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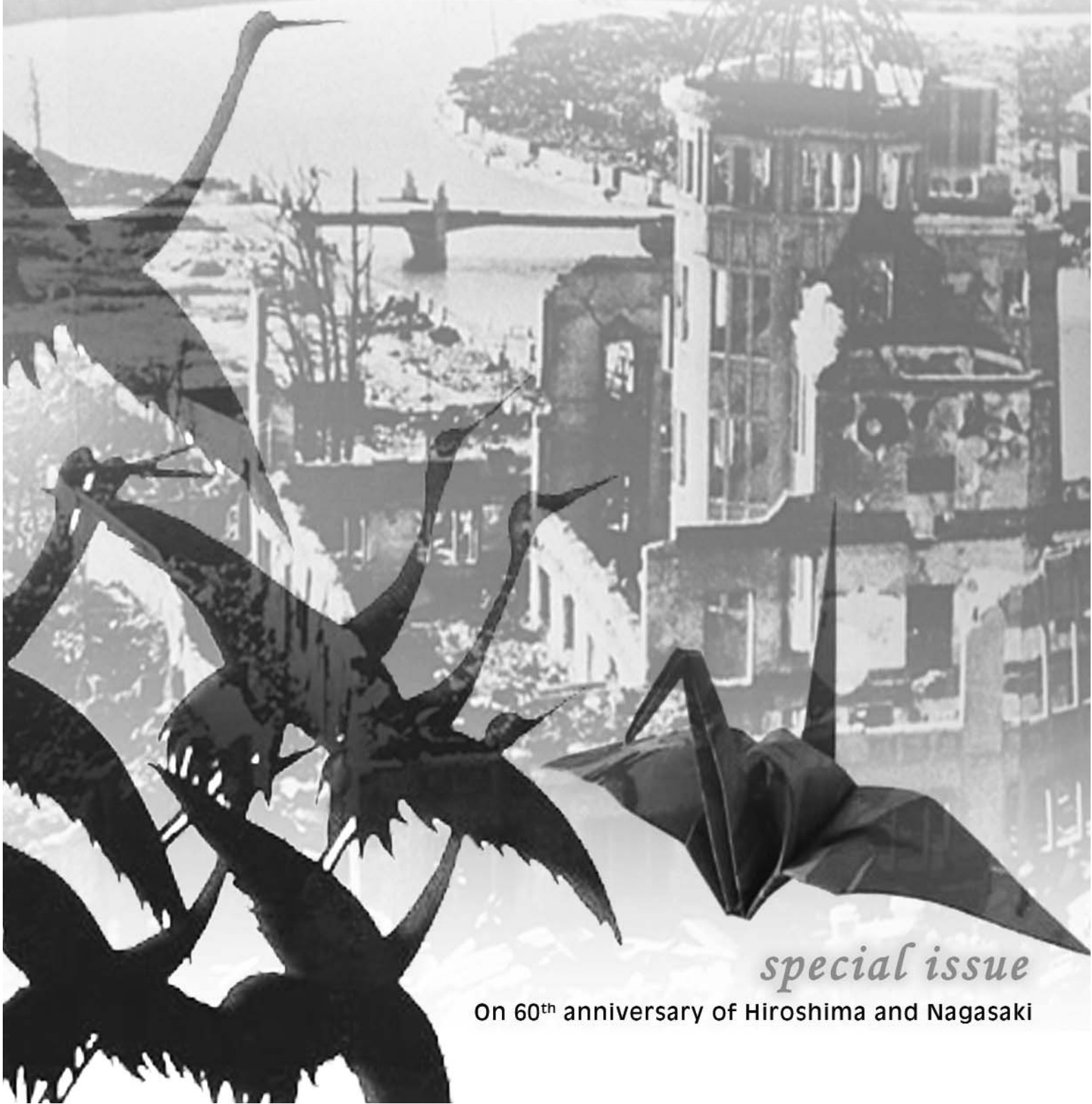
The Bulletin of the Coalition for Nuclear Disarmament & Peace



special issue

On 60th anniversary of Hiroshima and Nagasaki

Contents

Hiroshima and Nagasaki: Experiments in Nuclear Mass Murder

M. V. Ramana

In 1997, I gave a seminar at Jawaharlal Nehru University, Delhi where I presented my preliminary results on what would happen if a nuclear weapon were to explode over Bombay. While describing my scenario, I mentioned that the explosive yield of the hypothetical weapon I had assumed was 15 kilotons, about the same as the weapon that was dropped on Hiroshima. It was also, I told the audience, around the same as the stated yield of the "device" tested by India in 1974 in Pokharan (although there is some suggestion that the yield of this test was significantly smaller). During the question/answer session, one of the students in the audience asked me how I could possibly compare the two. Hiroshima was a barbaric attack on a civilian population; that Pokharan was a careful scientific experiment, was the gist of the student's argument.

My response at that time focused on the political implications of the 1974 test and why that was not compatible with the notion of a purely scientific experiment. Later a different answer came to me. Both Pokharan and Hiroshima were perceived in very similar ways by many people, especially scientists and engineers. In their perception, not only Pokharan but also Hiroshima and Nagasaki were experiments.

The view that the nuclear explosions over Japan were experiments was not limited to scientists who worked in the Manhattan project that developed the first nuclear weapons. An appropriate if unfortunate example comes from the 1989 debate over the construction of the Kaiga reactor held at the Indian Institute of Science, Bangalore, when a leading Department of Atomic Energy scientist reportedly said: "Hiroshima provided us with a fortunate opportunity to study radiation effects!" (Reddy, 2003) With such an attitude it is no surprise that the DAE continued with the construction of the Kaiga reactor despite the dangers to the environment and public health that the reactor posed. Or for matter with the many other nuclear fuel cycle facilities that have exposed populations to radiation with unfortunate health impacts.

Thinking about the explosions as experiments is evident both in planning for the bombing and in the sheer thoroughness with which various measurements were carried out after. Some of the thinking is on evidence in the deliberations of the US Government's "Interim Committee" which was charged with developing advice for President Harry Truman on how the new atomic bombs were to be used. The committee included academics like James Conant and Karl Compton, Presidents of Harvard University and Massachusetts Institute of Technology respectively, apart from Secretary of War Henry Stimson and Secretary of State designee James Byrnes. It also invited a panel of four scientists - Enrico Fermi, Arthur Compton, Ernest Lawrence, and Robert Oppenheimer - to advise it. Also included was the head of the Manhattan Project, Major-General Leslie Groves.

In the meetings of the Interim Committee, we have, for example, James

Conant argue that the "most desirable target" of the nuclear weapons be "a war plant employing a large number of workers and closely surrounded by workers' houses". Such a target would expose both people and a wide variety of structures to the bombs. Hiroshima and Nagasaki were therefore spared attacks with conventional bombs as part of the large scale bombing attacks that the US Air Force had undertaken over other Japanese cities, most spectacularly and destructively the fire bombing of Tokyo that killed close to a hundred thousand people. Groves opposed the idea of several simultaneous strikes on the grounds that it would forfeit "the advantage of gaining additional knowledge concerning the weapon at each successive bombing". All of these requirements reflect more the desire to learn as much as possible about the effects of these weapons rather than some kind of deliberate cruelty to Japanese civilians. What is remarkable is the absence of discussion about the likely horrific impact on civilians.

The Science Advisory Panel to the interim committee also ruled out the possibility of not targeting civilians. In its words, "The opinions of our scientific colleagues on the initial use of these weapons… range from the proposal of a purely technical demonstration to that of the military application best designed to induce surrender. Those who advocate a purely technical demonstration would wish to outlaw the use of atomic weapons and have feared that if we use the weapons now our position in future negotiations will be prejudiced. Others emphasize the opportunity of saving American lives by immediate military use, and believe that such use will improve the international prospects, in that they are more concerned with the prevention of war than the elimination of this special weapon. We find ourselves closer to these latter views; we can propose no technical demonstration likely to bring an end to the war; we can see no alternative to direct military use" (Smith, 1970, p. 50).

There was clearly much that scientists hoped to learn from the bombings. The bomb that exploded over Hiroshima was an untested design made of uranium. While few doubted that the weapon would go off, there was some uncertainty about the yield and other characteristics. The plutonium weapon dropped on Nagasaki was a tested design, but it was being exploded in the sky over a city with different structures - a setting quite different from the test site in the New Mexico desert. Finally, there were numerous questions about the effects of the explosions on people and physical objects.

The attitude of scientists to the first nuclear test at Alamogordo in July 1945 was also in accordance with thinking of it as an experiment without reflecting on the potential consequences. Though the immediate response to the explosion was one of awe, the first spoken remarks were mostly along the lines of: "well, it worked." Indeed, according to Oppenheimer's brother Frank, Robert simply exclaimed: "It worked". It was only later that Oppenheimer claimed that he had thought of the quotation from the Bhagvad Gita (for more on this, see Ramana, 2001). The chemist George Kistiakowsky rushed up to Oppenheimer to remind him of a bet they had struck on the outcome: "Oppie, you owe me ten dollars."

The immediate reactions to the bombing from the scientists at the Manhattan project are best captured by the description offered by Laura Fermi, the wife of the nuclear physicist Enrico Fermi, of the scene at the Los Alamos Laboratory when news of the explosion over Hiroshima reached them: one physicist burst into the room shouting "Our stuff worked". It was as though an experiment

had succeeded. And just as there were many who, without thinking sufficiently about the consequences of what had just been done, profusely congratulated the scientists and engineers who tested nuclear weapons in Pokharan, both in 1974 and 1998, so were there many who simply thought of the bombings of the Japanese cities as the successful culmination of many years of intense technical effort to develop these weapons. As Oppenheimer famously remarked in 1954, "When you see something that is technically sweet, you go ahead and do it and you argue about what to do about it only after you have had your technical success…That's the way it was with the atomic bomb."

And as the horrific effects of the bombing became more apparent, thanks in part to the efforts of some scientists to educate the public about the dangers posed by these new and extremely destructive weapons, other scientists tried to justify the bombings through various means. James Conant, for example, persuaded Henry Stimson to write an article in Harper's Magazine in 1947 suggesting that the atomic attacks had prevented one million casualties - the number that formed the basis for others' claims of US lives saved by the bomb (Walker, 1996).

There was, in fact, no basis for this claim. Military estimates of the number of US lives that may be lost in the first scheduled invasion, of the island of Kyushu planned for November 1, 1945, were only 31,000. Massive invasion of the country was only scheduled for Spring 1946, eight months after the bombs were dropped (Alperovitz, 1970). It is now clear without doubt that Japan would have surrendered well before these invasions without the use of atomic bombs. And yet myths once promoted stay on in popular and even "expert" memory. Fifty years later Hans Bethe, often held out as an example of a dove and a promoter of arms control, continued to justify the bombings on the basis of the baseless and discredited one million figure that Stimson offered.

As Gar Alperovitz argues, "[If] one regards what we take as the evidence of what men did at that time, on the one hand we have brilliant scientific work…These same men who diligently worked in their laboratories to find out precisely how to make the bomb had no diligence, the great majority of them, in finding out precisely what its use was to be; whether, in fact, it was as necessary as other secretaries of war and defense at that time said it was" (Alperovitz, 1970). To be sure, there were exceptions. People like Leo Szilard, Niels Bohr, James Franck, and Eugene Rabinowitch did question the necessity of the bombs and their use, and how to stop them. But they were few and did not have the power to stop the flow of events.

But other scientists took off where the Manhattan project left off. The Atomic Bomb Casualty Commission (ABCC) was established by the US government in Japan in the beginning of 1947 exclusively to collect scientific data on the long-term biological effects of the bombs. To many Japanese, the ABCC earned the onus of simply treating the hibakusha as experimental subjects a second time (Dower, 1996). As one of the foremost Japanese experts on radiation and its effects at the time of the bombing, Prof. Tsuzuki, said while presenting Phillip Morrison, who was part of the contingent of scientists sent to Japan in September 1945, with a copy of his 1926 paper on his study of radiation effects on rabbits: "Ah, but the Americans - they are wonderful. It has remained for them to conduct the human experiment!" (Wyden, 1984, p.323).

The Americans may have been the first

in experimenting on humans with massive amounts of radiation, but unfortunately the victims at Hiroshima and Nagasaki have not been the last. Since then we have had numerous instances of excessive radiation exposures - Lucky Dragon, Chernobyl, Tokai, and Kalpakkam are just some examples. The list will continue unless we achieve a world free of nuclear weapons and the technology that is inextricably tied to these weapons - nuclear energy.

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M.V. Ramana is a member of the Core Faculty at the Centre for Interdisciplinary Studies in Environment and Development, Bangalore.

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