be good imitations for a show purposes, but a close look at of scientific excellence in our countries. This can only happen through fluid communication with the West on the highest scientific level. Otherwise we will define an excellence that is acceptable to ourselves and take no heed of Western concepts.

Ignoring this urgent need can only make the world more unstable and assure that it will remain so for a longer time. The simple fact that it is "technological knowledge" that makes Moslem extremists effective, should be a warning that we are only at the beginning of a long struggle. The only way of having an effective dialog is to assure that we are using the same terms and concepts and that our words convey the same meaning for both sides. Cooperation in the practice of the physical sciences can, I believe, be one of the most effective ways of achieving this objective—and is an activity of modern life which should be fully acceptable to the Moslem world.

The Lithuanian Physical Society

The Lietuvos Fizikų Draugija
(member of EPS and IUPAP)

Zenonas Rokus Rudzikas
President of the Lithuanian Academy of Sciences

Although contemporary Lithuania is a small country on the eastern coast of the Baltic Sea with 3.5 million inhabitants, with Vilnius as capital city, it has a rich history. Indeed, in 2009 the country will celebrate a millennium of the first known mention of its name recorded in written sources. In 1579 the University was founded in Vilnius, which became the oldest functioning university in Eastern Europe. Physics was always taught there as a part of the natural sciences. In 1773 the Rector of the University presented to the king a draft of the foundation of the Academy of Sciences, however the initiative did not become a reality at that time.

The recent roots of the Lithuanian Physical Society (LPS) stem from the Scientific Society of Lithuanians (SSL) founded in 1907. At that time Lithuania was still incorporated into the Russian empire. The SSL was active until the occupation of Lithuania by the Soviet Union in 1940, which lasted for 50 years. The scientific research functions of the SSL were taken over by the Lithuanian Academy of Sciences (LAS), established in 1940. But the LAS had to perform within the Soviet model and avoid any signs of the national ("-istic") aims.

Since 1954 the so-called Meetings of the Physicists of the Republic have been usually organized every second year. Gradually they have become the National Physics Conferences. However, officially the word "*National*" was not used, since in our understanding it meant "Lithuanian" not "Soviet". The Meetings were dedicated to the presentation and analysis of physics research and teaching, history of physics in Lithuania, the coordination of research, methodological aspects of teaching physics in secondary and higher schools, the popularization of physics, as well as to the development of physics terminology in the Lithuanian language.

During the 5th National Physics Conference in 1962 the idea of the founding of the Lithuanian Physical Society (LPS) was seriously discussed. Officially the Society was founded in the following year, and it is older than the European Physical Society (EPS) that was founded in 1968. It is interesting to note at that time LPS was the only Physical Society established in the USSR, a country that formally consisted of fifteen (the so-called) "independent" Republics. Indeed, there was no Physical Society of the USSR. Therefore the official creation of a legal National Scientific Society, which had its own registered Statute established in a separate Republic, was a unique event with not only scientific, but also certain political significance.

One of the main and urgent activities of the LPS in the seventies was preparation, in collaboration with linguists, of a comprehensive Lithuanian – Russian – English – German dictionary of physical terms. This dictionary was published in 1979, and its now expanded version is available as a web application. Since teaching in secondary schools and at the universities is in Lithuanian, it was important to have Lithuanian analogues of the new international words of science and technology.
In 1961, with the efforts of physicists, the national physics journal "*Lietuvos Fizikos Rinkinys"*

("Lithuanian Physics Collection") was founded. Prior to this, research papers in physics were scattered in various journals, since they were published in the "Proceedings" of the Lithuanian Academy of Sciences or in the publications of Vilnius University, for example. Therefore, it was progress to have a collection of physics papers combined in a single national journal. The papers were published in Russian with the summaries in Lithuanian and a "foreign" (usually English) language. It was a quarterly journal until 1968, when it began to be published six times per year.

Since 1974 the journal was simultaneously translated into English and published by Allerton Press Inc. in the USA, however, under a strange (for us Lithuanians) title *"Soviet Physics – Collection"*; after the historical changes in 1989, it became the *"Lithuanian Physics Journal"*.

From the very beginning the LPS has been responsible for the publication of this journal, its quality and international recognition. Since 2000 the journal is published only in English with summaries in Lithuanian. Hence the Allerton Press terminated the publication of its translated version, and its present title is *"Lithuanian Journal of Physics"* (http://www.itpa.lt/~lfd/Lfz/LFZ.html).

In order to reflect the physicist's everyday life and convey information about the activities of the LPS, EPS, world physics discoveries, physics terminology, anniversaries, since 1990 the LPS publishes in Lithuanian twice a year "*Fizikų ?inios"* ("Physicists News", http://www.itpa.lt/~lfd/fiziku zinios/FizikuZinios.html). The LPS also encourages the publication of physics literature, both pedagogical and popular, and even "humorous" physics. The Board of the LPS may be contacted at lfd@itpa.lt.

The LPS rigorously promotes international cooperation. In particular of great importance is the integration of the relatively small number of physicists in Lithuania (the Society membership is approaching 300, including retired physicists and physics students) into the European Research Area using the fact that the country is a member of the European Union.

In 1972 the LPS established a physics school “Photon” where it is possible to study by correspondence. In 1973 it became a popular school across the country, and now about 900 students are admitted to the first course every year. Three times a year (in the fourth year of study, twice a year) its students receive a number of physical problems that they have to solve. The students send the solved problems to the "Photon" Council, which corrects them and sends them back together with a booklet of the correct solutions. The most successful students are invited to participate in summer camps, where they attend lectures delivered by famous professors, and participate in discussions with them. After graduating from this four-year school they receive certificates with the recommendation to study physical sciences (see http://www.fotonas.su.lt/photon.phtml). A number of graduates of this school are now well-known scientists.

The LPS also contributes to the organization of the National Physics Olympiads (the 54th in 2007) and prepares schoolchildren for the competition of the International Physics Olympiads (IPO). The LPS participates in the special school of additional training for gifted students, “Physics Olympus”, founded in 1995 (http://www.olimpas.lt/). Its students quite often get medals and awards at the IPO. In 1995 separate Association of Physics Teachers was founded (http://www.lfma.ivi.lt).

Every year on the first Saturday of April, the students and alumni of the Faculty of Physics of Vilnius University, who often are the members of LPS, organize a festival - the “*Day of*

Physicists” (known in Lithuanian as FiDi, pronounced “Phee-Dee”). Its symbol is a mobile Dinosaur traveling to the Faculty of Philology to scare and devour female philology students, and its slogan is: *“The dinosaurs have become extinct, but physicists have survived!”* (http://www.fidi.lt).

In summary, the main challenges for the LPS are: to contribute to the development of research in physics in Lithuania and to encourage the international cooperation; to organize the National Physics Conferences and to promote the organization of international physics conferences in Lithuania; to monitor the quality of teaching physics, the studies of the history of physics in Lithuania, and the development of Lithuanian physics terminology; to popularize the achievements of physics, particularly among the students of schools; to encourage interdisciplinary research, contacts with industry, and to attract girls to study physics.

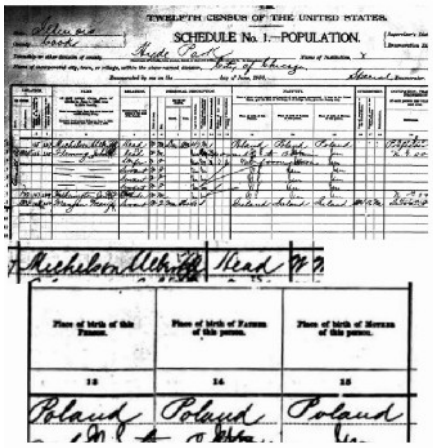
The LPS is ready to participate in the solution of these problems. And last but not least – special attention is directed to the cooperation agreements with a number of Physics Societies in other countries, the American Physical Society included.

Albert Abraham Michelson: "*A Pole - well up in Arithmetic*"

Portrait painted by Jan Suliński, an artist from Strzelno, Poland

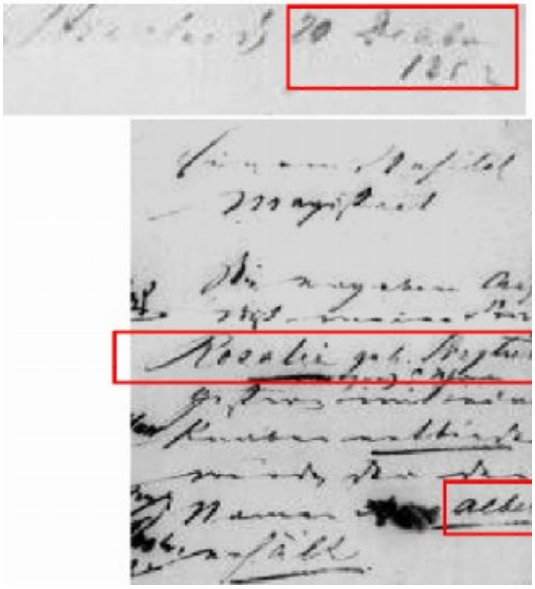
In the January issue of the APS News (vol. 17, number 1) a correction to the biography of Albert Abraham Michelson was published as a Letter to the Editor. It resulted from a fact mistakenly given in the article "November, 1887: Michelson and Morley report their failure to detect the luminescent ether" published in APS News, vol. 16, No. 10 – November 2007. Since an interesting aspect of the history of Michelson's Polish roots was omitted in the published letter, here we present some details and photographs that document a tribute being paid to Michelson by his fellow countrymen in Poland.

"*A Pole - well up in Arithmetic*" - one of the examiners wrote on the record of the oral exam of Albert Abraham Michelson, who took the entrance examinations to the Naval Academy in 1869. Indeed, Albert Abraham Michelson was born on December 19, 1852 in Strzelno, a small and very old Polish town, which at that time was occupied by Prussia as a consequence of the partition of Poland. He was born neither in Germany, as stated in the APS article, nor in Prussia, as is commonly written in his biographies on the Internet. He was born to a Jewish-Polish family; his father was a Jewish merchant from the nearby town of Inowrocław, and his mother, Rozalia Przyłubska, was the daughter of a Polish merchant from the same town. In the Twelfth U. S. Census taken in 1900 it is stated that Albert Michelson, head of the family, and his father and mother, all were born in Poland (see below).



Copy of the document the Twelfth U. S. Census from 1900 where it is stated that Michelson, his father and mother were born in Poland (courtesy of the A. A. Michelson Museum, Strzelno, Poland)

Although Michelson lived almost the whole life in the States (he arrived together with the parents on July 19, 1856), always he was proud of his Polish roots; even he was saying that he is such a hard worker, because this is a feature of Polish people. Many years after his death his daughter, Dorothy Michelson-Stevens (Livingston), asked the Nicolaus Copernicus University in Toruń (birthplace of Copernicus, thirty miles from Strzelno) to identify the place of her father's birth, the name of which she knew only in a misspelled version. In the local archives in Strzelno it was found that Michelson indeed was born there. This fact is documented by a copy of a hand written note, which is an announcement of the birth of a son placed by the father, Samuel Michelson:



December 20, 1852

To the Distinguished Town Office

I am announcing that my wife,

Rozalia, born Przylubska,
yesterday at 5 in the morning gave birth to a boy, who is named

Albert

This was the reason that the members of the Toruń chapter of the Polish Physical Society decided to commemorate this finding by funding a plaque, which written in Polish states:

"In this town, on December 19, 1852, Albert Abraham Michelson was born; Professor of the University of Chicago, Nobel Prize Laureate. With his famous experiments on the velocity of light he started a new era of development of physics. This plaque, which salutes this great physicist, was funded by the Polish Physical Society".

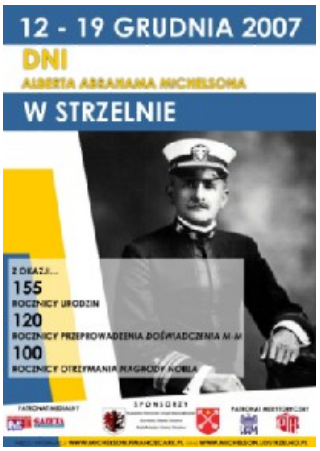
The dedication of the plaque, which is built into the wall of a house on Market Square in Strzelno, took place on September 4th, 1963. The ceremony was attended by Michelson's daughter and a representative of the American Embassy in Warsaw. The Mayor of Strzelno, in order to confirm the words that "*Strzelno is proud of her son*", on behalf of the city council, named one of the streets in the town Michelson Street. This was an historical event for the local community, for the students from all the schools in the vicinity of Strzelno, and for the physicists from Copernicus University in Toruń. It is recorded in the photograph where Michelson's daughter addresses the audience gathered in the main square in Strzelno [1]

In the picture below[2] Professor Jabłoński, the founder of the Physics Department of Nicolaus Copernicus University, and the author of the famous "Jabłoński diagram" of luminescence, dedicates the plaque (the lady in the hat is Michelson's daughter),

The story about this tribute to Albert Abraham Michelson in Strzelno is translated from the memoirs and memories written by Danuta Jabłońska-Frąckowiak[2], daughter of Professor Jabłoński, who is also a Professor of Physics, and who was a witness to this historical event. In fact, she was the one who arranged with the American Embassy in Warsaw the music of the American National Anthem for the brass band of the local Volunteer Fire Station to play during the ceremony.

Forty-five years have passed since that celebration; during this time Michelson's fellow countrymen did not forget about him and his outstanding achievements. Indeed, to commemorate this famous son of Strzelno, various documents, copies of his papers and publications about him were collected together with the photographs, not to mention scientific sessions arranged to present Michelson's achievements to the auditoria at various levels of advancement and knowledge of physics.

In December 2007 there was a special celebration organized in Strzelno (poster below). For almost a week the citizens of Strzelno of all generations and various professions celebrated the 155th anniversary of Michelson's birth, the 120th anniversary of the famous Michelson-Morley experiment, and the 100th anniversary of Nobel Prize awarded for the first time to an American Physicist; in fact, it should be said that it was awarded to a Polish-born American Physicist!



Poster of Michelson's Days organized in Strzelno in December, 12-19, 2007;

designed and printed by Krzysztof Starczewski, a graduate from a local high school

The program of these Michelson's Days was overwhelming: various lectures and panel discussions, and to mention just one, "A. A. Michelson – a private person and scientist"; opening of an exhibition "Michelson – on the 100th anniversary of his Nobel Prize", a dedication to his name of the physics laboratory in the local high school (a photograph below) and the grand opening of a museum with a permanent exhibition of the memorabilia collected over the years.

Michelson's physics laboratory in the high school in Strzelno

There was also a competition for the students of primary schools in the district on the knowledge about Michelson's achievements. Knowing Michelson's passion for sport, and for billiards in particular, remembering also his artistic talents it was impossible not to organize a billiards tournament and an exhibition of the drawings made by students, supplemented by a performance of some episodes of his life. Michelson's love for music was represented by the concert given by the same band of the Volunteer Fire Station as in 1963, but now with musicians of a new generation. In the photograph below the collage of various artistic performances of this celebration is presented. The representatives of the youngest generation of Strzelno citizens, the children from a kindergarten dressed in folk dresses of the district, were reciting poems about Michelson written by Lech Gierba, one of the school teachers.

The photographs of the artistic program of the Michelson's Days

celebrated in Strzelno in December 2007; in the lower left corner there is

Tomasz Kardaś, the spiritus movens of the commemoration of Michelson and his achievements

Michelson's words ***"My greatest inspiration is a challenge to attempt the impossible"*** are indeed the inspiration for many in Strzelno; even small children in their tasks and work on the way to excellence are trying to follow their countryman's example.

In general, when looking back at the history of science, two kinds of scientists are distinguished. There are the *revolutionary* scientists, who are the giants on whose shoulders the others are standing, as Isaac Newton defined them in his letter to Robert Hook written in 1676; Nicolaus Copernicus, Galileo Galilei, Johannes Kepler, Sir Isaac Newton, Albert Einstein, Maria Skłodowska-Curie... There are also *evolutionary* scientists, who due to their knowledge, patience and persistency are the authors of huge jumps in the development of science; this list for sure contains the name of Albert Abraham Michelson.

W. T. Vollmann in his interesting book *Uncentering the Earth*[3] introduced Copernicus by a short rhymed poem:

He was a scholar of Polish birth

Who stopped the Sun and moved the Earth

It took more than three centuries for another Polish scholar to be born with a Renaissance mind and spirit (just 30 miles from Copernicus' birthplace) to continue the concept of heliocentric revolution. The uncentered and moving Earth was the main condition for the Michelson-Morley experiment that, apart from the great dissappointment of its performers, provided a new outlook on many physical issues. In fact, as written on the Web page of the Optics Institute of Southern California:

> *"While Michelson and Morley were testing the "ether drift," Einstein had begun to speak of clocks that moved backward, mass that was not constant and light made up of things called "photons." For scientists, these heresies were as profound as those of Copernicus, the first to suggest that the earth was an orbiting planet, and not the center of the universe".*

Fortunately, at the end of 19th and the beginning of 20th century, the three century old Heliocentric System was established well enough in the minds of the scientists, that the fiasco of the Michelson-Morley experiment, (in its authors' opinion) was not interpreted as an evidence that ...the Earth is still, but rather that the *wind of ether* does not exist! However, Copernicus, the GIANT recognized by all, in Book I, chapter 8 of *De Revolutionibus Orbium Celestium* (translation by A. M. Duncan[4]) wrote the words that might give support to those who are skeptical about the non-existence of *ether*[5]:

> *"The air which is nearest to the Earth will appear still, and objects suspended in it will be set in motion only by wind or some other impulse*

this way or that. For what is the difference between a wind in the air and a wave on the sea?"

Albert Abraham Michelson to the very end of his life, deep down in his soul, was not completely convinced that *ether* indeed does not exist.

Lidia Smentek,	Tomasz Kardaś
APS FIP, Member-at-Large	Physics Teacher, retired
Nicolaus Copernicus University, Toruń, Poland	Organizer and custodian of the Albert Abraham Michelson Museum
Vanderbilt University, Nashville	and of A. A. Michelson's Physics Laboratory , Strzelno, Poland

[1] Photograph from a private collection of Emanuel Walentynowicz
[2] Danuta Jabłońska-Frąckowiak, "*Na Uniwersytecie Mikołaja Kopernika w latach 1946-1966*", Wyd. Uniwersytetu Mikołaja Kopernika, Toruń, 2006; pages 96/97.
[3] W. T. Vollmann, "*Uncentering the Earth"*
[4] A. M. Duncan, *"On the revolutions of the Heavenly Spheres"*, Newton Abbot 1976.
[5] G. Granek, "*Poincaré's Ether: A. Why did Poincaré retain the ether?",* Apeiron, **8** (1), January 2001.

The New York Academy of Science

Partnering for Progress

By Ellis Rubinstein*

Scientists and engineers the world over know that science progresses through collaboration. Throughout recent history, under the most difficult of political circumstances, scientists and engineers have managed to reach out to one another to advance science for human benefit. But despite centuries of evidence that investigator-to-investigator partnering brings synergies of effort, research institutions have been more apt to compete than to collaborate. Until recently.

Who would have thought a mere decade ago that American universities, including the elite among them, would be building hospitals and entire campuses in the Middle East and Asia? Who would have imagined that European universities would be working with investment banks and sovereign wealth funds to develop bio-parks in China and the Gulf?

To cite one unusual example, John Sexton, President of New York University, is trying to pioneer in the creation of a global university. He wants the future students of NYU to be able to take advanced degrees on any continent. The New York in NYU would be no more than iconic for students choosing to learn from NYU faculty in Abu Dhabi, where he is creating a 3000-student campus, and perhaps in Paris, Buenos Aires, Beijing, or elsewhere.

To Sexton, a distinguishing characteristic of the 21st century will be a fierce competition between urban centers to be the world's leading "Idea Capital." Whereas in the 1920s and 1930s, Paris could attract the best and brightest because of its extraordinary population of brilliant artists and writers, Sexton believes this century's "great attractors" will be the scientists, engineers, and entrepreneurs working together to serve society.

But to achieve scale, urban centers will have to find a way to entice the proud and competitive institutions in their midst to work together, to build centers of excellence and to create environments as attractive as Paris was in 1925. And yet, since when do institutions work together?

Enter the New York Academy of Sciences as enabler.

First, the Urban Partnerships

Beginning five years ago, the New York Academy of Sciences transformed the "science scene" in New York in four ways. The Academy:

1. Engendered communities of interest in the frontiers of science and technology. Some of the fields include systems biology, neurodegenerative diseases, RNAi, chemical biology, imaging, predictive toxicology, soft condensed matter, green buildings, sustainable energy and even quantitative finance. By building these communities, the Academy has synergized the talent among historically isolated institutions in several ways: by developing program committees peopled by the leading researchers at a minimum of five or so different universities and academic medical centers; by ensuring that the program committees would not merely invite brilliant scientists to provide review talks but would identify and feature the most exciting young scientists at seminars throughout the year; and by disseminating these talks globally. This initiative has also conveyed a novel message about New York: when the best researchers from New Haven to Cold Spring Harbor to Princeton come together, sparks fly.

2. Organized an unprecedented system for mentoring the greater metro area's Ph.D. students and post-docs. This program, the Science Alliance, is a consortium of universities, teaching hospitals, and independent research facilities in the New York City metro area and around the world that have formed a partnership with the Academy. The Alliance provides unparalleled career and professional development mentoring for students and postdocs in the sciences and engineering through a series of live events and a dedicated web portal. In addition, the Science Alliance gives students and postdocs the opportunity to network with their peers across institutions and with key leaders in both industry and academia.

3. Bridged academia and industry. Too often, as we all know, the worlds of academic and corporate research do not meet. Less so in engineering but frequently in the sciences, conferences by professional societies are heavily weighted to academia, and industry networks with itself at events organized by for-profit conveners. But the Academy makes a point of inviting the best researchers of industry to join program committees, and the leaders of corporate research have sponsored participation by thousands of their scientists during the last several years.

4. Bridged science and the arts, science and architecture, and science and finance. For many decades, the New York Academy of Sciences has held unusual cross-sectoral conferences to bring together professionals from diverse disciplines who might have reason to care about science. In the last few years, the Academy has held a series of events featuring many of the world leading architects now interested in new materials and green engineering, artists inspired by science, and investment bankers often trained initially in math and physics who now employ algorithms to make investment decisions.

Imagine the value to a community of scores of events of such a cross-disciplinary, inter-institutional, and cross-sectional nature! And imagine the power of an urban region that can display globally the full richness of its talent across science, technology and the professions that – in a post-industrial knowledge-based economy – need to interact with them! These characteristics of the Academy's New York-based programs have not gone unnoticed elsewhere.

Then, the Global Partnerships

The Academy has had international affiliates since its beginnings nearly 200 years ago when scientists from many places beyond our borders became members, a connection that still exists today. And it has long partnered with other organizations and institutions to sponsor conferences and other gatherings around the world. The nature of Academy partnerships, however, has recently taken on new dimensions as we refine and expand our ability to develop collaborations that provide the infrastructures that help catalyze innovation and progress. Three recent examples:

- Last December, the Academy kick-started a bold coalition of some of the great universities in southeastern England. For the first time in memory, Imperial College London, King's College London, and University College London joined together under our banner to organize and hold a landmark conference on brain imaging. Spurred on by the Academy and partners GlaxoSmithKline and Britain's Royal Institution, the trio also announced the practical beginnings of southeast England's GMEC – the Global Medical Excellence Cluster – an unprecedented effort to harness and synergize the scientific strengths of the "London Three," plus Oxford and Cambridge Universities. Some months before he retired as Prime Minister, Tony Blair told the presidents of the five universities that the UK would not be able to compete successfully with the likes of Boston, the Bay Area, and New York if its institutions didn't work together to achieve scale of excellence in science and technology. Now, The New York Academy of Sciences has been invited to help the institutions work together once again, co-organizing the first of future collaborative events for the "Big Five" in biomarkers.

- In February, the Academy inaugurated an alliance with the visionary new mayor of Mexico City, Mercelo Ebrard, who has set a goal of shifting his city's economy from a manufacturing to a knowledge-based one. The Academy has agreed to help advise Mexico City—the second largest metropolitan area in the world—on the best practices for fostering innovation and science- and technology-based economic development. A first step in that direction will be the creation of a Science & Innovation Week in Mexico City this coming September. We will bring together leaders from the academy, industry, and government with local and international experts. The event will officially launch the mayor's program and help define the areas of science and technology in which Mexico City has strengths and which also directly benefit its citizens. We will be working on other activities as well to bring together key stakeholders that can positively impact this effort.

- In May, the Academy launches perhaps one of its most ambitious and exciting initiatives ever: Scientists Without BordersSM. This new program aims to mobilize and coordinate science-based efforts to improve health care, foster agricultural progress, promote environmental well being, and devise energy solutions in the developing world. The underlying concept is that synergies of enormous benefit to the poor and ill can be attained if the many institutions often operating in isolation know about one another…and if scientists and engineers can match their skills and passion with the needs of organizations operating in developing countries. The cornerstone of Scientists Without Borders[SM] is a database consolidating key information about scientists and organizations from disparate specialties and locations so that users of the program's Web portal will be able to match needs with resources and find out who is doing what, where. An elite Advisory Council—a who's who of the global health world—has been formed, and a score of leading companies, foundations, and organizations have signed on as supporters. And in the first six weeks after the Scientists Without Borders[SM] Web site was opened to registration by potential partners, over 500 individuals, 50 project leaders, and 80 organizations working on issues of poverty formally joined the program.

Science and engineering have always been the most global of enterprises. The New York Academy of Sciences has – for 191 years – been the only global Academy. Even in the 19th century, this was so. Darwin and Pasteur were members along with the leading lights of America, including Presidents Jefferson and Monroe, Thomas Edison, Alexander Graham Bell, and hundreds of leading scientists and engineers. Today, we are blessed with more than 25,000 members in 140 countries and a President's Council with not only 26 Nobel Laureates but the heads of multinational corporations and national science agencies throughout the world. But the special challenge of the Academy is to deserve our memberships by having a positive impact on science around the globe. We hope that as you learn more about the "new" New York Academy of Sciences, you will come to agree that the initiatives described above have special value. Join us. Participate.

- Ellis Rubinstein is President of the New York Academy of Sciences.

The Andrei Sakharov Prize

Betty Tsang, Member of the Sakharov Prize Selection Committee and the FIP, Executive Committee

The APS Andrei Sakharov Prize is named in recognition of the courageous and effective work of Andrei Sakharov on behalf of human rights, to the detriment of his own scientific career and despite the loss of his own personal freedom. It was established to recognize outstanding leadership and/or achievements of scientists in upholding human rights. The Prize is endowed by contributions from friends of Andrei Sakharov. In 2004, the Forum of International Physics contributed $5,000 to the endowment.

The prize is awarded bi-annually. The first Andrei Sakharov Prize in 2006 was awarded to the Soviet dissident Dr. Yuri Orlov of SOS (Scientists for Sakharov, Orlov and Sharansky) fame. The 2008 Andrei Sakharov Prize Selection committee consisted of Andrew Sessler (chair), Edward Gerjuoy, Joel Primack, Yuri Orlov and Betty Tsang.

Arthur Bienenstock, APS president, accepting the first edition of the Chinese "Collected Works of Einstein" from Chenggang Xu. (Photo courtesy of Mimi Huang, World Journal.)

Prof. Liangying Xu, the main translator of a three-volume "Collected works of Einstein" and an outspoken dissident/activist in China, was chosen as the 2008 award winner. Prof. Xu was featured in a New York Times article as "Einstein's Man in Beijing: A Rebel with a Cause" on Aug 22, 2006. Unfortunately, due to ill health he could not travel to St. Louis to receive his Prize on April 13 during the 2008 APS April meeting. His son Chenggang Xu accepted the prize on his behalf. Xu gave the APS the first edition of the "Collected works of Einstein" to the APS. At the award session, part of the video clips of Prof. Xu reading his acceptance speech in Chinese was shown. As majority of the audience are English speaking, Prof. Zuoyue Wang of California State Polytechnic University, Pomona read the translated version of the speech. Prof. Danian Hu of City College of New York showed photographs of Prof. Xu's life and human rights activities. Both Prof. Hu and Prof. Wang were Xu's former graduate students. The translation of the speech is reprinted below.

Acceptance Speech of the Andrej Sakharov Prize

By Liangying Xu

Mr. Chairman, Ladies and Gentlemen,

It is my great honor to be awarded the Sakharov Prize from the American Physical Society. Since I cannot take travel due to health reasons, I have asked my son Dr. Xu Chenggang to accept the Prize on my behalf.

Andrei Sakharov is a scientist for whom I have the highest respect. Albert Einstein, the scientist whom Sakharov most respected throughout his life, has also been my model since I was very young. In 1934, when I was fourteen years old, I dreamed of becoming a scientist like Einstein. As an 18-year-old, before starting college I read the collection of his writings entitled "*The World as I See It*." This made me start to ponder upon different values and ways of life. Two years later, as a college sophomore, because of the intolerable political corruption and social darkness in China at that time, I embraced the Marxist theory of violent revolution and proletarian dictatorship and determined to devote my life to the Chinese revolution. The revolution was victorious in 1949. After some twists and turns, in 1956 I eventually began research into the fields of the philosophy and history of scientific thought in which I was interested.

In 1957, because of my open objection to the "Anti-Rightist Campaign," I was categorized as an "extreme rightist" and thus became a victim of the revolutionary dictatorship. After that campaign, I stayed in my hometown working as a peasant for twenty years.

In 1962, during the contest between Mao Zedong and Khrushchev over the leadership of the International Communist Movement, in an attempt to make China the center of the theory of revolution, Mao asked relevant experts to collect and translate anti-Marxist works in the international intellectual community for criticism,. Naturally, Albert Einstein was their first target. I took on with pleasure the task of compiling and translating the thoughts of Einstein that were assigned to me. I went to Beijing and borrowed all of the relevant literature that could be found and then I returned to my hometown where I read, compiled, and translated day and night. I am grateful to the help of four friends, two of whom became embroiled in my case and were also categorized as "rightists" in 1957.

After working for 14 years, we completed the translation and compilation of three volumes entitled "*A Collection of Works by Albert Einstein*" and they were published successively in 1976 and 1979. This collection, which contains 410 documents, represented the most comprehensive collection of Einstein's thoughts at the time. It is also regarded as a pioneer in China's new democracy enlightenment movement. In this collection, the beliefs in democracy, freedom, and human rights that Einstein fought for all his life directly challenged the official ideology of the Communist totalitarian regime. Actually, it is due to the enlightenment of Einstein's thoughts that Fang Lizhi and I started thinking about the democratization of China. In 1954, in his address accepting Award of the Decalogue Society of Chicago, Einstein said: "In long intervals I expressed opinions on public issues whenever they appeared to me to be so bad and unfortunate that silence would have made me feel guilty of complicity." This spirit will inspire me forever.

The publication of "*A Collection of Works by Albert Einstein*" not only had an impact on the Chinese intellectual community, but also attracted the attention of Hu Yaobang, the leader of the new generation of Chinese Communist Party leaders. Hu Yaobang recommended this book to Chinese Communist Youth League cadres and to cadres of the Chinese Communist Party.

In 1978, I returned to the Institute for the History of Science at the Chinese Academy of Sciences and continued my research into the history of modern and contemporary science, the history of scientific thought, and Albert Einstein. In February 1980, the Secretariat of the Chinese Communist Party Central Committee was reestablished and Hu Yaobang was appointed the General Secretary of the party. He immediately asked the Chinese Academy of Sciences to arrange

for lectures on science and technology to be given to the Secretariat and the leaders of the State Council. The first lecture was on the history of science. In the draft of the manuscript that was mainly prepared by me, I emphasized the following: "Science and democracy are the engine of a modern society and critical for the development of a modern country." Thereafter, I published an article entitled "On the Social Function of Science and Democracy" to illustrate and justify this statement.

In 1985, together with Li Peishan, an historian of biology, I edited and published "*A History of Science and Technology in the 20th Century.*" In a section of the concluding remarks, I discussed the role of democracy and academic freedom in the prosperity of science. In December 1986, this section was republished in the *People's Daily*. It both echoed and was echoed by the voices of the thriving student movements at that time. One month before that, to boost the progress of the reform, together with Fang Lizhi, and Liu Binyan I initiated the planning of a conference for the thirtieth anniversary of the 1957 Anti-Rightist Campaign. Unfortunately, the authorities did not allow us to hold the conference. Fang and Liu were expelled from the party by Deng Xiaoping and Hu Yaobang was forced to step down for "not having done a good job in the "anti-bourgeois liberalization" campaign. As a result of these events, I no longer had any illusions about the Communist Party and I no longer believed in Marxism. At the National Conference on Modernization held in November 1988, I proposed that Karl Marx's greatest mistake was that he advocated dictatorship rather than democracy, which opposed the trend of human civilization.

From fall 1988 to spring 1989, in commemoration of the 70th anniversary of the May 4th Movement and the 200th Anniversary of the Declaration of the Rights of Man and of the Citizen, I published 5 papers to elucidate the idea of democracy and to criticize anti-democratic trends, such as the theory that there was no rush to democratize and the new authoritarianism, that were officially supported by the regime. In January and February 1989, 42 people, most of whom were accomplished scientists and two of whom were famous writers, signed a letter advocating democracy in China. I initiated this movement together with my friend the glaciologist Shi Yafeng. Our letter argued that democracy would guarantee the success of the economic reform and prevent corruption, and we called for the protection of civil rights and the release of all of those who had been imprisoned because of their ideas. This was the first time in Chinese history that so many scientists together openly expressed their political ideas.

In April 1989, Hu Yaobang passed away. His death and the injustice he had suffered stimulated an unprecedented student movement protesting the corruption and advocating democracy. Eventually, the movement was violently suppressed by Deng Xiaoping on the eve of June 4th. Chinese history was turned back many tens of years.

In 1992, Deng Xiaoping traveled to the south of China to give talks that advocated continuing the economic reform. In contrast to the acclaim of the domestic and foreign media, I published an article entitled "The Reform Cannot Succeed without Democracy," in which I pointed out that "if human beings are economic animals, if the growth of productivity is the only index of social progress, then it is Nazi Germany rather than the four Asian tigers that is worthy of our applause," and the people should acclaim 'Heil Hitler!'" Furthermore, I wrote that "What he [Hitler] advocated was also socialism (Nazism)."

In 1993, I published a survey on the history of democracy entitled "The Concept of Human Rights and the Modern Theory of Democracy," pointing out that the concept of human rights is premised on and a foundation for the modern theory of democracy.

In applying to host the Olympic Games, the authorities released some political prisoners in succession. In 1994, after the application was unsuccessful, the authorities again put many dissidents into prison. Together with six other intellectuals, I submitted a petition calling for an improvement in the human rights situation in China. In our petition, we quoted that "the ignorance, neglect, or contempt of the rights of man are the sole cause of public calamities and of the corruption of governments" (as first stated in the "Declaration of Rights of Man and of the Citizen") and we appealed to the authorities to "bravely end China's history of punishing people for their ideas, speeches, and writings."

The year of 1995 was the United Nations Year of Tolerance. I drafted a petition "Saluting the Year of Tolerance and Appealing for Tolerance in China," in which I demonstrated that although historically tolerance symbolizes human civilization, there had been lack of tolerance in China ever since ancient times. We appealed to the authorities to end their hostility to those who have independent thoughts, to reevaluate the decision on the June 4th movement, and to release all those imprisoned for the ideas, speeches, and beliefs. At first, a total of 45 people signed the petition. In particular, my mentor Wang Ganchang, a leading nuclear physicist in China, was very pleased to sign it and his name headed the list of signatories. Later, this petition was signed by many famous people throughout the world and within a month over one thousand people, 10 of whom are Nobel Laureates, had signed it.

To our surprise, however, the appeal for tolerance was denigrated by an American physicist who sought to flatter Deng Xiaoping. He wrote a letter to Prof. Wang Ganchang, threatening that the petition "was harmful to the Chinese people" and "was a serious and unfortunate event." He succeeded in frightening Prof. Wang who then responded in an

inexplicable manner. His response was published in the Hong Kong media, seriously damaging Prof. Wang's reputation. Therefore I had to publicly clarify the truth and expose the shameless conduct of this American physicist. I compared his actions to those of P. Lenard and J. Stark, the German physicists who threw themselves onto the lap of Adolf Hitler half a century ago.

Because of its authoritarian tradition, China's way to democracy will be long and tough. Enlightenment is the first stage, to make the foundations of a modern civilization, such as democracy, freedom, human rights, and law, become the common sense of our society. A first step is to enlighten the intellectuals themselves and to erase the impact of the totalitarian ideology on them. Since 1985, to promote a democratic enlightenment, my wife Wang Laidi, an expert on Chinese modern history, and I have been writing a book on the history and theory of democracy. This book is a semi-narrative interspersed with comments. It aims to project both academic values and the popularization of democracy. Since our knowledge of the social and political history of the Western world was limited and sometimes mistaken, we had to read a huge amount of literature before beginning our writing. In addition, our old age, poor eyesight, weak memories, and interruptions from various everyday issues have slowed down our progress.

We have just finished the period before the founding of the United States. Nevertheless, we are determined to complete this work so as to make a contribution to China's democracy, freedom, and human rights.

Thank you!

The author Liangying Xu would like to acknowledge Nancy Hearst of Harvard University for editing the translated speech.

FIP Sponsored Events at the APS April Meeting 2008

Some members of the FIP Executive Committee at the April 2008 meeting. Seated Left to Right: Noemie Koller, Noemi Mirkin, Betty Tsang; Standing Left to Right: Satoshi Ozaki, John Clark, Leo Violini, Cherrill Spencer, Herman Winick

Sessions

"International Gender Issues in Physics" (Panel Discussion)

Saturday, April 12, 2008 1:30 PM - 3:18 PM
Physics Hyatt Regency St. Louis Riverfront Promenade D
Co-sponsor: FPS
Chair: Arthur Bienenstock, APS President, Stanford University

- Women Physicists in the European Union : how Brussels is moving toward gender equality
  Giulia Pancheri, INFN Frascati National Laboratories, Italy
- Keeping Women in Physics
  Meg Urry, Yale University
- Women in Physics in Latin America: why so few in leadership positions?
  Marcia Barbosa, Universidade Federal do Rio Grande do Sul, Brazil
- Panel and audience discussion

FIP Business Meeting

Saturday, April 12, 2008, 3:30 - 4:30 PM
Hyatt Regency St. Louis Riverfront , Boardroom 23

- Meet the FIP Executive Commitee
- Update of FIP programs, and financial and membership status
- Opportunity to share your suggestions for future programs and activities.

"Impact of Major Accelerator Projects on the Development of Emergent Countries"

Saturday, April 13, 2008 8:30AM - 10:18AM
Hyatt Regency St. Louis Riverfront, Promenade D
Co-sponsor: DBP

- Indian Participation in LHC and a Glimpse of the Road Ahead
  Vinod Chandra Sahni, Raja Ramanna Centre for Advanced Technology & Bhabha Atomic Research Centre, India
- Impact of Pohang Accelerator on Large-scale Science Programs in Korea
  Won Namkung, POSTECH, Korea
- The Impact of the SESAME Project on Science and Society in the Middle East
  Herman Winick, SLAC/SSRL/Stanford University