

Panel Discussion Proposal: PLEASE SCHEDULE FOR MONDAY OR TUESDAY

“Making and Experiencing Nuclear and Biological Warfare before and during WWII”

Organizer: Tomoko Y. Steen, Ph.D. tste@loc.gov, 202-707-1207
Science, Technology and Business Division
The Library of Congress

<Panel Proposal>

The Japanese experience of WWII in terms of NBC (Nuclear, Biological and Chemical) weapons is a unique one. People in Nagasaki and Hiroshima were the only civilians who experienced the atomic bombs, which were dropped in August 1945. Because the incidents were reported in the news after the war, and many books have been written on the topic in different languages since the 1970s, the public has had a chance to know the incidents. Ironically, on the other hand, until the 1980s very few people in the world knew that Japanese military was actively working on their own NBC weapons during the WWII, and tested BC weapons on POWs and civilians in China and South East Asia and possibly other nations.

Through a series of “non-fiction” stories, “Satisfying the Devil” (*Akumano housyoku*) written by Seiichi Morimura and Masaki Shimozato and published by the Japanese Communist Party newspaper, *Akahata* in the 1980s, the existence of the notorious Unit 731 finally became widely known to the Japanese public. Only after 2000, however, did the substantial evidence for Japan’s NBC weapons research finally become more accessible. On the other hand, Japanese physicists who worked on nuclear weapons were called in to examine the impacts of the atomic bombs right after these bombs were dropped.

All of the documents on NBC weapons research were classified before and during WWII by the Japanese military, and captured and sent back to the US during the US Occupation Period – initially as classified materials. Although many of these documents have been unclassified by now, not all relevant documents are available as they are still not completely organized and cataloged at the institutions holding these items.

Since 2004 a significant amount of data has become available in the US and it is now timely to revisit this history. Each panelist presents his/her findings through their recent discoveries on Japanese NBC activities and on the lives of the protagonists by using the newly available records.

Speaker 1: Professor Masakatsu Yamazaki, Ph.D. yamazaki.m.aa@m.titech.ac.jp
Tokyo Institute of Technology

Speaker 2: Professor Akira Masaike, Ph.D. masaike@jpsusa.org
JSPS/Kyoto University, Department of Physics

Speaker 3: Professor Keiichi Tsuneishi, Ph.D. kfh00251@nifty.com
Kanagawa University

Speaker 4: Maika, Nakao, Ph.D. Candidate goa.maika@gmail.com
Tokyo University, History and Philosophy of Science and Technology

Commentator 1: Professor Dong-Won Kim, Ph.D. dwkim3@yahoo.com
Johns Hopkins University

Commentator 2: Tomoko Y. Steen, Ph.D. tste@loc.gov
The Library of Congress, Science, Technology and Business Division

<Individual Abstracts>

Speaker 1: Professor Masakatsu Yamazaki, Ph.D, Tokyo Institute of Technology “History of the Japanese Nuclear Weapons Development during the Second World War”

Japan was one of the six countries engaged in nuclear weapons development during the World War II. In the 1980s the documents of US intelligence surveys were declassified, and some documents of Japanese project became available. There still exists a discrepancy about the scale of the Japanese project: Japan’s successful atomic test in Hungnam, Korea on August 12, 1945, the amount of money spent, and so forth. The historical new researches made it clear that these arguments were wrong.

Japanese military did not pay much attention to such long range projects as the development of atomic bombs. After the Japanese defeat in Midway in June 1942 they accelerated their respective nuclear projects. Yoshio Nishina, an experimental physicist of the *Riken* and head of army project, was ambivalent even after the Pearl Harbor attack, but decided to undertake the weapons research at the end of 1942. He submitted a feasibility report to army in June 1943. At the time, Nishina mistakenly expected that his “heat engine” bomb could release an enormous amount of energy, almost the same energy released by the Hiroshima bomb. This particular conception of a bomb, a reactor gone out of control, was one of Nishina’s principal errors. Nevertheless, his report served as a turning point in the army’s nuclear project. In September 1943, the Army upgraded Nishina’s program with an official designation, the ‘Ni-go research.’ By February 1945, the Nishina team thought they had produced just enough enriched material with their thermal diffusion tube to test in a cyclotron. However, it revealed that virtually no U-235 had been separated from the uranium hexafluoride. The bombing raid on the night of April 13, 1945 destroyed the tube. In June 1945, the Army terminated the project at the Riken.

Speaker 2: Professor Akira Masaïke, Ph.D., JSPS/ Department of Physics, Kyoto University, Japan “Research Activities on Nuclear Physics at Kyoto University during the World War II”

Activities on nuclear physics at Kyoto University during the World War II will be presented in my paper. Bunsaku Arakatsu, the Head of Particle Physics in Taipei,

constructed a Cockcroft-Walton accelerator in Taipei, Taiwan and conducted nuclear experiments using it for the first time in Asia in 1933. Arakatsu soon moved back to Japan, and became a professor of Kyoto University in 1936. In Kyoto, he performed several experiments on nuclear reactions with neutrons from the D-D reaction and γ -rays from the Li + p reaction using protons from a Cockcroft-Walton accelerator before and during the WWII. One of the most significant experimental results was that the average number of neutrons produced in the fission of U^{235} induced by slow neutrons is 2.6, which is the most accurate value obtained before the War.

Arakatsu started the construction of a cyclotron in 1943, but it was destroyed by US Navy just after the War. He committed the “F-Research”, the project of application of uranium fission to atomic energy, at the request of Japanese Navy independently of the Riken project. He studied the possibility of explosion by the chain reaction and proposed the uranium separation by means of the centrifuge.

Recently discovered notebooks in the Library of Congress show the activities of Kyoto group led by Arakatsu. I was given a memorandum written by an interpreter who witnessed the seizure of the notebooks by the US Navy. From these documents, the activities of Arakatsu were found to be fundamental research rather than applied to develop nuclear weapons. Arakatsu strongly desired to publish the experimental data as he did not see the connection between his researches to weapons development. This was also confirmed in a record of SCAP.

**Speaker 3: Professor Keiichi Tsuneishi, Ph.D., Kanagawa University
“Japanese BW (Biological Warfare) Program from 1932 to 1945: Purchased
Research Documents by US”**

The Manchuria 731st Unit is notorious for its execution of forbidden human experimentation. It was a part of the Ishii Organization which started its operation in 1932 by Japanese Army. It became a huge network of medical research covering the military sections as well as academic sectors in the late 1930's. Its headquarters was the Research Institute for Preventive Medicine (RIPM) directed by Ishii Shiro, belong to the Army Medical College in Tokyo. Under the RIPM, there were 4 units in China and one in Singapore. The RIPM asked many professors in leading medical schools in Japan to be consultants/advisers for its program in order to utilize their research ability and to recruit their students to the Ishii Organization as principal investigators. As a result, these young PIs from various universities conducted human experimentations under Ishii Organization to test preliminary research results carried out by their professors at their universities.

Since 2004, we have had four significant developments from the view point of research materials on this study. The first, in 2004, we noticed that the Library of Congress opened to the public *Reports of RIPM: Section 2* which had been published at least 947 issues from 1939 to 1945 and not only military surgeon like Ishii but also professors at major medical schools had contributed their own papers. The second is to find US document which indicates that research data by the Ishii Organization had handed over to the US as acquisition by money or ‘payment in kind, i.e., rations’ (Letter from C. A. Willoughby to S. J. Chamberlin, 22 July 1947). The third, in 2005, is the

discovery of two note books written by Ishii Shiro from August 9 to the end of November 1945. His description shows clearly his efforts to conceal the fact that they conducted human experimentation and prepared BW attack. The forth is the completion of the work of IWG (Interagency Working Group on Nazi War Crimes and Japanese Imperial Government Records) from National Archives in 2006. The result of the work of IWG indicates that several important documents, like the 60-page report on BW activities directed against man, turn out to be missing still and they could not find the evidence to show the experiment on US POW (prisoner of war) in Mukden Camp by Ishii Organization.

Speaker 4: Ms. Maika, Nakao, Ph.D. Candidate, University of Tokyo
“Images of the Atomic Bomb before and during the War in Japan”

The present paper will analyze the discourse of the atomic bomb and nuclear energy in Japan before its first use in 1945, and examine the images of the atomic bomb as a weapon and as a product of science and technology. The view of the atomic bomb is dependent on the period, location, and social conditions. How the public image of the atomic bomb was created and evolved is an important topic in considering various issues of science and technology in modern society. There has been much research on the making of the bomb, the decision to use it and its impact on culture and society, but little about images of the atomic bomb before Hiroshima and Nagasaki. I will explain how information related to the atomic bomb were communicated among scientists, politicians, science writers, and others by examining articles in print media of the time.

I divided this process into three periods: first, the early history of atomic energy (from the beginning of 20th century to the 1930s), second, the connection between the war and atomic energy (from 1937 to the early 1940s) and finally, the spread of images of the atomic bomb (1944 and 1945). I also intend to show the gap between the social discourse of technology and technology itself. Toward the end of the war, Japanese media expected a successful conclusion to the Japanese atomic bomb project. Images of the atomic bomb widely appeared in various types of media and were used for propaganda and motivational purposes, along with other special weapons such as the “death ray”. Discourse of the atomic bomb was formulated before its use, yet little was known about the true nature of the weapon’s disastrous effects. I want to show how the actors who constructed these images influenced each other.