

*A Special Double Issue on Bomb Tests*

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## *The Song of Indian Civilisation*

*Sitting on a Sand dune in Pokkran  
Tathagata Buddha is smiling,  
for two Thousand and five hundred years  
he has been singing the mantra  
of COMPASSION, of EQUALITY and of LOVE.  
underneath his eyes came hordes of  
shaks, Greeks, Huns, Pathans, Gujjars and Mughals;  
Ghauri came and Khiljee too  
ALL who came got drowned in  
this ocean of compassion and became one  
"Thost who came as Enemies became friends.  
Their voices and their songs,  
Their archilecture and their art  
Their philosophies and their emotions  
All became suffused by the music of equality And of  
love.  
plunderers too came and went leaving not a TRACE.  
Sufis came and so did saints  
to find a permanent abode WITHin people's heart  
Porlugese came and so did the Dutch, French and  
English  
They lived like outsiders and eventually left  
Left behind were their ways of thinking*

*The English went but Englishness remained.*

*It remained in the life-style, In the language, In education;  
In the blind idol worship of armed might.*

*Then came a poet who sang the songs of world love  
And a philosopher who tried to raise humankind towards  
the Gods*

*And a MAHATMA Who loves the English but tried to  
destroy  
Englishness  
who sacrificed his life to preserve our civilisation.*

*while today,  
even though not just out but six explosions  
transpire*

*Beneath the ever smiling EYES of Tathagata  
Buddha  
explosions that throw dust in our eyes and  
make us blind.*

*The shakti of love is immortal  
It shall overcome hatred, loathing, arrogance and  
violence.*

*Love shall emerge victorious, Unity will win  
Magnanimity shall TRIUMPH, the lionhurt shall  
prevail.*

*And then once again we shall hear the conch-shells  
of a civilisation that is tolerant*

*A culture that has never accepted the defeat of love  
before hatred*

*An enlightenment that has never accepted the defeat of  
love before  
storms of animosity*

*The smile on the face of Tathagata Buddha*

*Narayan*

*Desai*

*Translated from the original Hindi by*

*Surendra Gadekar*

*Tests have heightened tension*

A meeting on the nuclear arms race between India and Pakistan was held at MIT. Nearly a hundred people (largely Pakistanis and Indians) attended the meeting. We also circulated the following petition against the nuclearization of South Asia.

We express our deep regret at the recent series of nuclear and missile tests by India and Pakistan, and the general militarization of the region.

Although the two governments have sought to justify the nuclear arms build up in their respective countries in the name of national security, their actions serve only to heighten tensions and increase hostilities in the region.

It is tragic that valuable resources that should be used for the betterment of the people are instead being squandered on weapons of mass destruction.

The nuclear and missile tests undermine the ongoing efforts to forge common bonds of friendship between the two countries by those Indians and Pakistanis who have been able to transcend narrow nationalist propaganda. The jingoistic rhetoric of our leaders notwithstanding, we are determined to work together toward peace and harmony in the region.

*Signatures of more than 100 Indian and Pakistani scientists working in various universities in the US.*

he after glow of Operation Shakti lingers on. Yes, India has done it. Our scientist and engineers and even our politicians are second to none. Recalls to mind those famous lines coined during the Russo-Turkish War of 1877-78 which gave the English language a word which describes rather well the mood in middle class India today:

*We don't want to fight,  
yet by jingo, if we do,  
We get the ships, we got the men,  
And we got the moneey, too!*

*A chievement at what cost*

A nuclear test involves the release into the environment of large quantities of radioactive poisons. Poisons that shall linger on and on; long after the after glow fades; long after the applause and the mutual back-patting fades; long after all the scientists, engineers, and even the evergreen politicians fade; long after historical constucts such as Pakistan, China and even beloved India fade. This deliberate poisoning of our soil and that most precious of all things in a desert—water, shall continue to extract an inevitable toll. Obtaining complete and accurate data on health and environmental effects of nuclear weapons testing is difficult. This is because the prin-

cipal responsibility of assessing the health and environmental effects of the testing is given to the very agencies that make and test the weapons. These agencies have overwhelming desire for secrecy and the perceive a need to build up nuclear arsenals come what may. In this mindset, it is no wonder that the health and security of one's own citizens is sacrificed at the altar of geo-political considerations. Henry Wasserman very aptly named his book describing US experience with the effects of ionising radiation as "Killing Our Own." Of one thing we can be sure. If it is found that operation Shakti has resulted in radioactive contamination which is a threat to human health, the villagers living in the vicinity are unlikely to be told anything about the fact or asked to take precautions that might reduce their risks. In our persuit of geo-political might, some have to pay the price of development. Modern versions of the ancient custom of human sacrifice for the sake of power and glory can be played to thunderous applause from a nation thirsty for international recognition. When the news first came on 11th May, we all wanted to bring out an issue within a week. Unfortunately it has taken more than seven weeks for us to come to you. We did try to register our protest through the mainstream media by issuing statements, and writing articles. But as has become the nature of the mainstream media, only the voice of the establishment is heard and amplified. The common newspaper readers in the country were fed half truths and lies through reams and reams of newsprint. In the din, the voice of hundreds of academics, journalists, social activists, poets and writers, who organised protests in different parts of the country braving attacks from the saffron stormtroopers and their lackeys, got drowned. The mainstream media gave you one side of the story. We are giving you the other.

*Surendra Gadekar*

*Do Not Forget  
Hiroshima and Nagasaki  
Fight Nuclearisation of Indian Subcontinent  
Through Active Protest*

*Continued on page 29*

# Just Say 'No' To Murder

Dr. Zia Mian

India and Pakistan have both thought and done the unthinkable. With their nuclear weapons tests they have demonstrated to themselves, to each other, as well as to the world that they are both willing and now able to commit nuclear mass murder.

This was not done with universal consent. There were brave voices who spoke the language of right and wrong, and not that of power within both nations. There was a nuclear debate. But there should have been no need for one.

Nuclear weapons have become the one great exception to the sense that there are some issues that a society should never debate because the issue itself is so unethical. A simple example is that few if any societies would feel it necessary or even acceptable, to have a debate on whether it is right to kill and eat children.

When it comes to nuclear weapons, however, the moral response has been dulled. What is at issue is whether it is right or wrong to want to have, and to want to use, the power to kill hundreds of thousands, perhaps millions of people in the blink of an eye, to maim many more and to poison them so they die slowly and painfully over years from cancers and other illnesses induced by radiation. The experience of Hiroshima should have been enough to convince anyone that nuclear weapons were an affront on humanity. Despite this there has been a world-wide debate about nuclear weapons for over fifty years.

This has happened in large part because nuclear weapons are usually not discussed in moral terms. From the very beginning of the nuclear age there has been a tendency to use language that hides the reality of what is being

considered. But it is more than simple disguise. Language is used as an anaesthetic, as a way to kill feelings. Without feelings, morality dies. These are the first casualties of nuclear weapons.

Nowhere is this more evident than among those people whose job it is to deal with these weapons on a daily basis. The American scientists who build the first ever nuclear bomb simply called it the 'Gadget', as if it were just another strange invention rather than the most destructive weapon that had ever been made. When it came time to kill people with these weapons, the scientists and soldiers involved found the most innocuous names possible for the weapons: the bombs that destroyed the Japanese cities of Hiroshima and Nagasaki were called 'Little Boy' and 'Fat Man'.

This refusal to confront the reality of nuclear weapons is not confined to the United States. It has afflicted every state that has developed them. The Soviet Union named its first bomb, the 'Article'. Britain called its first nuclear explosion 'Hurricane', France had (the 'Blue Mouse', and China named its first nuclear weapon simply 'Device 596'.

The same escape can be found closer home; India called its nuclear bomb test in 1974, 'Smiling Buddha' and more recently simply 'Shakti'. All of these illustrate what psychologist Robert Jay Lifson has called nuclear numbing, the process by which "we domesticate these [nuclear] weapons in our language and attitudes. Rather than feel their malignant actuality, we render them benign."

Pakistan has its way of talking about its nuclear weapons without really talking about them. For more than a decade while it lacked a nuclear bomb that it could name, the debate in Pakistan was only about a nuclear option, or a nuclear capability". There was never a mention of what it was an option for. So used are Pakistan's scientists to a nameless bomb that they have not so far given a name to the nuclear tests.

If the nerve of moral outrage is dulled, there is hope that the sharp prick of knowledge can serve to revive it. Laying out enormity of what is involved in Pakistan's nuclear tests can serve this purpose. Pakistan is believed to have tested a simple nuclear weapon of the kind that was used 52 years ago against Hiroshima. In Hiroshima, the atomic bomb killed between 210,000 and 270,000 people, and destroyed more than 90% of the city. Pakistan's nuclear tests were a demonstration that it could do the same thing to one or more of India's major cities. The city could be Bombay, or Delhi, or any one of nearly half a dozen others. That any of these cities would be largely destroyed is obvious. What needs to be faced is how many people would be killed. Estimates of the deaths that would result from such an attack vary, but each new estimate is larger than the one that came before. An early estimate was that an attack on Bombay would kill between 103,000 and 265,000 people, while 26,000 - 175,000 would die if Delhi were the target. Later estimates suggested there might be 136,000 deaths in Bombay, and more than 220,000 people injured, while in Delhi, the toll would be

Nuclear weapons are not weapons in the usual sense of the word. They are devices for genocidal destruction.

40,700 deaths and 66,900 injured. The most recent estimate, based on the 1991 Indian Census, is that as many as 700,000 people would die in Bombay alone. It hardly needs to be added that since almost half the population of India, like that of Pakistan, is under the age of fifteen, about half of all these deaths would be of children.

In the final analysis, a nuclear test

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is about proving you have the power to do this. Becoming a nuclear weapons state, a status both India and Pakistan now claim, means keeping this power. Giving up nuclear weapons means accepting that there is nothing, nothing at all, that could ever justify wanting or having such terrible power,

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*The article is an edited version of a long article to be published in Pakistan and the Bomb - Public Opinion and Nuclear Options, edited by Samina Ahmad and David Cortright, University of Notre Dame Press, 1998*

## Nehru And Nuclear Conspiracy

Dr. M. V. Ramana

**N**uclear programmes the world over are, and have always been, powerful symbols of State power. In the early history of the Indian nuclear programme, the one political figure who figures repeatedly is Pandit Jawaharlal Nehru, India's first Prime Minister.

Nehru's interest in nuclear power as an example of a scientific enterprise is not surprising. Since his early days in England, Nehru was always convinced of the positive good that could result from science. Addressing the Indian Science Congress in 1938, he emphasised his faith in science as follows: *"The application of science is inevitable and unavoidable for all countries and people today. But something more than its application is necessary. It is the scientific approach, the adventurous and yet the critical temper of science, the capacity to change previous conclusions in the face of new evidence, the reliance on observed fact and not on preconceived theory - all this is necessary not merely for the application of science, but for life itself and the solution of its many problems."*

A central canon in science is openness; but secrecy has become the bane of science. Two reasons can be given for this. First, secrecy in science is unethical. Science does not grow by the intellectual activities of individual scientists, or even of a team of scientists. It is the product of the whole community. It is for this reason that one of the greatest physicists of all time, Sir Isaac Newton said: *"If I have seen further than others, it is because I*

*stand on the shoulders of giants. If one takes information from others, then one must also give"* Second, secrecy hides errors and inefficiencies. In the words of J. D. Bernal: *"With no check from publication and free criticism, the most errant nonsense is likely to receive official sanction. Teaching will become an initiation into mysteries, and science will degenerate into the kind of cabalistic alchemy it was in the decay of the Roman Empire The growth of modern science coincided with a definite rejection of the idea of secrecy."*

### *Secrecy and the Nuclear Establishment*

The Indian nuclear programme which began by envisioning itself as devoted to scientific research violated this canon from its very inception. During Nehru's reign as the Prime Minister, the Indian nuclear establishment progressively insulated itself from outside gaze. Passed shortly after independence, the Atomic Energy Act of April 1948 made atomic energy the exclusive responsibility of the state. In 1958, with the creation of the Atomic Energy Commission, the nuclear establishment succeeded, in increasing its authority. And, finally, on September 15, 1962, the Parliament passed a new Atomic Energy act that granted the chairman of the Atomic Energy Commission the sole authority to initiate, execute, propagate, and control exploration, plan and manufacture of

atomic material and its related hardware and all nuclear research and developmental activities. Under Section 18 (i) of this act, the government was empowered to restrict the disclosure of information, whether contained in a document, drawing, photograph, plan, model or in any other form whatsoever, which relates to, represents or illustrates: a) an existing or proposed plant used or proposed to be used for the purpose of producing, developing or using atomic energy, or b) the purpose or method of operation of any such existing or proposed plant, or c) any process operated or

A central canon in science is openness; but secrecy has become the rule in big science and nuclear technology.

proposed to be operated in any such existing or proposed plant. Section 20 denied any person or organisation not authorised by the AEC to invent or to patent anything which the AEC believes as relating to atomic energy. Section 21 (5) gives the AEC absolute authority over any legal or formal arbitration.

#### *Saha and the Nuclear Establishment*

Not only is this secrecy meant to prevent lay persons from knowing what is happening, but also the rest of the scientific community in the country, i.e. outside the nuclear establishment. One of the biggest challenges to the Indian nuclear establishment, and probably the only major challenge to come from the rest of our scientific cadre, came from the famous scientist Meghnad Saha. Saha was an early votary of the application of science and modern industrialised development to India. It has been argued that he may have been one of the first scientists anywhere to realise that atomic energy can be used to generate electricity. Thus, he was certainly not opposed to nuclear energy. What he was opposed to was secrecy and the exclusivity of the Indian Atomic Energy Commission. In particular, he wanted to see universities do research, and be supported in their efforts to do so. on nuclear physics and engineering. During the early 50s. as an elected Member of Parliament, he repeatedly raised this issue on the floor of the Lok Sabha.

Responding to Saha's constant pressure and critiques. Nehru agreed to hold a special conference entitled "The Development of Atomic Energy for Peaceful Purposes in India" on November 26 and 27. 1954. For Saha. it was to be a way of addressing the appropriateness of the Atomic Energy Commission's(AEC) strategy. However, the very choice of location - the National Physical Laboratory (NPL) in Delhi - suggested that the die was already cast against him. NPL's director was K S. Krishnan, one of the three founding members of AEC, the other two being Hom i J, Bhabha and S. S. Bhatnagar. In the words of Raja Ramanna, Krishnan would eventually "save the day for us (the AEC)." The bulk of the speakers were from the AEC and the whole conference had the effect of marginalizing Saha and defusing the challenge to the power of the AEC. In his opening remarks at the conference, Nehru clearly defined the technological aspects of nuclear energy as restricted to the state alone though he suggested the possibility that the scientific aspects may be pursued in the universities. All these suggest that Nehru was far from being neutral in his role of arbiter.

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#### *Why Secrecy?*

While introducing the Atomic Energy Act in 1948. Nehru gave two reasons for the imposition of secrecy: *The advantage of our research would go to others before we even reaped it. and secondly it would become impossible for us to cooperate with any country which is prepared to cooperate with us in this matter, because it will not be prepared for the results of researches to become public "*

To say that the US. Canada, England and so on, from whom we got much of our early nuclear know-how, would steal ideas from Indian research is disingenuous at the very least Further, it is not clear why 'others' should not benefit from our research'. India, after all. was planning to benefit from the results of research carried out by western countries. And. last, if these were to be the only reasons, then the same levels of secrecy should have applied to other fields of science and technology.

The answer, perhaps, lies elsewhere.

#### *Nehru and the Bomb*

To attempt to understand the reasons for Nehru's support for secrecy in the Indian nuclear establishment, we turn to an early quote of Nehru's dating back to 1946. In a remarkably forthright speech, he said *As long as the world is constituted as it is, every country will have to devise and use the latest scientific devices for its protection I have no doubt that India will develop her scientific researches and I hope Indian scientists will use the atomic force for constructive purposes But if India is threatened she will inevitably try to defend herself by all means at her disposal.'*

This statement reveals several aspects of Nehru's thinking. In 1946 less than a year after the bombing of Hiroshima and Nagasaki, it was impossible for anyone thinking about atomic power not to think of its use for defence purposes. But, it is interesting to note that even though India was still a colony of Britain, Nehru envisaged it having potential threats And. implicitly,

I hope Indian scientists will use the atomic force for constructive purposes. But if India is threatened she will inevitably try to defend herself by all means at her disposal

*Jawaharlal Nehru*

in stating what India would do in the future, he also seems to see himself as a statesman and leader of the country.

Nehru's understanding of the dual nature of atomic power seems to have stayed with him. Several years later, on a memo submitted by Bhabha, Nehru is also reported to have written a note to the effect that: *"A part from built-in power stations and developing electricity there is always a built-in advantage of defence use if the need should arise."*

Both these quotes fly against the conventional view of Nehru as one of the foremost votaries of universal nuclear disarmament. Clearly, his activities in the 1950s lends support to this view. All through this period, Nehru was intensely concerned about nuclear disarmament. Being the first to suggest a ban on nuclear testing, he was glad when the limited test ban treaty was signed and welcomed it as a great landmark in history. He also commissioned an official study on the effects of nuclear explosions. Not only did Nehru push for universal nuclear disarmament, but as late as 1961 he had categorically stated in public that India would not produce nuclear weapons "whatever may happen".

As Ashok Kapur points out, there is an ambiguity between Nehru's mistrust of nuclear weapons and his policy of promoting the peaceful applications of nuclear power. Ambiguity does not mean hypocrisy. But, as a leader of a State, Nehru could not perhaps make the choices that he may have chosen as an individual.

This ambiguity is inherent in the whole nuclear enterprise - that something can be developed ostensibly, or even honestly, for peaceful purposes and then put to use for producing weapons. Very early on, this dual nature was explained by Robert Oppenheimer, the head of the Manhattan project that produced the first atomic bombs. In 1946, commenting on a proposal for the international control of nuclear weapons, he wrote: *"We know very well what we would do if we signed such a convention. We would not make atomic weapons, at least not to start with, but we would build enormous plants, and we would design these plants in such a way that they could be converted with the maximum ease and the minimum time delay to the production of atomic weapons saying, this is just in case somebody two-times us; we would stockpile uranium; we would keep as many of our developments secret as possible; we would locate our plants, not where they would do the most good for the production of power but where they would do the most good for protection against enemy attack."*

A few months after Nehru's death, Bhabha pronounced that India was capable of exploding a nuclear device within 18 months. The pronouncement came on the heels of the first Chinese nuclear test. However, given the intricacies involved in manufacturing nuclear explosives, this statement, if true, reveals that much work had been done towards making a bomb even prior to this. The timing also lends credence to the claim that it was Nehru who held back Bhabha's enthusiasm for nuclear tests.

The promised bomb exploded on May 18, 1974 at Pokharan in Rajasthan. The seemingly innocuous choice of words - "The Buddha is Smiling" - used to inform Mrs. Indira Gandhi, Nehru's daughter and the Prime Minister of India during that period, of the successful explosion is ironical. For, in 1957, during a visit to Japan, standing in front of the Peace Memorial, Nehru said: *"The world must choose between the path of violence symbolised by the atom bomb and the path of peace symbolised by the Buddha."*

**The choice is still before each of us.**

**M V. Ramana**

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### *Theif ! Who Me?*

*Pakistani operatives reportedly set up fictitious companies and established circuitous shipping routes and smuggling operations to collect equipment, technology and data from the United States, China and European nations including Britain, the Netherlands, West Germany and Switzerland.*

*Asked today about the allegations, Khan replied, every project is universal and denied Pakistan stole technology or equipment for its nuclear program. He said countries and individuals were willing to sell technology and material to Pakistan despite what he termed 'unnecessary restrictions, a reference to the laws of some nations that prohibit exporting sensitive nuclear material and technology.*

*'If somebody sells it to me and makesome profit how can it be stolen?' Khan asked.*

# Hey Ram : The Last Shot

Dr Vinay Lal

This year, as India marked the 50th anniversary of the assassination of Mahatma Gandhi, the 'father of the Nation' has finally been liquidated. In 1974, less than three years after concluding a victorious war with Pakistan, India exploded what was called a "peaceful nuclear device", as though even its nuclear explosions had to carry some of the burden of Gandhi's non-violence. For the subsequent 24 years, India exercised virtuous restraint, but it has now broken the self-imposed moratorium with a series of five nuclear tests over the last few days. Writing to Clinton and other political leaders, the Indian Prime Minister, Atal Bihari Vajpayee, pointed to the "deteriorating security environment" in South Asia, and the aggressive designs of its two principal neighbours, China and Pakistan, as providing India with a sufficient warrant for seeking to acquire nuclear deterrence. The political party over which Vajpayee presides, which draws some of its membership from other political associations that were implicated in the assassination of Gandhi fifty years ago and which have over been the ardent champions of Hindu ascendancy, has finally removed the specter of Gandhi which has been haunting India's modernizing elite. The Indian nation-state will no longer live in consummate fear of Gandhi's critiques of modernity, big science, instrumental rationality, development, war, and masculinity.

While economists, foreign policy experts, and defence specialists will continue to debate the reasons that led India to carry out nuclear testing at this particular juncture, the cost to India of economic sanctions, the possible escalation of an arms race, the palpable failures of American foreign policy and intelligence gathering, and the geopolitical consequences of South Asia's nuclearization, there are other

more interesting and poignant, considerations to which we should be attentive. During the height of the Cold War, Nehru attempted to place India in a 'third camp' and place it at the helm of the leadership of the non-aligned movement. This was even, in some measure, a continuation of Gandhi's policy of repudiating realpolitik. The non-aligned movement, however, would become increasingly irrelevant, until the fall of the Soviet Union rendered it obsolete, and some commentators have consequently interpreted the nuclear tests as India's cry for attention. Clinton appeared to have echoed this view when he noted that India, perhaps lacking in self-esteem, thought itself "under-appreciated" as a "world power".

The history of India's nuclear tests extends back, in a manner of speaking, to the early days of India under colonial rule. The British were apt to describe Indians as an "effeminate" people, leading lives of indolence and womanly softness; following the rebellion of 1857-58, the entire country was divided between "martial" and "non-martial" races. One response was to embrace a certain kind of hyper-masculinity, which would enable Indians to be construed as a people just as "manly" as the British. Indians have never been able to live down the taunt of "effeminacy". and those who know of the cultural nuances of South Asian history are aware that some Indians imagine Pakistani Muslims as a meat-eating, virile, robust, and martial race. It is a telling fact that the first comment of Balasaheb Thackeray, the chauvinist leader of the militantly Hindu Shiv Sena party who is an open

## Goodbye Gandhi

Fifty years ago we took leave of Gandhi  
For he was a symbol of the moral power of the nation.

Seeing us at fault  
He would cry "Halt"  
While returning a debt,  
he would calculate not  
what use the neighbour would make of it.

Being freed of debts  
he would try to be righteous

when we opposed the NPT  
our theme was righteousness  
with what face were bundles upon bundles to desist  
while armed with bundles upon bundles of bombs.

The first principle with bundles upon bundles of bombs.  
before holding a mirror to others.

when we turned away from CTBT  
There were still some sheaths of virtue left  
what is the point of merely banning testing  
while doing nothing about stockpiling  
and refining never weapons.

Fifty years!  
Today we present you Operation Shakti  
Having bid a final goodbye to Neeti  
what strength is there where there is no life  
what Shakti is there where there is no Neeti

Narayan Desai

Translated from the original Hindi by Surendra Gadekar



admirer of Hitler, upon hearing of the tests was, "We have to prove that we are not eunuchs."

By signaling its departure from the body of world opinion, India has sought to arrive on the world stage. It is the one resounding cruelty of our times that no nation-state which refuses to partake in realpolitik and the brutal zero-sum politics of our times can re-

ceive much of a hearing. The recent nuclear tests may represent the shallow triumph of India as a nation-state, but they signify the sad-denying defeat of India as a civilization, an irony made all the more bitter by the posturing in which Vajpayee's Bharatiya Janata Party engages as the vanguard of "Hindu civilization". True bravery and courage consist, not in an empty re-

nunciation of what is not possible, but in forsaking the military force that one has at one's command. Thus might what Gandhi called "non-violence of the weak", which is no non-violence at all, be transformed into "non-violence of the strong", and from India's descent into nuclear madness might some good emerge.

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## *Making Money The Nuke Way*

**W**hen Tensing Norkay and Edmund Hillary 'conquered' Mt. Everest in 1953, I was just six years old. Yet I remember the excitement. The highest mountain in the whole world had been laid low through human ingenuity, dedication and hard work. After their return from the top of the world, Hillary and Tensing were deservedly treated as heroes. They were just about everywhere, on the covers of magazines and in radio broadcasts.

Leave aside names, can you recall just how many people climbed Everest last year? Or the year before? I wonder if anybody can except perhaps the keeper of records at the Himalayan Mountaineering Institute. The total number who have been there by now must be running into hundreds though it is still probably less than the more than 2000 nuclear explosions that have been conducted in scores of places all over the world so far.

Not that climbing the Everest is a cakewalk. I can't do it even on a bet. But still as far as recognition for achievement goes Everest isn't Everest anymore. And rightly so, because human spirit recognises no boundaries — No ultimate pinnacle.

That is why the spectacle of Dr Abdul Kalam and Dr R. Chidambaram being feted like Tensing and Hillary is so strange and amusing. It is not a symbol of our scientific sophistication that it is made out to be but rather of our scientific naivette and ignorance. After all the first thermonuclear test took place on November 1, 1952, that is a few months before the first ascent on Everest.

One can understand the eagerness of the political establishment to bask in the reflected glory of this 'scientific achievement'. They have other more sinister agendas to accomplish and all the Jai Vigyan euphoria will come in handy.

But what of the scientists themselves? Wasn't it their duty as scientists to use the opportunity presented by being in the focus of national attention to help in the creation of a scientific temper? The first step in such an enterprise would be to make realistic assessment of what had been achieved and a clear enunciation of further goals. That would have at least cooled the hysteria, maybe even saved some blood for uses better than as a substitute for ink! Instead we have interviews claiming that three simultaneous tests were some kind of a "world record".

Besides being in questionable taste, these claims are just not true and salvo explosions of the kind that India conducted were the norm rather than the exception in both Soviet and US testing programmes. The Soviets in fact once conducted eight explosions simultaneously for all the good it did them in terms of "national security".

Why so much hype? The scientists may not be the supermen they would like to project themselves, but neither are they fools. They do realise that inflated claims diminishes their credibility in the world scientific community. But they are willing to pay the price for a purpose. And that purpose as always is money. Lots of money.

Recall the situation before May 11, 1998. The nuclear establishment stood discredited. Accidents like the fire at Narora, the flooding of Kakrapar and the collapse, (sorry delamination) of the dome at Kaiga had delaminated their claims of safety. The performance or rather the persistent non-performance of the reactors had put nine out of ten reactors in India, amongst the fifty worst reactors world wide. Funding for nuclear projects was declining and so was the clout of the nucleocrats in corridors of power.

And then suddenly five flashes in the desert and the frog has turned into a Prince Charming sweeping the country off its feet and into a fairyland. All dreamlands in kaliyuga charge hefty admission tickets. No! old nucleocrats assure

# THE BANALITY OF EVIL

*Achin Vanark*

us. the price is cheap Only Rs one crore per bang. For a country where thousands of crores get swindled in scams every other year such a claim might seem a ridiculously low price to pay for the security of sleeping well at night knowing that your nuclear weapons were out there deterring their nuclear weapons from coming and frying you to a crisp.

We have been down this road before. In the early years of independence Dr. Bhabha using his considerable public relations skills had overcome the opposition of scientists like Dr Meghnad Saha and manipulated the political establishment towards the dead end of the peaceful atom black hole.

What was implied was that more than half the total research budget of the country being invested into the dream of too cheap to meter and plentiful nuclear energy

Besides, the dream also demanded that there be no bureaucratic interference or oversight of any kind. The cloak afforded by secrecy, in the name of national security could be used to cover multiple sins like corruption, non-performance and just plain rubbish science.

By skilful manipulation of the eagerness of the political leadership to play a big brother role with 'big bombs', nucleocrats hope to bring back those bygone days.

It is for the scientists of sense to get together and prevent this hijacking. Indian science cannot afford a second shot in the foot

*Surendra Gadekar*

**T**he small and angry minority of anti-nuclearists in India can take some solace from the fact that they are needed now more than ever. They represent the other side of an ongoing discourse and will be around as long as nuclear weapons remain on the face of this earth or that earth itself becomes no longer humanly habitable. The political folly of taking this decision to go nuclear is something that I have been arguing in numerous ways for over a decade. There will be occasion to do so many times again, especially when the shadow of the Pakistan bomb falls on those who can currently only see the 'glow' of the Indian bomb. Here I wish, for a change, to focus on that dimension which has been utterly and contemptuously disregarded by all who supported the testing-the moral question.

The universal glorification of this 'scientific achievement' and the congratulations from all quarters showered on the scientists responsible is nothing less than obscene. Many greater scientists possessing moral courage and integrity of a much higher order, will simply be appalled. Those of the past like Einstein and Oppenheimer who were horrified by what their endorsement of, and association with, the production of the first atomic weapon had done, and spent the rest of their lives opposing this new evil, will now be turning over in their graves. So sensitive were they to the unique evil represented by such weapons that they insisted not only that what they had earlier justified (needed to fight Hitler) was wrong but that any future production of such weapons be it in the name of national security, or whatever, could never be justified. Joseph Rotblat, recent Nobel prizewinner, simply walked away from the Manhattan Project. Indeed, as they pointed out, if the scientists of the world exercising an independent moral conscience simply re-

fused to make such weapons for their political masters, the world would be free forever of such evil

A starry-eyed idealism one might say? Once the first bomb appeared other countries fell compelled to do the same One cannot as strongly blame later scientists for not all having the same moral courage as these scientists-dissidents or for doing as they were told by their political mas-

The universal glorification of this 'scientific achievement' and the congratulations from all quarters showered on the scientists responsible is nothing less than obscene. Many greater scientists possessing moral courage and integrity of a much higher order, will simply be appalled. Those of the past like Einstein who were horrified by what their endorsement of, and association with, the production of the first atomic weapon had done will now be turning over in their graves.

ters. This is true enough, and condemning the scientists responsible for carrying out these Pokhran tests is misplaced and not what is being called for The issue is the obscenity of glorifying this supposed feat and claiming it to be a scientific accomplishment worthy of evoking national pride. One could have understood it if the supporters of this testing had said that they were fully aware of this

*April / May / June / July 1998*

moral dimension but that it had to be subordinated to national security considerations. Or that they were forced to produce these weapons because of the threat possessed by others and therefore had to misuse national scientific capacities (as others had earlier done) to produce them. Or that they grieved because instead of using our wonderful pool of scientists and their skills for truly worthwhile endeavours they had to be wasted for producing something which is so evil by the very nature of their being weapons of mass destruction that they must never be used!

One is not demanding here, that those who supported these tests withdraw their support. On the contrary, one is asking the question why not one politician, not one party, not one strategic expert, and so few journalists among all those who supported the stand of the Indian government could nonetheless not even think of making the only honest and accurate characterisation of the relationship between science and nuclear weapons! To have refrained from praising this misuse, to have called it an unfortunate, even if necessary, abuse of science and scientific knowledge and skill would have been to exhibit a real moral sensitivity and balance, to recognise the distinctive dilemmas posed for any country which decides to go in for such weapons and for anybody who rationalises such possession. The view that this act deserved to be praised as a scientific 'accomplishment' was so widespread and so 'natural' that to think otherwise was made to appear immoral and unpatriotic! What an incredible state of affairs and what a statement of the moral character and fibre of our strategic and political elite and of their upper and middle class supporters! Most of them at least, unlike the more perplexed poor, cannot be accused of not knowing what kinds of weapons these are.

And yet the view that anti-nuclearists are morally superior people to pro-nuclearists is simplistic and inaccurate. The problem is more fundamental and frightening. It is not because people who are more morally insensitive than others will somehow naturally gravitate to being pro-nuclear but the other way around. Ordinary people who are naturally moral and sensitive are made much more insensitive by accepting the ideology and practice of nuclearism. The immorality is built into the very nature of nuclear strategic discourse and practice. Nuclear deterrence is a deeply immoral doctrine. The defence of it is always immoral. Persistent involvement in this discourse debases a nation, above all the nuclear elite and its support base. Moral hypocrisy cannot be avoided. It gets institutionalised and repeatedly surfaces over a whole range of arguments, claims and policy postures. There is the hypocrisy of claiming that nuclear arming by a 'good' country will promote nuclear disarmament and, of course, all national nuclear elites regard their own country as 'good'. A more recent hypocrisy will be shown by those in India who screamed that the NPT and CTBT discriminate between nuclear haves and have-nots but will now say India should sign these as a nuclear weapons state. The NPT is discriminatory, the CTBT is not, but let us leave that aside for the moment. Terrible as it is, the central issue is not the moral hypocrisy of nuclear strategic discourse. Nor is it even the strategic and political incoherence of nuclear deterrence thinking. Now that more people will be forced to think more seriously than

ever before on this issue, the strategic-political dividing line will be between those who continue to believe that such deterrence works and those who recognise that it is incoherent, self-contradictory and degenerative in the logic it imposes on the relations between hostile, nuclearly equipped rivals - hence an unavoidable arms race and growing nuclear tension.

It is another inescapable dilemma that is the crux. The pursuit of national nuclear security is simply not compatible with the pursuit at the same time of universal global disarmament. Some pro-nuclearists pretend to themselves and others that it is. The more straightforward of the pro-nuclearists have simply said we can never have complete global nuclear disarmament which is a mirage. However, it isn't. Humans have the capacity to undo this unnecessary evil but to do so they have to abandon the political stupidity and the immorality of deterrence thinking. As long as it holds we are doomed to having the shadow of the nuclear holocaust always upon us. We will not move towards total disarmament through notions of proportionate disarmament so that 'security deterrence' is always presumably maintained till all the nuclear weapons states simultaneously reach the point of complete disarmament. The moral breakthrough has to come first-to think differently and reject deterrence-in order to make the political breakthrough towards institutionalising an irreversible process culminating in total disarmament.

Einstein pointed out the dilemma long ago-" the coming of nuclear weapons has changed everything but the way we think." Moral commitment, integrity, and courage are the need of the hour and the struggle to realise these values is the only way to overcome our fundamental evils be they apartheid, colonialism or nuclearism. The growth and spread of pro-nuclearists reflects the triumph, through banality, of evil

*Achin Vanaik is an antinuclear activist and a political commentator based in Delhi*

## ***Pound of Flesh***

*Finance Minister Yashwant Sinha began his maiden budget speech by stressing that the Pokhran tests were the 'first step' towards building a new, strong and self-reliant India." Plan allocation for the Department of Atomic Energy (DAE) in the budget has been increased by a hefty 68 per*

# Protest and Survive

**I**n this issue of Anumukti we have argued that the nuclear debate is immoral. But having said that one cannot shirk the challenge to debate. For it is a debate for the very soul of India and Pakistan. Despite what pusillanimous mainstream political parties in both countries think, permanent mutual hostility requiring ever sophisticated and destructive armaments is not the only possible state of being.

Despite the moral argument against nuclear weapons, in the states that have built these weapons there has been public support for them. This public support has been built by creating a sense of crisis and fear. People are told that there is an enemy and the bomb is the only defense. In an atmosphere of absolute conflict, peace is ruled out.

There is also no doubt that the overwhelming elite support for nuclear weapons in India and Pakistan is shared by large numbers of ordinary people. Nationwide celebration of nuclear tests in both countries is sufficient to prove this. This level of support, according to opinion polls, has not changed for over a decade. This is remarkable. In one of the most tumultuous periods in the region's history, where governments came and went, economic policies changed, the Cold War ended, the Soviet Union collapsed, sanctions were imposed on Pakistan because of its nuclear weapons programme, nuclear weapons have remained beyond question.

There are two reasons behind this massive and inert support for nuclear weapons. The first is that most people know little if anything about nuclear issues. This is an obvious inference from polling data showing that support for nuclear weapons in both countries is constant regardless of educational attainment. From the illiterate to those having only a basic education to those with degrees, about the same proportion of them support these weapons. There is rarely such unanimity except when based on a shared ignorance. In the absence of information, there is no incentive to change one's mind. There is, indeed, no reason to even think about changing one's mind.

That the nuclear debate is starved of information is evident, one only has to look at newspapers, magazines and electronic media. There is never more than assertion that nuclear weapons are vital. This is the second reason for the strong and enduring support for

nuclear weapons. For over a decade, the people have heard nothing but repeated public declarations by all sorts of political and military leaders that nuclear weapons were vital for the national interest. When things are presented in this way it is evident that many people will conclude nuclear weapons are the last and only hope.

But nuclear weapons need enemies to make them worthwhile. For decades, India and Pakistan have been projected as absolute and unremittingly hostile enemies, without scruple, willing to exploit every opportunity. The other is the source of everything that goes wrong in Pakistan and India. Any challenge to the status quo is interpreted as a foreign inspired conspiracy against national security.

The final and darkest element in manufacturing a national consensus in support of nuclear weapons is maintaining ignorance. That it is at work can be seen in the deliberate orchestration of hate by sections of the media against individuals and groups who argue against nuclear weapons. Debate that might inform people about alternative ways of thinking is not only discouraged, it is not tolerated.

An example from each country should suffice.

*Letter from Dr Zia Mian*

"I have received serious and disturbing news from one of my closest friends in Pakistan. Dr A.H Nayyar (Associate Professor of Physics at Quaid-i-Azam University in Islamabad). Nayyar, is one of the handful of real peace activists in Pakistan, and has been

*The hope of intellectual independence is to resist, and the necessary first step in resistance is to discover how the institutional grip is laid upon our mind.*

*Mary Douglas  
How Institutions Think*

among the most significant and active during the horrors of the last few weeks.

"At a press conference today (June 2, 1998) organised in a hotel in Islamabad by the Pakistan-India Peoples Forum for Peace and Democracy. A.H Nayyar, Fqbal Ahmad and Samina Ahmad (no relation) were supposed to talk about the current nuclear crisis in South Asia.

'About 50-60 journalists attended the press conference and most were hostile. Instead of questions from the floor, there were long inflammatory statements attacking the speakers. Then 10 to 15 young

men belonging to Shabab-e-Milli (the youth wing of the Jamaat-i-Islami, a right wing Islam ist Party) burst in with banners and placards denouncing the speakers. They then started to shout slogans. A journalist, who has demonstrated his hostility towards peace activists on earlier occasions (most notably at a public meeting held in Feb 1996), attacked A.H. Nayyar. The Shabab-e-Milli members joined the attack. In Nayyar's words "I got a good beating by fists, kicks and chairs, but suffered only a few minor bruises." Some of the other journalists intervened, at which time the speakers were escorted to a safe place by the hotel staff. After the meeting, some of the journalists were also beaten up by the Shabab members.

The first victim of nuclear weapons is always conscience,  
Zia Mian

*Letter from Shri Bhanu Das*

"At a meeting organised by Peoples Union for Civil Liberties (PUCL), Congress for Democracy and Centre for Education and Documentation (CED), I had been invited to speak as a physicist and a democratic rights activist, but I had to turn down the invitation as I was one of the principal organizers of another meeting at the same time. Two of the speakers, A.K.N.Reddy, an expert on energy studies and Hasan Mansur from PUCL are retired academics. The audience was made up of primarily academics and intellectuals. The Hindu Jagaran Vedike an RSS front, decided to target this meeting. The RSS storm troopers actually prevented the meeting from taking place for a while. Some of the people in the audience told me that they were on the verge of being physically attacked by those goons. The organisers had to call the mobile police to resume the meeting. Indeed the RSS which had been quiet for the last few years is now beginning to show its true colours. The message

to me is clear—the fight against nukes in India is inextricably linked to the fight against Hindu communalism.

'Secular' Hindus seem to have given up the fight for the Hindu mind by default. Today we have a strange doctrinal and intolerant masquerade of Hinduism promulgated by the likes of Vishwa Hindu Parishad and Bajarang Dal as the dominant face of 'resurgent' Hinduism. It is imperative to realise

that one needs to fight not to lose the "patriotic" space by a similar default.

*Bhanu Das* Therefore, news of protest meetings and actions from different parts of the country and even from the Indian diaspora in other countries in which a few hundred people each have participated are so welcome. Mainstream newspapers have downplayed such events by giving them only local coverage. That is why there is dire need for better communications between these spontaneously arising groups in different parts of the country. More concerted action will not only educate the people regarding the truth about nuclear weapons it will also send a strong political message to the people who have perpetrated this outrage that it is not all gain no pain. There is a domestic political price to be paid for reckless adventurism.

*Surendra Gadekar*

## ***Reports of Protest Actions from Horn e and A broad***

Below we give a summary of some of the reports that have come to us from friends about these actions. Some of the countries leading intellectuals and prominent citizens have participated in these programmes. No doubt there have been other events in other towns and cities in the country from where we have not received any reports.

### ***Protest Against BJP's Despotic Designs***

*Payyanur, May 16, 1998*

The Peringome Anti-nuclear Forum strongly protested against the nuclear tests at Pokhran. Hundreds of activists took out a procession at Payyanur town on 16.05.98 shouting slogans. Later a largely attended public meeting was held at the bus stand square in which Dr. D. Surendranath, Mr. N. Subrahmanyam and Mr. K. Ramachandran spoke. The speakers held that the BJP Govt., by harping on chauvinistic national sentiments and directing people's ire against neighbouring countries, was trying to promote hatred and jingoism. They condemned the militarisation of the Asian region and warned against an escalating nuclear arms race. Any nuclear programme, either for 'peace' or for war, cannot promote national security or general welfare; on the contrary it can promote secrecy, mutual suspicion and despotism.

### ***Students, Teachers Form Solidarity For Peace***

*Hyderabad, May 23, 1998*

Leading academic, intellectuals, human rights activists, journalists and writers from Andhra Pradesh have condemned the recently conducted nuclear tests describing them as 'anti-people' and indicative of the fascist designs of the Bharatiya Janata Party-led government. Presiding over an anti-nuclear weapons conference, organised here last night by Solidarity for Peace, a forum of students of the Hyderabad Central University Prof G Haragopal, vice-president of the Andhra Pradesh Civil Liberties Committee (APCLC) and head of the human rights department of the university, said going nuclear would only lead the country to greater

centralisation of powers in the hands of politicians, technocrats, bureaucrats and security forces and pauperise, subjugate and render helpless the common people. A PCLC president M T Khan, speaking on the social political and cultural fall-out of the nuclear tests, quoted Prime Minister Atal Behari Vajpayee's statement that we would sacrifice every thing for the country's security. "What it means is that the BJP would sacrifice human rights and dub any people's movement, dissent and struggles for life as anti-national." he added. Mr Khan said the jingoism of the BJP leaders suited politicians of Pakistan equally as the cry of patriotism would help them repress any form of dissent Prof Rama Melkote of Osmania University questioned the propriety of the state assuming monopoly over violence and weapons and pointed out that internal security of the state was as important as external security. She said nuclear weapons cannot ensure the security of the country, pointing out the case of the former Soviet Union, which despite having a large stock of nuclear weapons, collapsed under its own weight. She said the welfare of the people and integrating them were a greater guarantee for the security of a country. Leading environmentalist Purushottam Reddy wanted a total ban on nuclear establishments in the country. Prof S G Kulkarni condemned the militarisation of science and technology and stressed the need for advancement in science and technology for solving the problems of the people. He alleged that the ruling party leaders and technocrats were hand in glove in nuclearising the country which would only promote a dictatorial government which took shelter behind secrecy. Prof Probal Dasgupta said there was nothing to gloat about the nuclear tests as our scientists had only duplicated the technology available elsewhere. A PCLC general secretary K Balagopal called upon all the concerned citizens to launch a campaign to concientize mass opinion against nuclearisation.

#### *Indians, Pakistanis Protest N.Tests*

*Montreal June 13, 1998*

"For a lasting peace in South Asia!" "No to nuclear tests" Raising these slogans, a group of about 100 demonstrated in Montreal

The assembly was called by the South Asian Women's Community Centre (SA WCC) and CERAS (Centre d'etudes et recherches sur Pasie du sud). SAWCC is a service, support and advocacy organization for South Asian women and their families in the Montreal area. CERAS is a nongovernmental organization which works with grassroots organizations in Pakistan, India, Bangladesh, Sri Lanka and Nepal in the areas of

*April / May/ June / July 1998*

development, gender, health, peace and secularism A third of the group were of Pakistani origin, another third were of Indian origin and the rest were individuals concerned with peace. The demonstration commenced to the strains of "Sangam' the collaborative effort of Pakistan's late Nusrat Pateh Ali Khan and India's Javed Akhtar.

During the demonstration, various individuals spoke Naushad Siddiqui, Humeira Iqtidar and Dolores Chew denounced the tests. They also said that the nuclear club of five, including the United States, had no right to hypocritically criticize India and Pakistan, while they maintained a nuclear arsenal and carried out tests themselves Dolores Chew said that the tests had generated nationalistic fervour in India and Pakistan In India this was the deliberate intention of the BJP government, in its bid to garner wider support by diverting attention from their fundamentalist past and present.

The demonstrators were informed of an attack on Dr. A.H. Nayyar of the Pakistan-India Peace Forum by the Shabab-e-Milli in Islamabad, Anand Patwardhan, internationally-renowned documentary filmmaker and 200 others belonging to the Anubam Virodhi Andolan. who were demonstrating in Bombay, were lathi-charged by the police who invoked See 144 Many were also, arrested. In Bangalore, a meeting of scientists was disrupted and broken up by BJP supporters

Those assembled wanted to send a strong message to the governments of India and Pakistan that as non-resident Indians and Pakistanis they could work together and support peace initiatives that had begun under the previous Indian government and were being galvanized at the grassroots by the Pakistan-India Peace Form



# *Convention Against Nuclear Weapons*

*New Delhi, 9th June, 1998*

In a rare expression of unanimity, eminent speakers from diverse walks of life unequivocally condemned the BJP-led Government's decision to conduct nuclear tests, at a Convention organised in New Delhi on 9th June. The Convention was attended by over 400 people representing academicians, scientists, defence experts, journalists, lawyers, artists and leaders of political parties.

Prof. Rajni Kothari, in his opening remarks as Chairperson of the Convention, said that the Government had resurrected the prospect of Armageddon. He said that the whole concept of viewing nuclear weapons as instruments of deterrence was morally abhorrent and dangerous. The Indian Government's action may well accelerate the global arms race. He expressed his apprehension that it was actually the RSS which is running the present Government, and the explosions at Pokhran should be viewed in the context of the RSS's quest for dominance. This, he felt, made the tests doubly dangerous, as nuclear weapons in the hands of a RSS run Government is fraught with far greater dangerous consequences.

Sri N Ram, Editor of Frontline, termed the tests as "Right Wing adventurism of the most dangerous kind" which would "profoundly affect the terms of the nation's engagement with the region and the world". He said that the tests and subsequent "sabre-rattling statements" by ministers had led to the internationalisation of the Kashmir issue. He felt that there are clear signals that the Government's position would rapidly move from one of adventurism to appeasement and even surrender towards the interests of Imperialist powers.

In an evocative and emotional address Admiral Ramdas (former chief of Navy) said that the aftermath of the Pokhran blasts, in some ways, marked a "turning point in his life". He described himself as a person who had spent 45 years of his life in uniform and one who had been an integral part of policy formulation in defence related matters. He was deeply disturbed at the turn of events and said that the tests have "cast an evil shadow over the sub-continent". He categorically stated that no matter what the compulsions were, there was no justification for India deciding to go nuclear. He said that as a career defence person he could visualise how "so many things can go wrong with nuclear weapons", leading to a disastrous nuclear conflagration. Instead of enhancing national security, Admiral Ramdas felt that the Government's action had only enhanced the threshold for the possibility of things going wrong. Nobody really had a clue, he said, about the implications of a nuclear weaponisation programme, for Command and Control systems. Who, he queried will have

his fingers on the nuclear button—the Prime Minister, the Army Chief, the BJP Chief or the RSS? He dubbed the pronouncements by ministers as those of "babes in the wood who had found a new toy" and apprehended that a nuclear holocaust was a real possibility. As a result of an accelerated arms race, the people would have to pay the penalty in the form of cuts in expenditure on Health, Education and other Social Sectors. He said that it was imperative for India and Pakistan to get together immediately and put a cap on their respective nuclear programmes. He said that "we are all fighters here, and we need to fight for peace", and get the public in both India and Pakistan to understand about the disastrous consequences of a nuclear conflict so that they can pressurise their respective Governments.

Dr. Ashok Mitra said that he felt ashamed as an Indian after the tests. Drawing a parallel with the demolition of the Babri Masjid in 1992, he said that the tests were an attempt by the BJP to create a frenzy in order to divert the attention of the people from real issues. He said that India and Pakistan, in an accelerated arms race, can exhaust their national incomes but would end up in merely maintaining the same levels of relative defence preparedness. By exploding the "swadeshi bomb" the BJP Govt, had actually opened the floodgates for foreign domination over the economy. Foreign banks and companies are now to be allowed to remit their earnings unfettered to their parent companies. He was afraid that the South East Asian syndrome—where foreign speculators played havoc with domestic currencies—may now extend to South Asia.

Dr. T. Jayaraman (Indian Instt. of Mathematical Sciences, Madras) and Dr. Satyajit Rath (National Institute of Immunology, Delhi) decried the attempts to use patent falsehoods and half truths as scientific arguments, in order to justify the "inevitability" of the nuclear tests by India. They felt that much of the debate on the issue has been ill-informed and has failed to focus on the real effects of a nuclear war. Dr. Jayaraman said that the DAE and DRDO were party to the overturning of the national consensus against exercising the nuclear option. He said that India's scientific capabilities have little to do with its ability to conduct nuclear explosions. He said, for example, it takes a much higher degree of S&T capability to maintain a satellite in geostationary orbit to augment communication facilities, than to produce a missile with a nuclear warhead that can accurately reach its target.

Prof. Prabhat Patnaik, in an incisive attack on the tests, termed them as an "astonishing act of stupidity". He felt that the tests and their aftermath will be used by the Government to accelerate the neo-liberal thrust of the economy, where we shall see MNCs lording over the economy. He saw in the nuclear tests another move in the direction towards "disfranchisement of the poor—politically and economically", a typical way, he felt, of a fascist political formation trying to establish its hold over the country. He said that there has been a major move by fascistic forces to manufacture a "popular mood" in favour of the Government's policy. He said that the need of the hour was not to "kowtow" to the so called popular mood but to stand in clear opposition to the diabolic designs of the BJP Government and its cohorts.

*Prabir Purkavastha*

# The Threat of Accidental Annihilation

Peter Feaver

Most public analyses of the South Asian nuclear standoff have focused on the dangers of an arms race and the possibility that one side will launch a surprise attack to settle the Kashmir problem. These are serious concerns, but they are not the biggest danger.

Arms races are expensive and wasteful, but they are rarely dangerous in and of themselves....

Rather, the biggest danger in the new situation is the uncertainty over how safe and secure the Pakistani and Indian arsenals will be against accidental and unauthorized use. In other words, what we really should worry about is that India or Pakistan might find themselves "using" the weapons whether they intended to or not.

Accidents can happen because the design of the nuclear weapon itself is faulty or because the systems and procedures used to launch or drop the weapons lack safeguards. Unauthorized use can happen if those who are tasked with using the weapons under authorized conditions have the ability to use them regardless of whether they are given an authoritative order.

All arsenals contain inherent risks of accidental or unauthorized use because it is expensive, difficult, and sometimes impossible to avoid risks without rendering the arsenal itself unusable under appropriate circumstances.

A nuclear command and control system that is optimised for use under authorised conditions

is, of necessity, a system prone to accidental or unauthorised use. A system optimized against accidental or unauthorized use runs the risk of not being available for authorized use, especially after suffering a surprise attack.

This is the nuclear surety prob-

Such wishful thinking shows astonishing ignorance of US and Soviet nuclear history. The Cold War record of numerous near-accidents and close calls proves that military establishments will tolerate extraordinary risks of accidental and unauthorized use to ensure the weapons will be available for deliberate use, if needed.

These near-accidents were the direct result of com-

## ***Not Just Academic Scare-Mongering***

*At 02:26:00 on 3rd June 1980, at Offut Airforce Base in Nebraska the alarm went off on video screens used to track path of incoming missiles. Two Soviet SLBMs were inbound from North Atlantic.*

*In addition to calling the Pentagon for more information, the controller also alerted bomber and missile crews. The incoming missile counter was clicking up missile tracks so fast that within seconds, hundreds appeared to have been launched. NORAD duty officers searched their independent early warning system for some confirmation of the attack. When none was found, controllers held a threat assessment and agreed the problem was a fault in NORAD's computer relay system. The alert ended 02:29:12 It had lasted three minutes and twelve seconds.*

*Unlike the more than half hour flying time for missiles between the US and Soviet Union, the flying time for missiles in the India-Pakistan theater is likely to be less than 7 minutes. We need to have fool proof and MilwOrm proof computers and technicians not only in India but Pakistan as well to escape accidental annihilation*

lem: making sure weapons are always ready for use when needed, but never detonated accidentally or by unauthorized personnel.

There is a silly theory fashionable in some circles that we don't need to worry about this. Pakistan and India will worry about nuclear surety themselves, optimists aver, and will naturally solve the problem.

promises made on nuclear surety questions. Tolerating the risks of airborne alerts to achieve a maximum show of force here, failure to install nuclear safety devices for fear it would unnecessarily complicate a launch under duress there

This is the root nuclear dilemma. Although a nuclear surprise attack is a very unlikely scenario, it is one against which military planners must prepare. To prepare against it, they must take steps that increase the likelihood of accidental or unauthorized use

*Continued on page 17*





# *New Meanings for Commonly Understood Old Words*

M. V. R a m a n a

**I**ndia's now famous linkage between nuclear testing and the birthday of the great apostle of peace, Gautama Buddha, reflects not only political crassness but also a propensity to find hypocritical incipitahons to noble sentiments. Indulging in such double-speak is just another affirmation of India having internalized the forms of thinking and expression prevalent in the gang of nations that lead the way in terrorizing the world with their military arsenals. De the nuclear weapon slates

## **Nuclear Disarmament**

When speaking of nuclear matters, if there is one phrase Indian officials use more often than nuclear weapons, it must be nuclear disarmament. India had a time-bound plan for nuclear disarmament, the CIBT did not lead to nuclear disarmament and everything we were doing was to promote nuclear disarmament.

Logically, therefore, in the full official press statement following the tests, the statement "India remains committed to a speedy process of nuclear disarmament" had to be included. It was

Two days later two more tests were conducted. Evidently the Indian government thinks that commitment to nuclear disarmament means conducting nuclear explosions at a speedy pace.

Some what like a habitual drunkard who thinks that the way to abstinence is by quickly finishing the bottle.

## *Nuclear Status*

Soon after these tests, Prime Minister Vajpayee announced that India had declared itself a Nuclear Weapon State (with a big bomb). This was a rare moment of truth, though for many of us an unpleasant one. Now, thankfully, analysts in the United States can stop coming up with new adjectives to describe India's status: threshold nuclear state, de-facto nuclear weapon state, nuclear-capable state, and so on. Neither do they need to apply these terms to Pakistan. Now Israel remains the only state with more than 200 'ghost bombs'.

## **Nuclear Weapon**

However, Vajpayee followed this statement with a new interpretation of the role of nuclear weapons in international affairs. He said, "ours will never be weapons of aggression". This is a complete perversion of history. Nuclear weapons are quintessentially weapons of genocide. The 'big bomb' that India now has can kill, in a matter of instants, hundreds of thousands of people, and many more in the years that follow. No State invests huge amounts of resources to produce them if it never plans to use them. The question is not whether they are used first or in response to someone else's use. In either case, an act of aggression - killing innocent civilians - will be conducted. And, the Prime Minister's statement the following day - that India will not hesitate to use nuclear weapons if its defences were threatened - makes it amply clear that these bombs are intended for use.

## *World's Largest Democracy*

By going on from one momentous decision to the next at breathtaking speed, the BJP government has also given us a new definition of democracy. The history of a nation of nearly a billion people, and in all likelihood the histories of the neighbouring nations as well, has been changed by decisions made literally by a handful of people. Plans for the test are believed to have been known only to the Prime Minister, the defence minister George Fernandes, principal secretary to Prime Minister, Brajesh Mishra, political adviser Pramod Mahajan, scientific adviser to Prime Minister A P J Abdul Kalam, and Atomic Energy Commission chief R Chidambaram. This follows well in the tradition of the 1974 test. Then the decision to test was

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believed to be known only to Mrs Indira Gandhi, her principal secretary P N Haksar, secretary P N Dhar, B D Nag Choudhury, Atomic Energy Commission chief H N Sethna, and Raja Ramanna, leader of the team of scientists that carried out the test at Pokhran

### CIA Disinformation Campaign

The BJP is, of course, a past master in the art of redefining words. No one could have forgotten how the party, by forcefully demolishing the Babri Masjid, found new interpretations for secularism and communal harmony. Not to be outdone in this pursuit are the various other political parties that have had an equal hand in determining India's nuclear posture.

As is now amply clear, the assertions by the Congress Government in 1995 that they were not planning any nuclear test were simply false. Also false was the assertion reprinted dutifully in a number of newspapers all of whom prefer to 'patriotically' pass on government handouts, that this was part of a "CIA disinformation campaign".

### Gujarat Doctrine

The former Prime Minister himself admitted stylishly that test preparations had been going on during his tenure with the statement, "You can make out whatever you want to know from the fact that a nuclear test cannot be done overnight."

By and large, opposition parties have stuck to mealy-mouthed responses and trying to protect their own patriotic credentials by congratulating our scientists profusely. At best they have questioned the timing of the tests and the right of a minority government to take this decision. These are valid questions indeed. But, they stop way short of any comment, critical or otherwise, about the tests themselves.

This is not surprising. During the CTBT debate, they were falling over one another in defending India's nuclear option against "western treaties" Having done that they have boxed themselves into a corner, where they could not really question the tests in any meaningful manner.

### *Peaceful Uses of Atomic Energy*

The scientific establishment, particularly the Department of Atomic Energy, by testing a range of sophisticated weaponry has shown that our "peaceful nuclear programme" has been busy reinventing the meaning of the adjective peaceful. Once again, we have to be thankful that they did not further denigrate that term by calling these tests peaceful nuclear explosions

*April / May / June / July 1998*

### Great Power

There is another sense in which declaring India a nuclear weapon state may reflect an uncomfortable truth. The current five nuclear weapon states have been the biggest bullies around.

They have used their nuclear weapons on numerous occasions, not by dropping it but by threatening to drop them on those opposing their will. The US, of course, leads the pack both in terms of the number of threats it has issued, and by its heinous attacks on Hiroshima and Nagasaki.

By its repeated demands to be recognized as a great power, and making it clear that by power it meant the kind of power that the five nuclear weapon states have (and not for example, the kind of monetary power that Japan and Germany have), or the moral influence India

used to have in the early days of independence. India has also shown its own desire for this role

The nuclear weapon states, of course, do not want to have India join their club. They argue, quite hypocritically, that they, and they alone, have a need for (and a right to) these genocidal weapons. It is sad that when faced with this hypocrisy, India has decided to join them rather than fight them. By taking the high moral road of abstinence, or now, renunciation, it could lead the way to a nuclear weapon free world. The chances of that, unfortunately, are low

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## *Accidental Annihilation*

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Continued from page 15

During 50 years of Cold War experimentation, the United States and the Soviet Union adopted technical fixes like coded-locks buried inside the war head and administrative measures like the two-man rule. These steps went far to reduce the nuclear surety problem

Indeed, ongoing concerns about nuclear surety, not fears of an arms race or of deliberate use, are the primary impetus behind recent proposals to reduce US and Russian arsenals even further

India and Pakistan have proved that they have the ability to detonate a weapon, but they are neophytes when it comes to nuclear surety. If the United States and the Soviet Union engaged in risky behaviour, even though they had virtually unlimited funds and technical expertise to throw at the nuclear surety problem, how can we be confident that the cash strapped Indians and Pakistanis will be more conscientious?

We can't be, and that is what people should really worry about

*Peter Feaver, who has studied and written extensively on nuclear command and control, is an assistant professor of political science at Duke University in Durham N.*

## *At the Makeshift Aid Station*

*You girls-  
weeping even though there is no place for tears to come from :  
crying out even though you have no lips to shape the words;  
reaching out even though there is no skin on your fingers  
to grasp with—  
you girls*

*Oozing blood and greasy sweat and lymph, Your limbs twitch.  
puffed to slits, your eyes glitter whitely;  
only the elastic bands of your panties hold in your swollen bellies  
though your private are exposed you are  
wholly beyond shame:  
to think  
that a little while ago  
you all were pretty schoolgirls*

*Emerging from the flames that flickered gloomily  
in burned-out Hiroshima  
no longer yourselves.  
you rushed out, crawled out one after the other,  
struggled along to this grassy spot,  
in agony laid your heads, bald but for a few wisps of hair,  
on the ground.*

*why must you suffer like this?  
why must you suffer like this?  
For what reason?  
For what reason?  
you girls  
don't know  
how desperate your condition,  
how far transformed from human*

*You are simple thinking,  
thinking  
of those who until this morning  
were your fathers, mothers, brothers, sisters  
(would any of them know you now?)  
and the homes in which you slept, woke etc.  
( in that instant the hedgeroses were torn off; who knows  
what became of their ashes?)  
thinking, thinking —  
as you lie among friends who one after the other  
stop moving —  
thinking  
of when you were girls  
human beings*

**TOGE SANKICHI**

*Translated from Japanese by Richard H. Minear  
Atomic Ghost; Poets Respond to the Nuclear Age*



**WHEN YOU GROW UP,  
YOU MUST NEVER LET  
THIS HAPPEN AGAIN !!**

# *An Estimate of Indian Nuclear Weapons' Capability*

Since its first nuclear test at Pokaran in 1974, India has made about 25 plutonium metal cores for nuclear bombs, according to data obtained by Nucleonics Week from sources inside India's nuclear weapons development programme.

This figure corresponds with some of the lower range estimates cited publicly in recent weeks. But it is much lower than figures of 60-80 or even higher that have also been published erroneously.

Bomb cores, the actual explosive devices, should not to be equated automatically with militarily usable weapons (e.g., bombs for aircraft or warheads for missiles). It is not known how many of the cores have been incorporated into actual weapons, if any.

Other data obtained from Indian weapons programme sources indicate the following:

- - India's Department of Atomic Energy (DAE) began producing the bomb cores soon after the 1974 test, as ordered by the Prime Minister's Office. During the last two decades, there has been only one pause in otherwise steady production of the cores. The timing and duration of that pause is not known.

- - Most of the plutonium for the bomb cores was produced by the Cirus and Dhruva research reactors at the Bhabha Atomic Research Institute (BARC) Production has taken place at BARC's secret radiometallurgy laboratory

- - The cores are spherically shaped for use in implosion nuclear bombs. Most or all of the cores are identical or very similar to that exploded by India in 1974 at the Pokaran test site. The cores were manufactured at BARC for a "reference design" which is very close or identical to that tested in 1974.

This plutonium weapon design, which at most minor modifications, was apparently re-tested at Pokaran last month, is an effort to get more information about it which could be used as a data base in case India follows through on its announced intention to agree to a test ban.

The "reference design" would be a "medium-sized" nuclear bomb, smaller than a bomb India tested last month which used at least a small amount of thermonuclear material. As has been widely reported, India also tested several much smaller devices last month

The Department of Atomic Energy (DAE), which makes India's plutonium, and the Defense Research and Development Organization (DRDO), are now analyzing the results of India's May test series. Depending on the results, India may recast the plutonium bomb cores it has already made for the "reference design" bomb and use the metal for production of the newer, freshly -tested devices,

- - All the bomb cores are in the hands of the DAE. None of them, and no plutonium, have been turned over to the Indian Ministry of Defence. Western officials confirm that this statement is consistent with their assumptions that India, as yet, has no official military deployment strategy for use of nuclear weapons. Indian sources have stated that Defence Minister George Fernandes himself only found out about the nuclear tests two days before they were conducted,

Critical questions regarding India's nuclear capabilities remain unanswered. Among them:

1) How much plutonium does India have for its bomb programme?

The Indian sources would not say how much plutonium was required for a device of the "reference" type. Western analysts estimate that the amount required is likely between five and ten kilograms, depending on design efficiency and production losses. This suggests that the cores India has made account for between 125 and 250 kilograms of plutonium. This would account for somewhere between close to half and three-quarters of DAE's total inventory of

weapon-grade plutonium, which amounts to very roughly 300 kilograms

2) How much plutonium is being added to India's current stockpile?

The primary source for India's weapons material stockpile is the 100-MW (thermal) Dhruva reactor, a modern, well-maintained facility that stands outside of International Atomic Energy Agency (IAEA) safeguards and monitoring. Assuming the facility is operating between 60% and 70% of the time — as it was during a 1993 four by the author, and little has changed since Dhruva would be producing about 20 kilograms to 25 kilograms of weapons-grade plutonium per year. That would be enough for between three and five more bombs of the "reference" type each year

India's other main source for the weapons programme, the Cirus unit it imported from Canada in 1955, is capable of producing up to 10 kilograms weapons-grade plutonium more to this stockpile per year. However, the Cirus reactor has been shut down now, and for the foreseeable future due to ongoing problems, and must be rebuilt first. It may be at least 18 months before it could resume operation for plutonium production

*By Mark Hibbs  
Nucleonics Week June 17, 1998  
From Nuclear Watch  
Center for War, Peace, and the  
News Media*

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# *Nuclear Deterrence: A Dangerous Illusion.*

*By Commander Robert Green, Royal Navy (Retd)*

I served in the Royal Navy for twenty years from 1962-82. As a Fleet Air Arm Observer (navigator and weapon system operator), I flew Buccaneer carrier-borne nuclear strike jets from 1968 to 72; and for the next five years in anti-submarine warfare (ASW) helicopters equipped with the WE-177 Nuclear Depth Bomb (NI.)B). As one of four nuclear crew in a Buccaneer squadron, my pilot and I were assigned a target from NATO's Single Integrated Operational Plan, and were ordered to plan to attack it with a free-fall WE-177 thermo-nuclear bomb.

## *Nuclear Versus Conventional Deterrence Between States*

NDB were withdrawn from the Royal Navy in 1992. By then, new conventional ASW weapons had been developed which were able to neutralise all currently envisaged naval targets. Indeed, as far as the USA is concerned

*"There is nothing it could do with nuclear weapons that it cannot do with modern conventional weapons."*

Modern industrial states, increasingly interdependent on multinational conglomerates, the globalisation of trade and sensitive to public opinion, are increasingly constrained from going to war with each other. But even if the argument is not accepted, there is a fundamental logical objection to relying on nuclear deterrence. Although the risk of conventional deterrence failing is greater, the damage would be confined to the belligerent States - and the environmental damage would usually be reparable. What is at stake from deterrence failing between nuclear weapon States is the devastation and poisoning of not just the belligerent powers, but potentially of all forms of life on the planet. Meanwhile, retention of nuclear arsenals encourages proliferation of the problem, and with it this unacceptable risk.

## *Falklands War*

In my last appointment as Staff Officer (Intelligence) to Commander-in-Chief of the Fleet, I helped to provide round-the-clock intelligence support to British forces in the Falklands War. I know what a close-run thing that war was. If Argentine aircraft had sunk one of the main troopships before the landing force had got ashore, the British might have had to withdraw. What would Thatcher have done? Polaris had clearly not deterred Galtieri from invading. With victory in his grasp, it is doubtful that he

would have believed Thatcher even if she would have seriously threatened a nuclear strike on Argentina. Yet rumours abounded that a Polaris submarine has been moved south within range of Buenos Aires. If she had so threatened, my assessment was that he would have very publicly called her bluff and relished watching Reagan try to rein her in. And in the last resort, it is likely that the Polaris Commanding Officer would have either refused the order or faked a malfunction, and returned to face the court martial.

## *Gulf War*

My scepticism over nuclear deterrence grew when the Berlin Wall came down; but it took the Gulf War to make me break out of my pro-nuclear brainwashing. As the first ex-RN Commander with nuclear weapon experience to speak out against them, it was very traumatic.

In the run-up to the Gulf War, my military intelligence training warned me that the US-led coalition's blitzkrieg/punitive expedition strategy would give Saddam Hussein the pretext he needed to attack Israel - an undeclared nuclear weapon State. If thereby Israel was drawn into the conflict, this might split the coalition. If not, he still stood to gain widespread Arab support for being the first Arab leader for years to take on the Israelis.

My great fear was that the Iraqi leader would be provoked enough to attack Israel with chemical-headed Scud missiles. Knowing that West German technical support was involved in the warhead design, Israel's Prime Minister

Shamir would come under massive pressure to retaliate with a nuclear strike on Baghdad. Iraq had the best anti-nuclear bunkers Western technology could provide; but even if Saddam did not survive, what would happen next? With Baghdad a radioactive ruin, the entire Arab world would erupt in fury against Israel and her friends: there would be terror bombing in every allied capital; Israel's security would be destroyed forever; and Russia would be sucked in.

The first Scud attack hit Tel Aviv on the night of January 18, 1991. For the first time, the second most important city of a *de-facto* nuclear State had been attacked and its capital threatened. Worse, the aggressor did not promise Shamir anything in return for not retaliating - fortunately, the warhead was conventional high explosive, and casualties were light. The Israeli people, cowering in gas-masks in their basements, learned that night that their nuclear "deterrent" had failed in its primary purpose. Some 38 more Scud attacks followed.

Meanwhile, in Britain the IRA just missed wiping out the entire Gulf War Cabinet with a mortar bomb attack from a van near Whitehall. They were not deterred by Polaris - yet a more direct threat to the government could barely be imagined.

## *Nuclear Deterrence Won't Work Against Terrorists*

To my surprise, in 1993 the British Secretary of State for Defence agreed with me. In a keynote speech on 16 November at the Centre for Defence Studies in King's College, London entitled "UK Defence

Strategy: A Continuing Role for Nuclear Weapons?". Malcolm Rifkind almost agonised over the problem:

*'I have to say that it is difficult to be confident that an intended deterrent would work in the way intended, in the absence of an established deterrent relationship... Would the threat be understood in the deterrent way in which it was intended; and might it have some unpredictable and perhaps counter-productive consequence? Categorical answers to these questions might be hard to come by, and in their absence that utility of the deterrent threat as a basis for policy and action would necessarily be in doubt it is difficult to see deterrence operating securely against proliferators'*

By an "established deterrent relationship" presumably he meant the unstable, irrational balance of terror between two trigger-happy, paranoid power blocs - otherwise known as the Cold War. Its inherent instability was evidenced by the inevitable struggle for "escalation dominance." More than 50,000 nuclear warheads was the ridiculous result; while health, education, and other services that make up civilised society deteriorated on both sides through lack of resources

With the break-up of the Soviet Union and an unchecked arms trade, it is only a matter of time before terrorists get a nuclear weapon. They are the most likely "proliferators", because nuclear blackmail is the ultimate expression of megalomania and terrorism. Yet nuclear deterrence cannot be relied upon against such threats.

The most important underlying point to make here is that the surest way to minimise the chance of a nuclear hijack is to stop treating the Bomb as a top asset in the security business and the ultimate political virility symbol.

This nightmare will intensify as long as the five permanent members of the UN Security Council insist on the Bomb to "guarantee" their ultimate security - when in fact it does the exact opposite - while trying to deny it to other States. Such a policy of nuclear apartheid is hypocritical and unsustainable.

### *Nuclear Deterrence Undermines Democracy*

Democracy depends on responsible use of political and military power, with leaders held accountable to the will of the majority of the people. If a democratic nation is forced to use State-sanctioned violence to defend itself, its leaders must stay within recognised moral and legal limits

Democracy within a nuclear weapon state is inevitably eroded by the need for security and tight control of equipment, technology and personnel. When I became a nuclear crew in Buccaneers, I was given a special security clearance before being told never to discuss the nuclear role, even with other aircrew in my squadron, let alone my family. It was considered such an honour - only the four best crews were chosen - that no-one questioned it

As Senior Observer of Sea King ASW helicopter squadron in the carrier HMS EAGLE in 1973-74, I had to train the other Observers how to use a thermo-nuclear depth bomb (NDB). The speed and depth advantage of the latest Soviet nuclear submarines over NATO air-launched ASW torpedoes was such that it had been concluded that only an NDB could be guaranteed to destroy them. Now this was just to protect our carrier, not last-ditch defence of the motherland. Moreover the Observer would have had to press the button to release it - not

the Prime Minister, as they are so fond of claiming. There was "Low High Yield" switch low yield was about 5 kilotons, and high yield over 10 kilotons - Hiroshima was not much more than that. Worse, this would definitely be a suicide mission, because our helicopter was too slow to escape before detonation. For good measure, such an attack would vaporise a huge chunk of ocean, cause heavy radioactive fallout (both from the NDB and the nuclear submarine reactor and any nuclear-tipped torpedoes it carried), and also cause the underwater sonic equivalent to Electro-Magnetic Pulse - quite apart from escalating World War 8 to nuclear holocaust

Yet all these concerns were brushed aside when I raised them. I was simply told not to worry and get on with it. So I did

but I began to realise that nuclear weapons were militarily useless; and that my leaders - both military and political - were placing me in a position where I could fall foul of the Nuremberg Charter. However, the old British military tradition of the Charge of the Light Brigade in the Crimean War, as immortalised by Tennyson, was alive and well

*"Theirs not to reason why, theirs but to do and die."*

### *Nuclear Deterrence Undermines Security:*

The Falklands and Gulf Wars taught me that competing unilateral security leads to more insecurity, both for others and ultimately oneself. We need a new understanding of security one that sees it as a safety net for all, not a "win or lose" military game which leaves the underlying problems which caused the war unresolved, and feeds the arms trade. True security lies in fostering a just, sustainable world order

### Notice

*We have numbered this issue of Anumukti as Volume 11 Number 5 and 6. Whereas by right this would have been Volume 10 Number 5 and 6. That is how far back we have fallen. What we intend to do is to keep bringing Anumukti on time from now on and keep publishing all the missing numbers one by one as time permits so that within a year or so we will*

# Sanctions or Sanctioned?

In the euphoria that followed the May 11 nuclear tests, one of the causes for self congratulation by Indian nuclear establishment was the fact that US intelligence had failed to detect test preparations. Much newsprint was spent describing details of the various steps Indian 'scientists' had undertaken to hoodwink the all pervasive network of spy satellites and ground based agents. But the ways in which the world-wide US empire is run are not always straightforward and open. Suppose for a moment that the Indian government did have prior permission of US administration to go ahead and have their detonations. This would account for the total failure of US intelligence (comprising multiple and redundant spying agencies: CIA, DIA, NSA, NRO, State's Poli-M il, etc.) to provide advance public warning. It is indeed difficult to imagine that all of them were sleeping on the job especially

Rather than apply sanctions, American policy should move from treating India and Pakistan as the problem to incorporating them into the solution as partners in a non-proliferation regime,"

*Henry Kissinger*

after BJP had declared time and again that they would proceed to exercise the nuclear option.

Seen from the cynical point of view which often characterises the US government there are certain advantages to the tests. But first we must understand the position from the US point of view as it obtained before May 11, 1998. Both India and Pakistan were known to possess nuclear weapons but their actual weapons capabilities were unknown. Secondly both the governments had through repeated statements and overblown rhetoric painted themselves in a position where it was im-

possible for either of them to sign international nuclear control agreements like the Comprehensive Test Ban Treaty or the Nuclear Nonproliferation Treaty. As a consequence, it was impossible to sell either country 'peaceful' nuclear technology whose markets in the developed world were saturated and whose very survival was at stake in the absence of fresh orders from the 'developing' world.

## *The Tests have*

1. 'Smoked' out two closet nuclear weapons states into the open where the level of expertise of their weaponisation programme can be properly assessed and then capped as part of the normalisation process.
2. Reduced India's manoeuvrability in international relations and forced it to take a belligerent attitude towards China. This is in line with the US plans to encircle and isolate China which is now emerging as an industrial and military giant in its own right.
3. Freed the US from its legal requirement to put an end to its own testing. There is a strong lobby in the US which feels that continued tests are necessary to ensure the safety and reliability of the US nuclear deterrence.
4. Made India offer more concessions to US business and multinationals as a way of countering sanctions.
5. After a decent interval, as part of a process of 'normalisation', hitherto "discriminatory" treaties can be signed from a so-called "position of strength" and the way would then be opened for sale of "peaceful" nuclear technology to the region.

Is it a wonder that with so much to gain US intelligence services suddenly develop blind spots!

*Surendra Gadekar*

## ■ LETTERBOX

We must not lose sight of the central facts of our situation. The nuclear weapons states have weapons of mass destruction. The country in which I live is the possessor of the most modern and sophisticated arsenal of weapons of mass destruction on the planet and is the only nation ever to have dropped nuclear bombs on cities. It has used weapons of mass destruction when its elites believed that their goals would be served by doing so. Unfortunately, I have little doubt that they would do so again.

In their statements concerning India and Pakistan, the NWS have given no indication that they intend to change their policies concerning retention of weapons of mass destruction. Their mentions of disarmament and of their purported compliance with NPT Article VI obligations have shown little perceptible movement from their statements at the NPT Precomm prior to the India and Pakistan tests.

The strategy of the NWS appears to be to exert the maximum amount of pressure on India and Pakistan to freeze their nuclear capabilities at the current level that the NWS can bring to bear without committing to any negotiating forum or course of action which could provide an opportunity to focus attention on the nuclear arsenals and policies of the existing nuclear weapons states. In the end, it also appears likely that the NWS — or at least some of them — would prefer an outcome in which the nuclear weapons status of India and Pakistan somehow are "normalized," with the NWS appearing to their own populations to have made satisfactory efforts to contain the new arms race, than to have an outcome which forces the NWS onto any path which might actually lead to the abolition of nuclear weapons. It would not be surprising to discover that quiet negotiations are in progress seeking just such a face-saving solution to the current crisis. Such a result might leave current political elites once more feeling safely in control, but would leave the other five billion or so of us in a far more dangerous world.

There is no magic negotiating strategy or set of steps we can urge the NWS to follow, because the elites who control military policy in the nuclear weapons states do not share our goals. The only path which shows promise is the effort to build a truly international movement which has the social power to hold all nuclear weapons states, declared, undeclared, and aspiring, to account. We must ask for exactly what we want, and build the social movement to get it.

*Andrew Lichierman <alichterman@igc.apc.org>*



# The Environmental Effects of Underground Testing

There have been almost 1,400 underground tests during the period from 1957 to 1989 at various sites around the world. Underground tests have been conducted at nine sites in the United States and over 50 in the Soviet Union. In addition, France has conducted underground tests at two sites in the Pacific and at one in Africa. China has conducted them at its testing range at Lop Nor in Sinkiang Province. India has conducted six in Rajasthan while Pakistan has conducted six in Balochistan.

The total yield of the approximate 500 Soviet underground tests is about 31 megatons, and that of about 730 U.S. underground tests is about 37 megatons. The other countries do not add much to the total explosive content of underground tests, which is approximately 71 megatons.

The systematic and routine injection of long-lived radionuclides (fission and activation products as well as unfissioned plutonium-239) into the underground environment has produced an increasing inventory of radioactive substances. The possibility persists of serious contamination of another important segment of the earth's biosphere, the underground environment, where water is tapped for human use at ever increasing depths and in ever more remote areas of the world.

Assuming a fission yield of about 0.1 megacurie per megaton for strontium-90 and 0.16 megacurie per megaton for cesium-137, and unfissioned plutonium-239 amounting to 150 curies per nuclear test, we can calculate the cumulative inventories of these three long-lived materials underground. Assuming that about one-fourth of the cesium and strontium has

decayed away so far (since underground tests are of more recent occurrence than atmospheric tests, less of the fission-product radioactivity has decayed away the decay corrected inventories of the radionuclides would be approximately as follows:

Strontium-90 5.3 million curies  
Cesium-137 84 million curies  
Plutonium-239 0.2 million curies

In addition to these three, there are substantial quantities of activation products, as well as other long-lived fission products such as technetium-99 Carbon-14, which is formed by absorption of neutrons by nitrogen and is a major contaminant in atmospheric testing is not such a big cause for worry in underground testing since the nitrogen content in the underground environment, is generally much lower

Silicon and aluminum, common constituents of soil, and manganese, an important trace element taken up by plants, form radioactive isotopes through neutron capture. However, their half-lives are only 2.6 hours, 2.3 minutes, and 2.6 hours, respectively. Therefore, they are not important sources of radiation beyond a few hours after an underground test. In the following we will look in some detail at effects of testing in the US, Soviet Union and by French in the Pacific since there is some data available on these. Other countries have not provided any data on the effects caused by their testing programmes.

## US Underground Testing

Underground testing has often resulted in prompt releases of radioactivity to the atmosphere, mainly

through accidental venting. In the U.S. underground nuclear weapons testing programme, it has been estimated that between 1957 and 1970, 25.3 million curies of radioactive fission products were released to the atmosphere from 30 underground tests. The venting of Baneberry alone, in 1970, injected 67 million curies of radioactive fission and activation products into the environment. Between 1970 and 1988, it has been estimated that 54,000 curies have been released as a result of 126 underground tests of 126 releases, four were containment failures, four were late-time seeps, 10 were controlled tunnel purgings, and 108 were "operational" (intentional) releases.

The following is a list of some significant venting incidents reported by the U.S. Congressional Office of Technology Assessment (1989) (the quantity of radioactivity is normalized to 12 hours after the test)

Test name and year	Radioactivity in million curies
1962 Plane.	19
1062 Ecl.	19
Des Moines. 1962	11
Baneberry. 1970	67
26 other tests	38

Underground nuclear tests leave behind a large volume of crumbled rock and radioactive materials. Assuming a total yield of U.S. underground tests of 37 megatons and that one-fourth of the strontium-90 and cesium-137 have decayed away, approximately 2.8 million curies of strontium-90, 4.4 million curies of cesium-137, and 110,000 curies of plutonium-239 remain in the environment.

The long-term dangers arising from wastes in the underground environment have not yet been carefully assessed. According to Eisenbud (1987) *The quantities of debris involved are huge, but objective evaluation of potential long-range risks has not been possible because little of the basic data*

have been made available.

### *Soviet Nuclear Testing*

The Soviet Union has conducted its 503 underground tests at many locations in its territory. The multiple explosion sites mean that underground contamination potentially affects more territory and larger populations and constitutes a greater threat to future generations in the Soviet Union than in any other country.

The Tsyb Commission considered only the seismic impact of underground explosions. It did not discuss venting of radioactive materials from underground tests.

Tokhtarov presented some data regarding emissions from underground nuclear explosions. The first and perhaps largest release occurred in January 1965, from a nuclear explosion to excavate a water reservoir at the confluence of the Chagan and Ashisu rivers. His estimate of radiation levels "at traditional pastures and watering places" was 50 milliroentgens per hour, though the time after the explosion at which this level prevailed is not specified. The thyroid dose to children was estimated at 53 rems and the bone dose at 15 rems.

Tokhtarov noted that prior to 1980 underground nuclear tests in the Soviet Union were conducted at shallow depths, and he implied that venting was the rule rather than the exception. According to the report, the military admits that about 30 percent of underground explosions at the test site (or about 100 tests) were followed by the release of radioactive gases. Also cited were three cases of venting in the late 1980s, despite the fact that these tests were conducted at depths of 500 to 600 meters: on May 7, 1987, the radiation level in Semipalatinsk reached 350 to 500 micro-roentgens per hour; on September 18, 1987, the radiation level was 45 microroentgens per hour; and on February 13, 1989, the radiation level at the village of Chagan was 3,200 micro-roentgens per hour. (Typical natural background radiation is on the order of 10 microroentgens per hour).

There were over 200 atmospheric tests and over 500 underground tests on Soviet territory. The available evidence points to the conclusion that protection of public health and the environment was scant, even compared to other nuclear weapons states. Environmental measurements of radiation, dosimetry, and tracking of exposed populations made public so far are inadequate to provide a good picture of population exposures. Medical data are insufficient to describe accurately cancer incidence or other measures of radiation effect.

Estimated inventories of selected radionuclides due to underground Soviet tests (Decay-Corrected)

Radionuclide	Inventory
Strontium-90	2.3 million curies
Cesium-137	3.7 million curies
Plutonium-239	75,000 curies

### *French Testing at Moruroa*

French underground testing in the Pacific poses a different set of problems to other underground test sites since the sea is an integral part of the test site. At the time of the explosion, fracturing of the atoll surface can trigger landslides, tsunamis (tidal waves), and earthquakes. Possible long-term effects include leakage of fission products to the biosphere and transfer of dissolved plutonium-239 from the lagoon to the ocean and the food chain.

### *Physical Damage to the Reef*

The upper layer of the atoll is made up of reef carbonates, mainly limestone. This limestone cover is approximately 300 meters thick in the south of the atoll, increasing to 430 to 550 meters in the north.

Each scientific mission to Moruroa has described severe damage to the integrity of the atoll. The damage includes fissures in the limestone and surface subsidences of large areas of the atoll. Fissures are propagated by the testing, a result of the cumulative compacting of the limestone. Fissuring serves to increase lateral and vertical water transport in the carbonate body of the atoll, possibly resulting in more rapid leakage of fission products. The French authorities claim that no new damage is occurring because the tests are no longer conducted under the reef crown but under the lagoon. This claim is contradicted by underwater observations of the Cousteau mission.

### *Triggering of Tsunamis, and Earthquakes*

At least one major test-related landslide and consequent tsunami happened in Moruroa, on July 25, 1979. Apparently, the 120-kiloton weapon, which was supposed to be lowered into an 800-meter shaft, got stuck at a depth of 400 meters and could not be dislodged. The French authorities decided to explode the device anyway. This explosion resulted in a major underwater landslide of at least one million cubic meters of coral and rock and created a cavity, probably 140 meters in diameter. The underwater landslide produced a tidal wave comparable to a tsunami, which spread through the Tuamotu Archipelago and injured people on the southern part of Moruroa Atoll. French authorities initially denied that any mishap had occurred and declared that the tidal wave was of natural origin, but in a publication in 1985 they acknowledged "the accident of 25 July 1979."

### *Venting of Fission Products*

Scientists of Australea, New Zealand, and Papua New Guinea in 1983 were authorized to carry out a single experiment in situ at Moruroa. Their measurements demonstrated tritium levels were 500 becquerels per liter while the expected concentration due to atmospheric fallout should have been in the range of 0.2 becquerels per liter. These high levels are probably due to venting. The Cousteau mission in 1987, measured radioactivity of plankton, which is an even better indicator of venting. In plankton, they found an iodine-131 concentration of 22,000 picocuries per kilogram.

Thus, two separate scientific missions, on which major restrictions were imposed, were still able.

independently of each other to find typical indicators of short-term venting.

*Long-Term Leakage to the Biosphere*

According to a model formulated by Hochstein and O'Sullivan (1985), an underground nuclear explosion in rock saturated with seawater can set up an artificial geothermal system. The heat stored in the explosion chamber is of the order of  $10^{12}$  calories per kiloton of yield. In addition, heat generation due to radioactive decay goes on after the explosion of fission bombs, at a rate of about 595 calories per second per kiloton of yield. After an explosion, seawater enters the chamber and is heated up by about 25 to 50° Celsius by both stored and newly generated heat. The heated seawater dissolves the glassy materials, liberating the nuclear waste which transfers slowly upwards through the extended chimney. While the concentration of the radionuclides decreases by diffusion and absorption, the heated cell transferring the radionuclides moves upwards with a speed of about 10 meters per year, according to the computer simulations. Under the assumptions of this model, radionuclides from a depth of around 500 meters would reach the cracks of the lagoon in less than 50 years instead of the 500 to 1,000 years assumed by the French authorities.

The first hint that the model of Hochstein and O'Sullivan might be correct was the discovery of cesium-134 by the Cousteau Mission in 1987. In December 1990, Greenpeace too found cesium-134 in plankton collected outside the 12-mile exclusion zone around Moruroa. Recent studies indicate that leakage is occurring even faster than initially predicted.

The 120 underground tests conducted at Moruroa have in effect turned it into a long-term waste dump. The total amount of plutonium-239 from these tests and the three at Fangataufa

is about 18,450 curies. Based on a rough estimate of 2.5 megatons total yield of underground tests, the amount of cesium-137 and strontium-90 dispersed would have been 400,000 curies and 250,000 curies respectively. About three-fourths of the cesium and strontium still remain underground and some may have found its way into the lagoons and ocean. As a repository for nuclear wastes from underground testing, Moruroa is less than ideal. The geological structure is water-saturated, and there are natural fractures as well as a network of fissures due to the explosions. Moreover, the absorption capacity for the basalt of Moruroa as estimated by the French authorities is very low.

*"Safety Trial Causes Pollution"*

The land area of Moruroa has been used to store radioactive waste (including scrap metal, wood, plastic bags, and clothing) in a huge heap on the north coast of the atoll, which covers 30,000 square meters. In addition, on July 21, 1966, a bomb broke apart on the surface of Moruroa, dispersing plutonium-239. This plutonium-239 was confined to the area by fixing it in place with a layer of bitumen. Moruroa was also used as a safety trial area (A "safety trial" is a test to check whether an atomic bomb will explode on impact with a hard surface—as in the event of a plane crash. In the case of a "safe" bomb, or a "successful" safety trial, the impact does not cause a nuclear detonation but breaks apart the bomb, scattering plutonium-239 about the site.) Cyclones hit Moruroa mainly in 1981, washing radioactive waste from the coral rim into the lagoon, including the plutonium-impregnated bitumen.

Due to these waste management practices, the sediment of the lagoon contains an estimated 20 kilo-

grams of plutonium-239. At the time the Australian, New Zealand and Papua New Guinea Mission visited Moruroa, plutonium-239 concentrations in the air were about four times greater than in continental France. The mission estimated that about 20 gigabecquerels of plutonium-239 from the sediment of the lagoon are transported annually to ocean waters. This is consistent with findings of the Cousteau Mission that concentrations of plutonium-239 in the lagoon entrance are about ten times greater than in the lagoon itself. They also stated that the observed concentrations in the sediment and in the water are much too high to be attributed to global atmospheric fallout and are therefore of local origin and due to redobilization from sedimentary deposits. There is evidence that plutonium-239 is accumulating in the food chain.

*Katherine Yih*

*Source: Radioactive Heaven and Earth*



# *Environmental Effects of Nuclear Weapons Production*

*Howard Hu, Arjun Makhijani*

**R**oughly 70,000 nuclear war heads have been fabricated worldwide. This does not include reworking of materials and components of obsolete weapons into new ones. There are many aspects of environmental contamination resulting from nuclear weapons production that we cannot estimate due to lack of data. But we can make some order of magnitude estimates of waste generation and environmental contamination from some of the principal processes.

- One hundred to two hundred million metric tons of uranium-mill tailings containing 100,000 curies (about 4,000 terabecquerels) each of radium-226 and thorium-230 from the estimated 400,000 metric tons of natural uranium used for military purposes;
- Over 400,000 metric tons of depleted uranium;
- About 3 billion curies (100 million terabecquerels) of high-level radioactive waste from plutonium production (including only strontium-90, caesium-137 and their daughter radionuclides yttrium-90 and barium-137). (This estimate is not corrected for radioactive decay; such a correction would reduce it by about one-half);
- Twenty million curies (about 700,000 terabecquerels) of krypton-85 (non-decay-corrected) into the atmosphere due to reprocessing;
- Thousands of square kilometres of highly contaminated land from production processes and accidents;
- Global contamination from fallout due to atmospheric nuclear weapons tests amounting to 30

million curies (one million terabecquerels) combined of strontium-90 and caesium-137 (decay-corrected), and 10 million curies (0.4 million terabecquerels) of carbon-14 due to atmospheric testing. Additional inventories of fission products and unfissioned plutonium have been left underground due to underground testing.

## *Damage Far Worse*

These summary estimates provide a starting point for the work ahead in making estimates of the contamination in specific areas and countries. They are to be regarded as indicative rather than definitive. Moreover, they do not convey the real extent of the damage. Some of the worst damage has been in the former Soviet Union. Entire river systems have been contaminated in some cases, as for instance with the river system near the Chelyabinsk-65 plant. Lake Karachay at Chelyabinsk-65 is perhaps the most contaminated body of water on Earth. The dose rate near the pipe that discharges radioactive wastes into it is 6 grays per hour, which would yield a lethal (LDS0) dose in about 45 minutes.

Highly radioactive liquid wastes that result from reprocessing have been responsible for the worst accident resulting from nuclear weapons production. This was the explosion of a tank at Chelyabinsk-65 in September 1957. It resulted in the contamination of about 15,000 square kilometres of land and the evacuation of over 10,000 people.

Dozens of tanks in the United States and elsewhere are at risk of explosions.

## *The Price Has Been Paid By Others*

Uranium mining has been responsible for contamination not only in the nuclear weapons states but also in many other countries. Some of the most polluted areas from nuclear weapons production are in East Germany, which supplied the Soviet nuclear weapons programme, and in the Third World, which supplied the programmes of the United States, United Kingdom, and France. Even within the nuclear weapons states, uranium mining and resultant contamination have disproportionately affected tribal peoples.

The nuclear-weapons industry has contaminated groundwater, surface waters, seas, and oceans. For instance, the sea off Sellafield in England and the seas off Russia have been the dumping grounds for large amounts of radioactivity. In the United States and elsewhere, groundwater at many of the sites where weapons factories are located has become highly contaminated. While this water is not now being used for domestic consumption, it is not evident how its use can be regulated once institutional control of the sites is lost, or once they have been designated for other uses.

Decommissioning and cleaning up nuclear-weapons plants will produce additional large quantities of waste, the magnitude of which will become clear only over the next decade or so as decommissioning proceeds in the United States and possibly in other countries. Dismantlement of unwanted nuclear weapons and disposition of the fissile materials they contain present further formidable security and environmental challenges.

## *Exposed Populations*

Broadly speaking, the making of nuclear weapons has exposed five groups of people to environmental and health dangers:

- 1. Workers at nuclear weapons facilities.
- 2. Armed forces personnel who participated in atmospheric weapons testing.
- 3. People living near nuclear weapons sites.
- 4. People who were subjects of experiments.

- 5. The world's inhabitants for centuries to come.

These categories include only those affected by the production and testing of nuclear weapons. The transportation, deployment, and possible use of nuclear weapons are not within the scope of this paper. Generally, the most intensely exposed people have been workers in nuclear-weapons plants and testing facilities and members of the armed forces. Within these two populations, the extent of exposure varies according to the specific nature of their duties and length of service.

The third set of victims, often called "downwinders," are people who live near nuclear-weapons facilities. The definition of "near" extends in some cases to hundreds of kilometres downwind, especially in the case of atmospheric nuclear-weapons testing and large intentional or accidental releases, such as those that occurred at Chelyabinsk-65 or at Hanford in the United States. Some downwinders have been as highly exposed as workers and armed-forces personnel. This is certainly the case for some affected by the explosion at Chelyabinsk-65, for iodine-132 exposures from the first two decades of operation of the Hanford plant, and for nuclear testing downwinders among the people living near the Soviet test site near Semipalatinsk in Kazakhstan. Recent revelations in the United States have brought to light human experiments involving thousands of people. Finally, there have been and will continue to be exposures to the entire global population, mainly due to atmospheric nuclear-weapons testing but also to releases of krypton-85 and other gaseous radionuclides from plutonium production. Given the long lived na-

ture of some of the radionuclides involved, these exposures will persist for thousands of years.

It is possible to make rough, order-of-magnitude estimates of the number of exposed armed forces and worker populations in some instances. The figure for exposed "downwinders" is considerably more fluid, mainly because of the interlinked problem of defining the boundary of the "downwind" area and uncertainties about doses off-site.

About 2,500,000 members of the US armed forces participated in the atmospheric nuclear-weapons-testing programme. The number of workers in the US nuclear weapons complex at any time has been to the order of 100,000 since the mid-to-late 1950s, excluding workers in uranium mining and milling. (Current employment during the decommissioning phase is actually higher.) Considering some turnover of workers and recent increases in employment for clean-up operations, several hundred thousand people have at one time or another worked in the US nuclear-weapons complex.

In the Soviet Union, the number of workers involved in the nuclear weapons complex has been reported to be to the order of 1 million, including people engaged in uranium mining and milling. No reliable estimate is available for armed forces personnel involved.

Large numbers of people were involved in uranium mining and milling in other countries. Perhaps the largest number in a single place was the 450,000 uranium mine and mill workers in East Germany which supplied much of the uranium for the Soviet nuclear arsenal. Tens of thousands of people, at the very least, have been involved in

uranium mining in China, including the period of particularly labour-intensive mining during the Great Leap Forward in the late 1950s and early 1960s

While we have not attempted to gather comprehensive data on the number of workers involved in this global industry, it would appear that at least two million people have been involved in various aspects of nuclear-weapons production and worldwide: the true figure is probably considerably higher

The levels of exposure to radiation of the four population groups vary widely. Exposures due to global fallout are to the order of a few tens of microsieverts per year. However, the dispersed nature of fallout has resulted in exposure of billions of people to such levels of radiation.

Researchers have made various estimates of levels of exposures to downwinders. The most highly exposed groups that we know about are those living downwind and downriver of the Chelyabinsk-65 and downwind of Hanford in the early years of production. The downwind exposures near Oak Ridge, Tennessee may also be high, but this remains the subject of study and controversy

The most highly exposed groups have tended to be workers. The most severe exposures of workers for whom some data is available were in the Chelyabinsk-65 gas graphite reactor and reprocessing plant. Worker doses in the early years averaged about 1 sievert, according to data published so far

However, under many circumstances, notably in facilities that processed uranium, internal exposures may have been high among certain groups of workers. For instance, at the uranium-processing plant near Fernald, Ohio, data on employees indicate cumulative lung doses of several sieverts for some production workers. Yet neither the plant's corporate contractors nor the Department of Energy calculated internal doses from urine and lung-counting data that were collected at the plant.

Even greater uncertainties exist in regard to internal exposures for armed forces personnel, notably to alpha-emitting radionuclides. Thus, the overall exposures to workers, armed forces personnel, and downwind populations will remain the subject of considerable uncertainty and controversy, for some time. Because most official data on these subjects in most coun-

tries are still secret, it is impossible to know whether reliable quantitative estimates can be produced at least for an appreciable fraction of the exposed population.

#### *The Poor State of Data*

Estimating the total toll on human health of nuclear-weapons production worldwide is almost impossible given the types of uncertainties discussed. Aside from the global fallout effects of nuclear weapons testing, estimated to produce hundreds of thousands of excess cancer fatalities over the centuries, uranium mining has been responsible for the largest collective exposures to workers. While precise global estimates are at present impossible, we note that one estimate puts the number of workers who have died of lung cancer and silicosis due to mining and milling in East Germany alone at twenty thousand people.

Unfortunately, we cannot make similar estimates on a global level of the disease burden that may have resulted from occupational exposures in uranium mining, milling, and the industries related to plutonium reprocessing and nuclear-weapons manufacturing. It is instructive to note that many of the occupational mortality studies of uranium miners in the United States and Canada have estimated lung-cancer risks 2 to 6 times higher than expected. To the extent that this reflects generic risks shared by all uranium miners, and that working conditions have been similar or worse in other uranium-mining countries, this would mean that the mining of uranium for nuclear weapons has led to thousands of excess lung cancers. It is also apparent that a disproportionate share of that burden fell on indigenous or colonised peoples who lived in the areas of and were employed as workers.

In general, it is difficult to determine the validity of various studies in the face of serious problems with the quality and completeness of the data. For

instance, in 1994, US officials admitted that even external dose data for workers have some serious deficiencies. In fact, portions of the data were entered into the radiation dosimetry records of workers when the badges were not turned in.

Russian data on health are clearly suspect, even for groups of workers and off-site populations living near Chelyabinsk-65 with high exposures. Health outcome data show far fewer than expected leukemia or other cancer fatalities. This result is at considerable variance with well-established risk factors from medical radiation exposure studies and follow-up of Hiroshima-Nagasaki survivors. It is reported that doctors were forbidden to make radiation-related diagnoses, on pain of punishment. Thus, while some dose data indicate that one should find relatively high levels of fatal cancers, the health findings do not correspond to the dose estimates. New diagnoses such as "weakened vegetative syndrome" and even "ABC disease" unknown elsewhere, were created in Russia, possibly to fill the void for radiation-related diagnoses banned by nuclear authorities.

It is also impossible at present to estimate the disease burden due to community exposures to non-radioactive chemical pollution emitted by industries associated with nuclear weapons. The data based is so inadequate that it does not permit even qualitative discussion of the health impact for individual countries, to say nothing of worldwide estimate. There are anecdotal reports of damage that are inconsistent with radiation damage. Such damages may be linked to chemical dis-

charges. However, such emissions have not been monitored carefully, or indeed at all for most of the period for nuclear weapons production, so far as publicly available data indicate.

## *The Legal Question*

### *World Court Judgement*

On 8 July 1996 in The Hague, the International Court of Justice gave its Advisory Opinion on the question

"Is the threat or use of nuclear weapons under any circumstance permitted under international law?"

The Court highlighted:

*"unique characteristics of nuclear weapons, and in particular their destructive capacity, their capacity to cause untold human suffering, and their ability to cause damage to generations to come"*

Thereby, the Court confirmed that nuclear weapons are in the same stigmatised category of weapons of mass destruction as chemical and biological weapons. Indeed, the effects of nuclear weapons are more severe, widespread and long-lasting than those of chemical weapons of which the development, production, stockpiling and use are prohibited by specific convention regardless of size. Also radiation effects are analogous to those of biological weapons, which are also outlawed by specific convention.

The Court could find no legal circumstance for the threat or use of nuclear weapons. Also it endorsed the view that threat and use are indivisible. The Court confirmed that, as part of humanitarian law, the Nuremberg Charter of 8 August 1945 - paradoxically signed two days after the nuclear strike on Hiroshima and the day before the one on Nagasaki - applies to nuclear weapons.

*Continued from page 2*

### *Right wing madness*

The present madness is the creation of the current right wing, nationalistic sentiments of the Vajpayee government and its tenuous position in the Indian parliament. My assessment, and suggestion, is that if the US and the other big bullies let this sink in a bit, while Pakistan explodes her own bomb (if I were in the white House, I would not do much to dissuade Pakistan from doing it), the tide would turn against Vajpayee on its own momentum as the arms race in the subcontinent builds up and the dissenting voices in India could be heard beyond the initial euphoria of the ignorant and chauvinists. India herself has to respond negatively to this madness, as I am sure ultimately it will. Economic sanctions help to delay that response.

*Aqueil Ahmad*

### *Old wine in new bottle*

The tests, have been claimed to be a major scientific and technological achievement. We, scientists in various disciplines, while expressing our deep dismay and unhappiness at this action of the Indian Government, wish to point out that the magnitude of the S&T should not be blown out of proportion. The technology involved is for the most part decades old.

The country has been committed to an expensive weapons programme without a national debate.

We wish to recall emphatically, the horror that is nuclear war. There is a long tradition of eminent scientists who have consistently argued against the in-

duction of nuclear weapons. The horrors of nuclear war cannot be forgotten, no matter what. How can we feel happy and secure in a world in which every country feels proud of its nuclear weapons capability and is convinced of the deterrence tactic ?

*Signatures of more than 60 scientists from various Indian Institutes and Universities.*

### *It's cheap patriotism*

What with Anupam Kher speaking of 'our neighbours' molesting our sisters and daughters and someone from the external affairs ministry talking of it takes two to clap, but one to molest' I really shudder at the language and idiom of intolerance and cheap patriotism that is being unleashed under (his regime.

*Dr. Rowena Robinson  
IIT Bombay*

### *Shot in the foot*

Your letter started me thinking. I suppose the main impact on Indian science will be to encourage or prolong the life of the wrong kind of 'science', especially in physics. I am so disheartened about this already that I am not sure this additional shot in the foot will hurt much more.

I am saddened (hat we have gone so far in denying our Gandhian heritage, which is the only sure long term guide to the future of humanity as a society. This also seemed to be our main role in the 'comity' of nations.

*Dr. T. V. Ramakrishnan  
I.I.Sc. Bangalore*

They have blown up our hopes and aspirations for peace in our generation The sadness is indescribable

*Dr Zia Mian  
Princeton University*

### *Uncle Sam 's hipocrisy*

Today we hear everyone in Washington asking for sanctions against India because of these tests Yet. it is well known that Israel has tested a nuclear device and currently has an inventory of at least 200 nuclear weapons and an IRBM delivery capability But no one will even mention that matter in the American news media Remember what happened during (he Carter administration Israel and the apartheid Afrikaner regime in South Africa tested a nuclear device near the Indian Ocean The Carter administration immediately orchestrated a flimsy cover-up. publicly claiming that it was a meteorite hitting the satellite, in order to avoid the triggering of sanctions against Israel Of course, the news media in the United States dutifully accepted the cover-up and the matter disappeared down the Orwellian memory hole What we see now in Washington are crocodile tears being shed over the Indian tests. The United States has done absolutely nothing to stop Israel's rapidly escalating nuclear weapons programme despite more than enough leverage to do so. Some are more equal than others.

### *Start satyagraha against Nbomb*

It appears that we have burned up a lot of electrons during the past several days. But talk is cheap Politicians value deeds, not words. Right now we need to be pouring tens of thousands of people into the streets of the United States, Britain, France. Russia. Canada. Europe. Japan, Australia, New Zealand. Israel. Pakistan, India and as many other countries of the world as possible, all demanding immediate nuclear disarmament. People Power. Politicians pay attention to that Back in the 1980s there were tens of thousands of people protesting all over the world against the Reagan administration's aggressive nuclear weapons policies We need that all over again, only tenfold. They must march, protest, demonstrate, blockade, etc. What Gandhi called Satyagraha, truth-force. Personally, I think this is the only meaningful response we have to what has just happened and to what could very well happen in the immediate future.





People of the world unite! We have only our nukes to lose!

*Francis A. Boyle*  
*Professor of International Law*  
*University of Illinois*  
*fboyle@, law.uiuc.edu*

*Need for total disarmament*

While Clinton chides India to sign the Comprehensive Test Ban Treaty. India's nuclear tests demonstrate the pointlessness of the treaty. Despite all of our movement's best efforts for more than a generation, we've been trumped by technology. India seeks laboratory testing capability as well, a goal the US would be comfortable with!

I believe any forward movement towards nuclear disarmament is waylaid by further advocacy and time spent on ratification of the CTBT. It is nuclear abolition or nothing, and as King observed, 'non-violence or non-existence.' Arms control is not disarmament.

Can there be any doubt that it serves the interest of the US government and the military-industrial-prison complex to claim ignorance of imminent Indian nuclear explosions? Already conservative senators are exploiting this claim of ignorance to bolster their own perspective that the entire arms control regime is futile. Yes, the regime of arms control, the hope that incrementalism would lead to disarmament faster than technology outpaces the diplomats is indeed a futile hope. Arms control was never enough, and the CTBT now awaiting ratification should be abandoned and left behind by any nuclear abolition movement worthy of the name.

It is altogether fitting, then, that the last few months of tension among the purveyors of weapons of

mass destruction have produced the proliferation of nuclear inspection and verification teams comprised of citizens whose allegiance is global, not national, but who are assuming the responsibility for the weapons in their own midst, deployed in their name.

The Citizen Verification Team at Los Alamos in March proclaimed that its goals are to " 1) educate the public about the United States' own weapons of mass destruction; 2) to call for international transparency regarding all programs which design, produce, or stockpile weapons of mass destruction; 3) to inspire a process of societal verification to bolster non-proliferation and disarmament efforts."

These seem far more worthy aims than another minute advocacy for the tool of proliferators, the Comprehensive Test Ban Treaty.

The Pakistani Foreign Minister said "it seems that the Indian leadership has gone berserk." He obviously knows the condition - Pakistan plans to follow suit. But the leader in this Fool's Parade is certainly the United States, under the banner of the CTBT.

*Jack Cohen-Joppa*  
*Nuclear Resister*

I am sorry. Have the people been advised to take iodised salt, calcium and potassium supplements (to lower the uptake of radioactive iodine, caesium and strontium)? It would also help if they could use distilled water for at least the next three months for all drinking and cooking. It will help to leach out inorganic materials (which the body does not need). If perspiring use fruit juices, and no regular water just distilled water.

All underground nuclear tests leak some radioactivity to the environment. Several so close together in time and place must have leaked! I understand one was a hydrogen bomb - probably using the CAN DU reactor to provide the tritium!

2nd letter: While I do applaud the initiative of the anti-nuclear groups to condemn Canadian involvement with the nuclearization of India. I think we might use this outrageous event to forward a global disarmament strategy. We could back Pugwash is calling for a more active role of so called Middle Sized Countries, with Canada leading. We could seize upon and enlarge this initiative.

This Middle Sized Countries delegation could mediate between the five nuclear powers on the one side, and India/Pakistan on the other. Hopefully they could broker a swap between them providing for no more tests whether under ground or sub-critical, bona fide disarmament by the five nuclear powers, full signing by all parties of the nuclear non-proliferation treaty and right of inspection of all countries by the IAEA.

*Rosalie Bertell*

*N-deterrence is dangerous*

The Nuclear Weapons States (NWS) and NATO have stated repeatedly that N-weapons are essential for their security. Accepting those (incorrect) statements, an obvious conclusion is that the weapons are essential to Indian security, neighbour to a nuclear-armed China and with Pakistan claiming (and then denying) that it has nuclear weapons.

Nuclear deterrence is far too dangerous, because a single failure of deterrence between two heavily-armed nuclear states must result in destruction of both states, enormous radioactive contamination of whole continents, and probably the end of human civilization. As stated authoritatively by the Canberra Commission, "The proposition that nuclear weapons can be retained in perpetuity and never used - accidentally or by decision - defies credibility." My paper "20 Mishaps that might have started accidental war" shows how real the actual risk of inadvertent war was during the Cold War. A small risk continuing over a long period adds up to near certainty of disaster.

The nuclear arms race between U S A and USSR was the biggest mistake in human history. First, and by far the most important it risked destruction of human civilization and possible extinction of the human race. The risk is still present. Second, it was enormously expensive, taking resources away from many unmet human needs. Third, it has resulted in radioactive contamination which has rendered large areas of both countries uninhabitable for centuries, and has caused significant radioactive contamination worldwide.

There are good reasons for India and Pakistan not to repeat that mistake. If they do, the likely result is destruction of those two nations and severe damage to their immediate neighbours, by a limited nuclear war at some time in the future. As to the expense, these countries are far less able to tolerate it than was the United States

India has not broken any undertaking of theirs nor any international law. They have not signed the NPT nor the CTBT, and have given logical reasons for not doing so. I believe the UN has no legal reason to apply sanctions. If the western NWS and their allies apply sanctions, the non-NWS will consider, perhaps correctly, that the purpose is to maintain the military superiority of the present NWS by punishing and threatening to punish other nations that try to acquire nuclear weapons

A possible consequence of a South Asian nuclear arms race is that a limited nuclear war there would so horrify the people of the world, by the destruction of an ancient civilization and its famous cities, and the terrible human suffering involved, that the NWS would be persuaded to give up their nuclear arsenals. We do not wish for it to happen that way, but we see it as a possibility.

A proper response by the NWS and their allies is to admit their mistake, and to immediately renounce all dependence on nuclear weapons. They must then disable all the weapons promptly, and dismantle them permanently as soon as possible.

A lan F Phillips <aphi@web.net>  
Physicians for Global Survival

April / May / June / July  
1998

*The Killing Advantage*

Please note that the following refers only to direct deaths in the area of the blast, not distant deaths caused by fallout or other secondary causes.

Deaths produced by Pakistan attacks on India with 25-kiloton bombs striking highest population areas:

No of 25 kt bombs	Deaths in Millions
15-32	19.2
182-379	46.8
1,630-3,395	128

Deaths produced by Indian attacks on Pakistan with 35 kt bombs in highest population areas

No. of 35 Kt warheads	Millions of deaths
76-163	13.5
253-542	22.4
811-1,739	46.1

Conclusion India's head is screwed on backwards, if it thinks for a second that it has derived any advantage via nuclear "deterrence". India's population densities are so great that only 15 to 32 Pakistani weapons can cause 19.2 million direct deaths in India. By contrast it would take fully 76.3 to 163 Indian nuclear weapons to cause roughly 13.5 million direct Pakistani deaths

India not only shot itself in the foot by choosing to go nuclear; it has revealed to the world its monumental incompetence in analysis. It does not take a wizard to count

ies <ike@swva.net>

On Buddha's birthday, the coalition government led by Bharatiya Janata Party put the finishing touch to more than three decades of erosion of Gandhi's legacy by conducting three nuclear tests. With that show of military muscle, Prime Minister Vajpayee declared India to be a nuclear weapons state and staked its claim as a world power. In so doing India has, for the time, thrown away a rarer and incomparably finer claim to great power status that it had already established in the minds and hearts of the people of the world. India was

already a great power for having given life during its independence movement to the philosophy of non-violent militant action. The tests were, as some Indian commentators have remarked, the end of moralism as the basis of global politics for India, and the establishment of power politics

India's nuclear weapons programme has little internal strategic coherence. India already possesses overwhelming conventional superiority with respect to Pakistan, which it has demonstrated in wartime. India's programme allows China a cheap way to keep India off balance by providing military assistance to Pakistan

India may aspire to match China in the size and variety of its arsenal (thought to be about 400 to 500 warheads), but it will have to expend enormous resources to do so. Most of the cost of nuclear weapons programmes is not for the weapons themselves, but for delivery systems, command and control, security, and related programmes dealing with deployment and potential use of weapons. Moreover,

since it does not have submarine-based long- or medium-range missiles, which are among the most expensive of systems, India's weapons will be relatively vulnerable to pre-emptive attack and destruction

Moreover, India simply cannot match the industrial and economic infrastructure of China, though they have comparable populations. For instance, India's installed electric power capacity is only about 80,000 mega watts, while China's is about 260,000 mega watts. China runs balance of payments surpluses, while India runs deficits. China has foreign exchange reserves many times those of India. It is relatively invulnerable to sanctions, since many large multinational corporations derive substantial portions of their profits from export-oriented manufacturing in China. To try to approach China's nuclear arsenal in size and sophistication would make India fall farther behind in industrial infrastructure, economic growth and consumer goods, even if the effect of sanctions is ignored.

Trying to create a substantial nuclear arsenal will complicate rather than promote solutions to India's two main border disputes with its neighbours: that with China in two sectors and that with Pakistan in Kashmir. By raising the level of tensions, it provides incentives to both Pakistan and China (which may act largely through Pakistan) to destabilize borders and force India to expend more resources in unproductive avenues.

If there is a silver lining to India's tests, it is to expose the hypocrisy of the nuclear weapons states and to create a sense of urgency among the world's people about the need for complete nuclear disarmament. The legacy of Gandhi can only be reclaimed by popular actions and demands upon recalcitrant powers that have grown too used to wielding weapons of terror and mass destruction.

*Arjun Makhijani*

*Institute for Energy and Environmental Research, Takoma Park*

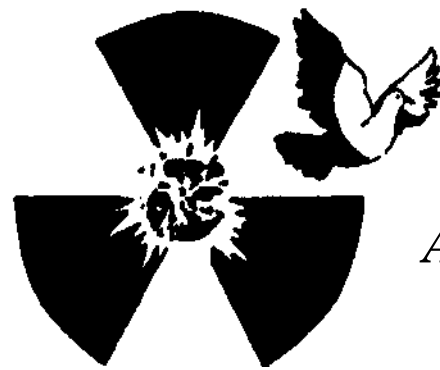
*Living in constant fear*

Earlier this month, I was in Kazakhstan, home of some 490 nuclear tests conducted by the Soviets over a 40-year period, until 1989. More than 19 million hectares of land were destroyed, and more than 75 percent of the inhabitants in the areas where the tests were conducted suffered radiation exposure. But these facts don't shock me so much as the words of the people I met in Semipalatinsk, one of the former nuclear test areas in the northeastern part of the country. Almost a decade after the end of testing in Kazakhstan, people still are surviving the consequences and living in fear of radiation. Radiation is a difficult topic to avoid — it is part of their daily existence.

In testing these nuclear devices, India and Pakistan can be added to the list of countries that have guaranteed fear for their populations and the people of neighboring countries. India and Pakistan may not be signatories of the Comprehensive Test Ban Treaty, but this testing is a violation of human rights and a violation of our earth. And whose choice was it? The people have no choice when governments decide to test nuclear weapons. And ultimately, our earth has no choice.

The United States and the global community must ensure the right to live free from nuclear testing, without exception. With every test that is conducted, we further disrupt the delicate ecosystem that sustains us. Testing is a road to ultimate self-destruction and one that none of us can afford to take.

*Nicole Cheetham*



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