

Responsabilita' etica e sociale degli scienziati:

History and impact of the Pugwash movement

Francesco Calogero

Summary

A terse overview will be presented of the history and impact of the Pugwash Conferences on Science and World Affairs. Questions will be welcome.

Francesco Calogero is a theoretical physicist. He is a member of the Pugwash Council since 1972; he served as Secretary-General of Pugwash from 1989 to 1997, and as Chair of the Pugwash Council from 1997 to 2002.

The Russell-Einstein Manifesto

Issued in London, 9 July 1955



Bertrand Russell and Albert Einstein

IN the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.

We are speaking on this occasion, not as members of this or that nation, continent, or creed, but as human beings, members of the species Man, whose continued existence is in doubt. The world is full of conflicts; and, overshadowing all minor conflicts, the titanic struggle between Communism and anti-Communism.

Almost everybody who is politically conscious has strong feelings about one or more of these issues; but we want you, if you can, to set aside such feelings and consider yourselves only as members of a biological species which has had a remarkable history, and whose disappearance none of us can desire.

We shall try to say no single word which should appeal to one group rather than to another. All, equally, are in peril, and, if the peril is understood, there is hope that they may collectively avert it.

We have to learn to think in a new way. We have to learn to ask ourselves, not what steps can be taken to give military victory to whatever group we prefer, for there no longer are such steps; the question we have to ask ourselves is: what steps can be taken to prevent a military contest of which the issue must be disastrous to all parties?

The general public, and even many men in positions of authority, have not realized what would be involved in a war with nuclear bombs. The general public still thinks in terms of the obliteration of cities. It is understood that the new bombs are more powerful than the old, and that, while one A-bomb could obliterate Hiroshima, one H-bomb could obliterate the largest cities, such as London, New York, and Moscow.

No doubt in an H-bomb war great cities would be obliterated. But this is one of the minor disasters that would have to be faced. If everybody in London, New York, and Moscow were exterminated, the world might, in the course of a few centuries, recover from the blow. But we now know, especially since the Bikini test, that nuclear bombs can gradually spread destruction over a very much wider area than had been supposed.

It is stated on very good authority that a bomb can now be manufactured which will be 2,500 times as powerful as that which destroyed Hiroshima. Such a bomb, if exploded near the ground or under water, sends radio-active particles into the upper air. They sink gradually and reach the surface of the earth in the form of a deadly dust or rain. It was this dust which infected the Japanese fishermen and their catch of fish. No one knows how widely such lethal radio-active particles might be diffused, but the best authorities are unanimous in saying that a war with H-bombs might possibly put an end to the human race. It is feared that if many H-bombs are used there will be universal death, sudden only for a minority, but for the majority a slow torture of disease and disintegration.

Many warnings have been uttered by eminent men of science and by authorities in military strategy. None of them will say that the worst results are certain. What they do say is that these results are possible, and no one can be sure that they will not be realized. We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices. They depend only, so far as our researches have revealed, upon the extent of the particular expert's knowledge. We have found that the men who know most are the most gloomy.

Here, then, is the problem which we present to you, stark and dreadful and inescapable: Shall we put an end to the human race; or shall mankind renounce war? People will not face this alternative because it is so difficult to abolish war.

The abolition of war will demand distasteful limitations of national sovereignty. But what perhaps impedes understanding of the situation more than anything else is that the term "mankind" feels vague and abstract. People scarcely realize in imagination that the danger is to themselves and their children and their grandchildren, and not only to a dimly apprehended humanity. They can scarcely bring themselves to grasp that they, individually, and those whom they love are in imminent danger of perishing agonizingly. And so they hope that perhaps war may be allowed to continue provided modern weapons are prohibited.

This hope is illusory. Whatever agreements not to use H-bombs had been reached in time of peace, they would no longer be considered binding in time of war, and both sides would set to work to manufacture H-bombs as soon as war broke out, for, if one side manufactured the bombs and the other did not, the side that manufactured them would inevitably be victorious.

Although an agreement to renounce nuclear weapons as part of a general reduction of armaments would not afford an ultimate solution, it would serve certain important purposes. First, any agreement between East and West is to the good in so far as it tends to diminish tension. Second, the abolition of thermo-nuclear weapons, if each side believed that the other had carried it out sincerely, would lessen the fear of a sudden attack in the style of Pearl Harbour, which at present keeps both sides in a state of nervous apprehension. We should, therefore, welcome such an agreement though only as a first step.

Most of us are not neutral in feeling, but, as human beings, we have to remember that, if the issues between East and West are to be decided in any manner that can give any possible satisfaction to anybody, whether Communist or anti-Communist, whether Asian or European or American, whether White or Black, then these issues must not be decided by war. We should wish this to be understood, both in the East and in the West.

There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? We appeal as human beings to human beings: Remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, there lies before you the risk of universal death.

Resolution:

WE invite this Congress, and through it the scientists of the world and the general public, to subscribe to the following resolution:

"In view of the fact that in any future world war nuclear weapons will certainly be employed, and that such weapons threaten the continued existence of mankind, we urge the governments of the world to realize, and to acknowledge publicly, that their purpose cannot be furthered by a world war, and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them."

Max Born Percy W. Bridgman
Albert Einstein Leopold Infeld
Frederic Joliot-Curie
Herman J. Muller Linus Pauling
Cecil F. Powell Joseph Rotblat
Bertrand Russell Hideki Yukawa

THE FIRST MEETING IN PUGWASH: July 1957

Participants - The First Pugwash Conference



From left to right: I. Ogawa, Chou Pei-Yuan, V. P. Pavlichenko, S. Tomonaga, C. F. Powell, A. M. B. Lacassagne, A. V. Topchiev, A. M. Kuzin, E. Rabinowitch, G. Brock Chisholm, D. V. Skobelczyn, J. S. Foster, C. S. Eaton, J. Rotblat, H. J. Muller, H. Thirring, L. Szilard, W. Selove, E. H. S. Burhop, M. L. E. Oliphant, M. Danysz,
(D. F. Cavers, P. Doty, V. F. Weisskopf and H. Yukawa were absent when this photograph was taken)

LIST OF PARTICIPANTS

- **Australia**
 - Professor M.L.E Oliphant
Physicist, Director Post-graduate Research School of Physical Sciences, National University of Australia, Canberra
- **Austria**
 - Professor H. Thirring
Professor of Physics, University of Vienna
- **Canada**
 - Dr. G. Brock Chisholm
Physician. Former Director-General, United Nations World Health Organization, Victoria, B.C.
 - Professor J.S. Foster
Physicist. McGill University, Montreal
- **China**
 - Professor Chou Pei Yuan
Physicist. Vice-Rector, Peking University
- **France**
 - Professor A.M.B. Lacassagne
Physician, L'Institut du Radium, Paris
- **Japan**
 - Professor I. Ogawa
Professor of Physics at Tokyo's Rikkyo (St. Paul's) University
 - Professor H. Yukawa
Director Research Institute for Fundamental Physics, Kyoto University, Nobel Prize in Physics
 - Professor S. Tomonaga
Department of Physics, Tokyo University of Education
- **Poland**
 - Professor M. Danysz
Physicist. University of Warsaw
- **UK**
 - Professor C.F. Powell
H.H. Wills Physical Laboratory at Bristol University, Nobel Prize in Physics
 - Professor J. Rotblat
Professor of Physics, University of London. Executive Vice-President of the Atomic Scientists Association

- **USA**

- Professor D.F. Cavers
Associate Dean- Harvard Law School
- Professor H.J. Muller
Biologist. Professor of Zoology Indiana University. Nobel Prize in Physiology and Medicine
- Professor P. Doty
Department of Chemistry, Harvard University
- Professor E. Rabinowitch
Biophysicist, Research Professor, University of Illinois, Editor, Bulletin of the Atomic Scientists
- Professor W. Selove
Department of Physics, University of Pennsylvania
- Professor L. Szilard
Physicist. University of Chicago
- Professor V. F. Weisskopf
Physicist. Mass. Inst. of Technology, Boston, MA.

- **USSR**

- Professor A.M. Kuzin
Institute of Biophysics, Soviet Academy of Sciences, Moscow
- Academician D.V. Skobelzyn
Soviet Academy of Sciences. Director of Lebedev Institute of Physics, Moscow
- Academician A.V. Topchiev
Chemist. Head of Institute of Silicates. Soviet Academy of Sciences, Moscow

The main methodology of Pugwash

Organize meetings---Conferences with about 100 participants, Workshops with 20-40 participants, sometimes much smaller meetings (“Consultations”)---involving *influential* people (scientists, diplomats, military people, personalities including past and future top politicians...) on delicate topics such as arms control (nuclear, chemical, biological weapons, also conventional weapons), specific conflicts (for instance European security during the Cold War, the extended Middle East, India-Pakistan, the Korean Peninsula), ethical issues (responsibility of scientists),... Participants take part in their *personal* capacity. The meetings are *not* secret (with a few exceptions), participants are welcome to report to governments and to the public the essence of the discussions and suggestions emerged from the meeting, but without attributing statements to specific participants (to allow participants to discuss more frankly). Altogether several hundred meetings have been organized.

Main achievements of Pugwash

Significant contribution to the formulation and conclusion of most arms control treaties, in particular all the nuclear arms control treaties (including in particular the ABM Treaty), the Chemical Weapons Convention, the Biological Weapons Convention; the development of some key notions (for instance “defensive defense”, in the context of European security); perhaps most of all, the end of the Cold War. These achievements are hard to document in any specific manner, but they are also hard to deny (just by looking at the quality of the participants and, in many cases, to their life trajectories). To some extent they have been specifically documented by historical researchers (see for instance the book *Unarmed Forces* by Matt Evangelista, who is here...).

Selected past activities promoting nuclear disarmament and the transition to a nuclear-weapon-free world

* F. Calogero, M. Goldberger, S. P. Kapitza (editors), *Verification: monitoring disarmament*, a Pugwash Monograph, Westview Press, Boulder, Co, USA, 1990, [Russian version: Mir, Moscow, 1991]. This was the first book on such a sensitive topic *all* chapters of which were co-signed by authors on opposite sides of the iron curtain.

* *A Nuclear Weapon-Free World: Desirable? Feasible?*, A Pugwash Monograph, edited by J. Rotblat, J. Steinberger and B. Udgaonkar, Westview Press, Boulder, Co, USA, 1993. Also published in Russian, French, Chinese, Arabic, Swedish, and Japanese. [My contribution: F. Calogero, "An asymptotic approach to a nuclear-weapon-free world"].

The Norwegian Nobel Committee has decided to award the Nobel Peace Prize for 1995, in two equal parts, to **Joseph Rotblat** and to the **Pugwash Conferences on Science and World Affairs**, for their efforts to diminish the part played by nuclear arms in international politics and in the longer run to eliminate such arms.

It is fifty years this year since the two atomic bombs were dropped on Hiroshima and Nagasaki, and forty years since the issuing of the Russell-Einstein Manifesto. The Manifesto laid the foundations for the Pugwash Conferences, which have maintained a high level of activity to this day. Joseph Rotblat was one of the eleven scientists behind the Manifesto, and has since been the most important figure in the Pugwash work.

The Conferences are based on the recognition of the responsibility of scientists for their inventions. They have underlined the catastrophic consequences of the use of the new weapons. They have brought together scientists and decision-makers to collaborate across political divides on constructive proposals for reducing the nuclear threat.

The Pugwash Conferences are founded in the desire to see all nuclear arms destroyed and, ultimately, in a vision of other solutions to international disputes than war. The Pugwash Conference in Hiroshima in July this year declared that we have the opportunity today of approaching those goals. It is the Committee's hope that the award of the Nobel Peace Prize for 1995 to Rotblat and to Pugwash will encourage world leaders to intensify their efforts to rid the world of nuclear weapons.











Hussain Al-Shahristani



Current Pugwash activities

Mainly focused on nuclear disarmament (preventing nuclear-weapon proliferation; progressing towards a Nuclear-Weapon-Free World), and even more on specific conflicts with (actual or potential) nuclear-weapon relevance: extended Middle East (Israel, Iran); India-Pakistan; Korean peninsula.

Current leadership

Secretary General: **Paolo Cotta-Ramusino** (an Italian mathematical-physicist);

President: **Jayantha Dhanapala** (a diplomat from Sri Lanka who served in key UN positions)

The Chair of the Pugwash Executive Committee (**Steve Miller**, USA) and the Chair of the Pugwash Council (**Saideh Lotfian**, Iran),

See the Pugwash website: www.pugwash.org

ISODARCO: International School On Disarmament And Research on Conflicts

**It is sometimes described as the “teaching arm” of Pugwash.
It coincides with the Italian Pugwash Group.**

**It operates since 1966, organizing International Residential
Courses.**

**Presently it organizes every year a one-week course in a place
(Andalo) on the Italian Alps (where it is also possible to ski).**

**See the website www.isodarco.org (or ask Matt Evangelista, a
co-director of the last few courses).**

**The 28th Isodarco Winter Course will be held again at Andalo,
January 7-14, 2015 and it will be on**

**"GLOBAL NUCLEAR GOVERNANCE: ACTORS, POLICIES AND
ISSUES: PREPARING FOR THE 2015 NPT REVIEW
CONFERENCE"**