The Nuclear Challenge

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Volume II of readings

The nuclear challenge

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Bertrand Russell: Some thoughts and the birth of the Pugwash Movement

Text from Bertrand Russell, *The Autobiography of, 1944-1969*, New York: Simon and Schuster, 1969, pp. 6-16.

Throughout the forties and the early fifties, my mind was in a state of confused agitation on the nuclear question. It was obvious to me that a nuclear war would put an end to civilization. It was also obvious that unless there was a change of policies in both East and West a nuclear war was sure to occur sooner or later. The dangers were in the back of my mind from the early twenties. But in those days, although a few learned physicists were appreciative of the coming danger, the majority, not only of men in the streets, but even of scientists, turned aside from the prospect of atomic war with a kind of easy remark that, "Oh, men will never be so foolish as that." The bombing of Hiroshima and Nagasaki in 1945 first brought the possibility of nuclear war to the attention of men of science and even of some few politicians. A few months after the bombing of the two Japanese cities, I made a speech in the House of Lords pointing out the likelihood of a general nuclear war and the certainty of its causing universal disaster if it occurred. I forecast and explained the making of nuclear bombs of far greater power than those used upon Hiroshima and Nagasaki, fusion as against the old fission bombs, the present hydrogen bombs in fact. It was possible at that time to enforce some form of control of these monsters to provide for their use for peaceful, not warlike, ends, since the arms race which I dreaded had not yet begun. If no controls were thought out, the situation would be almost out of hand. It took no great imagination to foresee this. Everybody applauded my speech; not a single Peer suggested that my fears were excessive. But all my hearers agreed that this was a question for their grandchildren. In spite of hundreds of thousands of Japanese deaths, nobody grasped that Britain had escaped only by luck and that in the next war she might be less fortunate. Nobody viewed it as an international danger which could only be warded off by agreement among the Great Powers. There was a certain amount of talk, but no action was taken. This easy-going attitude survives among the laity even down to the present day. Those who try to make you uneasy by talk about atom bombs are regarded as trouble-makers, as people to be avoided, as people who spoil the pleasure of a fine day by foolish prospects of improbable rain.

Against this careless attitude I, like a few others, used every opportunity that presented itself to point out the dangers. It seemed to me then, as it still seems to me, that the time to plan and to act in order to stave off approaching dangers is when they are first seen to be approaching. Once their progress is established, it is very much more difficult to halt it. I felt hopeful. Therefore, when the Baruch Proposal was made by the United States to Russia, I thought better of it then, and of the American motives in making it, than I have since learned to think, but I still wish that the Russians had accepted it. However, the Russians did not. They exploded their first bomb in August 1949, and it was evident that they would do all in their power to make themselves the equals of the United States in destructive — or, politely, defensive — power. The arms race became inevitable unless drastic measures were taken to avoid it. That is why, in late 1948, I suggested that the remedy might be the threat of immediate war by the United States on Russia for the purpose of forcing nuclear disarmament upon her. I have given my reasons for doing this in an Appendix to my *Common Sense and Nuclear Warfare.* My chief defence of the view I held in 1948 was that I thought Russia very likely to yield to the

demands of the West. This ceased to be probable after Russia had a considerable fleet of nuclear planes.

This advice of mine is still brought up against me. It is easy to understand why Communists might object to it. But the usual criticism is that I, a pacifist, once advocated the threat of war. It seems to cut no ice that I have reiterated *ad nauseam* that I am not a pacifist, that I believe that some wars, a very few, are justified, even necessary. They are usually necessary because matters have been permitted to drag on their obviously evil way till no peaceful means can stop them. Nor do my critics appear to consider the evils that have developed as a result of the continued Cold War and that might have been avoided, along with the Cold War itself, had my advice to threaten war been taken in 1948. Had it been taken, the results remain hypothetical, but so far as I can see it is no disgrace, and shows no "Inconsistency" in my thought, to have given it.

None the less, at the time I gave this advice, I gave it so casually, without any real hope that it would be followed, that I soon forgot I had given it. I had mentioned it in a private letter and again in a speech that I did not know was to be the subject of dissection by the press. When, later, the recipient of the letter asked me for permission to publish it, I said, as I usually do, without consideration of the contents, that if he wished he might publish it. He did so. And to my surprise I learned of my earlier suggestion. I had, also, entirely forgotten that it occurred in the above-mentioned speech. Unfortunately, in the meantime, before this incontrovertible evidence was set before me, I had hotly denied that I had ever made such a suggestion. It was a pity. It is shameful to deny one's own words. One can only defend or retract them. In this case I could, and did, defend them, and should have done so earlier but from a fault of my memory, upon which from many years' experience I had come to rely too unquestioningly.

My private thoughts meanwhile were more and more disturbed. I became increasingly pessimistic and ready to try any suggested escape from the danger. My state of mind was like a very much exaggerated nervous fear such as people are apt to feel while a thunderstorm gathers on the horizon and has not yet blotted out the sun. I found it very difficult to remain sane or to reject any suggested measures. I do not think I could have succeeded in this except for the happiness of my private life.

For a few years I was asked yearly to give a lecture at the Imperial Defence College in Belgrave Square. But the invitations stopped coming after the lecture in which I remarked that, knowing that they believed you could not be victorious in war without the help of religion, I had read the Sermon on the Mount, but, to my surprise, could find no mention of H-bombs in it. My audience appeared to be embarrassed, as they were good Christians as well as, of course, warriors. But, for myself, I find the combination of Christianity with war and weapons of mass extinction hard to justify.

In 1948, the Western Powers endeavoured to create a union which should be the germ of a World Government. The Conservative Party approved and wished Britain to become a member. The Labour Party, after some hesitation, opposed the scheme, but left individual members free to support it or not, as they thought fit. I joined and made a possibly somewhat excessive attack upon one of the few Communists present at the international Congress assembled at The Hague to consider the scheme. In his speech he had maintained that Communists have a higher ethic than other men. This was just after the fall of the democratic government of Czechoslo-

vakia and my remarks had the complete agreement of the bulk of the people present. The younger Masaryk's suicide as a result of his rough handling by the Communists had shocked us all, and almost all of us had the conviction that co-operation with the East was for the present impossible. I said: "If you can persuade me that hounding your most eminent citizen to his death shows a higher ethical outlook than that of the West, I shall be prepared to support you, but, till that time comes, I shall do no such thing."

Towards the end of the war, after my return to England, and for some time thereafter, the Government used me to lecture to the Forces. The Forces had become more pacific than I expected as the war neared its end, and I remember that Laski and I were sent together on one occasion to speak to some of the airmen. Laski was more radical than I was, and they all agreed with him. In the middle of my lecture, I suddenly realized that half of my audience was creeping out of the hall and I wondered if I had offended them in some way more drastic than merely failing to be sufficiently radical. Afterwards I was told that the men had been called away to combat the last of the German air raids against England.

At the time of the Berlin air lift, I was sent by the Government to Berlin to help to persuade the people of Berlin that it was worth while to resist Russian attempts to get the Allies out of Berlin. It was the first and only time that I have been able to parade as a military man. I was made a member of the armed forces for the occasion and given a military passport, which amused me considerably.

I had known Berlin well in the old days, and the hideous destruction that I saw at this time shocked me. From my window I could barely see one house standing. I could not discover where the Germans were living. This complete destruction was due partly to the English and partly to the Russians, and it seemed to me monstrous. Contemplation of the less accountable razing of Dresden by my own countrymen sickened me. I felt that when the Germans were obviously about to surrender that was enough, and that to destroy not only 135,000 Germans but also all their houses and countless treasures was barbarous.

I felt the treatment of Germany by the Allies to be almost incredibly foolish. By giving part of Germany to Russia and part to the West, the victorious Governments ensured the continuation of strife between East and West, particularly as Berlin was partitioned and there was no guarantee of access by the West to its part of Berlin except by air. They had imagined a peaceful co-operation between Russia and her Western allies, but they ought to have foreseen that this was not a likely outcome. As far as sentiment was concerned, what happened was a continuation of the war, with Russia as the common enemy of the West. The stage was set for the Third World War, and this was done deliberately by the utter folly of Governments.

I thought the Russian blockade was foolish and was glad that it was unsuccessful owing to the skill of the British. At this time I was *persona grata* with the British Government because, though I was against nuclear war, I was also anti-Communist. Later I was brought around to being more favourable to Communism by the death of Stalin in 1953 and by the Bikini test in 1954; and I came gradually to attribute, more and more, the danger of nuclear war to the West, to the United States of America, and less to Russia. This change was supported by developments inside the United States, such as McCarthyism and the restriction of civil liberties.

. . .

When I had returned to England in 1944, I found that in certain ways my outlook had changed. I enjoyed once more the freedom of discussion that prevailed in England, but not in America. In America, if a policeman addressed us, my young son burst into tears; and the same was true *(mutatis mutandis)* of university professors accused of speeding. The less fanatical attitude of English people diminished my own fanaticism, and I rejoiced in the feeling of home. This feeling was enhanced at the end of the forties when I was invited by the BBC to give the first course of Reith Lectures, instead of being treated as a malefactor and allowed only limited access to the young. I admired more than ever the atmosphere of free discussion, and this influenced my choice of subject for the lectures, which was "Authority and the Individual." They were published in 1949 under that title and were concerned very largely with the lessening of individual freedom which tends to accompany increase of industrialism. But, although this danger was acknowledged, very little was done either then or since to diminish the evils that it was bringing.

I proposed in these lectures to consider how we could combine that degree of individual initiative which is necessary for progress with the degree of social cohesion that is necessary for survival. This is a large subject, and the remarks that I shall make upon it here are no more than annotations on the lectures and sometimes expansions of subjects that have interested me since writing the book.

The problem comes down, in my view, to the fact that society should strive to obtain security and justice for human beings and, also, progress. To obtain these it is necessary to have an established framework, the State, but, also, individual freedom. And in order to obtain the latter, it is necessary to separate cultural matters from the Establishment. The chief matter in which security is desirable now is security of nations against hostile enemies, and to achieve this a world government must be established that is strong enough to hold sway over national governments in international matters.

Since no defence is possible for a single nation against a more powerful nation or a group of such nations, a nation's safety in international matters must depend upon outside protection. Aggression against a single nation by another nation or group of nations must be opposed by international law and not left to the willful initiative of some warlike State. If this is not done, any State may at any moment be totally destroyed. Changes in weapons may frequently alter the balance of power. It happened, for example, between France and England in the fifteenth century when the Powers ceased to defend castles and came to depend upon moving armies with artillery. This put an end to the feudal anarchy which had until then been common. In like manner**,** nuclear weapons must, if peace is to exist, put an end to war between nations and introduce the practical certainty of victory for an international force in any possible contest. The introduction of such a reform is difficult since it requires that the international Power should be so armed as to be fairly certain of victory in warfare with any single State.

Apart from this connection with the dangers of war now that weapons of mass destruction were being developed, these lectures were important in my own life because they give the background of a subject which has absorbed me in one way and another, especially since 1914: the relation of an individual to the State, conscientious objection, civil disobedience.

The prevention of war is essential to individual liberty. When war is imminent or actually in progress various important liberties are curtailed and it is only in a peaceful atmosphere that

they can be expected to revive. As a rule, the interference with liberty goes much further than is necessary, but this is an inevitable result of panic fear. When Louis XVI's head was cut off, other monarchs felt their heads insecure. They rushed to war and punished all sympathy with the French Revolution. The same sort of thing, sometimes in a less violent form, happened when Governments were terrified by the Russian Revolution. If the individual is to have all the liberty that is his due, he must be free to advocate whatever form of government he considers best, and this may require the protection of an international authority, especially since nuclear weapons have increased the power of nations to interfere with each other's internal affairs. Individual liberty in wartime should extend to personal participation in war.

In the course of these lectures, I gave a brief résumé of the growth and decay of governmental power. In the great days of Greece there was not too much of it: great men were free to develop their capacities while they lived, but wars and assassinations often cut short their labours. Rome brought order, but at the same time brought a considerable degree of eclipse to the achievement of individuals. Under the Empire, individual initiative was so curtailed as to be incapable of resisting new attacks from without. For a thousand years after the fall of Rome, there was too little authority and also too little individual initiative. Gradually, new weapons, especially gunpowder, gave strength to governments and developed the modern State. But with this came excessive authority. The problem of preserving liberty in a world of nuclear weapons is a new one and one for which men's minds are not prepared. Unless we can adapt ourselves to a greater search for liberty than has been necessary during the last few centuries, we shall sink into private lethargy and fall a prey to public energy.

It is especially as regards science that difficult problems arise. The modern civilized State depends upon science in a multitude of ways. Generally, there is old science, which is official, and new science, which elderly men look upon with horror. This results in a continual battle between old men, who admire the science of their fathers, and the young men who realize the value of their contemporaries' work. Up to a point this struggle is useful, but beyond that point it is disastrous. In the present day, the most important example of it is the population explosion, which can only be combatted by methods which to the old seem impious.

Some ideals are subversive and cannot well be realized except by war or revolution. The most important of these is at present economic justice. Political justice had its day in industrialized parts of the world and is still to be sought in the unindustrialized parts, but economic justice is still a painfully sought goal. It requires a world-wide economic revolution if it is to be brought about. I do not see how it is to be achieved without bloodshed or how the world can continue patiently without it. It is true that steps are being taken in some countries, particularly by limiting the power of inheritance, but these are as yet very partial and very limited. Consider the vast areas of the world where the young have little or no education and where adults have not the capacity to realize elementary conditions of comfort. These inequalities rouse envy and are potential causes of great disorder. Whether the world will be able by peaceful means to raise the conditions of the poorer nations is, to my mind, very doubtful, and is likely to prove the most difficult governmental problem of coming centuries.

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Pp. 72-75

From the *News Chronicle,* 1st April, 1954

HE FORETOLD IT

In November, 1945, in a speech in the House of Lords on the atomic bomb, Bertrand Russell said:

"It is possible that some mechanism, analogous to the present atomic bomb, could be used to set off a much more violent explosion which would be obtained if one could synthesize heavier elements out of hydrogen. All that must take place if our scientific civilization goes on, if it does not bring itself to destruction: all that is bound to happen."

From the *News Chronicle,* 1st April, 1954

THE BOMB: WHERE DO WE GO FROM HERE?

Bertrand Russell, mathematician, philosopher, answers the questions that everyone is asking (in an interview with Robert Waithman).

Bertrand Russell sat very upright in his armchair, smoking a curved pipe and talking gently about the hydrogen bomb. But there was nothing gentle about his conclusions.

Britain's greatest living philosopher, whose mind and intellectual courage have moved the twentieth century since its beginning, is now 81. His hair is white and his voice is soft; and his opinions, as always, are expressed with a memorable clarity. I put a succession of questions to him and he answered them thus:

Is there any justification for alarm at the thought that some disastrous miscalculation may occur in the H-bomb tests?

Though, obviously, there will come a time when these experiments are too dangerous, I don't think we have reached that point yet.

If there were a hydrogen-bomb war it is quite clear that practically everybody in London would perish. A shower of hydrogen bombs would almost certainly sterilize large agricultural areas, and the resulting famine would be fearful.

But we are talking of the current tests, in peacetime. I do not expect disaster from them. I think those who may have been showered with radio-active ash, whose fishing catches have been damaged or destroyed, undoubtedly have every right to complain.

But I do not foresee a rain of radio-active ash comparable with the phenomena we saw after the explosion of the Krakatoa Volcano in 1883 (which I remember well), I do not think that, so long as the explosions are few, marine life will be grievously affected.

It is affected now by oil pollution, isn't it — though that is much less dramatic a story?

Do *you think that a feeling of dread and uncertainty at the back of people's minds might have an evil social effect?*

Well, you know, it isn't an effect that lasts long. As with the atom bomb at first, people get into a state; but after a little while they forget it.

If you have perpetually mounting crises, of course, it will be different. The truth is, though, that the thought of an old peril, however great, will not distract people from their daily jobs.

You will have observed that since the first atom bombs were exploded the birth-rate has continued to go up. That is a reliable test.

I should say that the fear of unemployment, which is something everyone understands, has a much greater social effect than the fear of atom bombs.

And the international effects? Do we seem to you to have reached a strategic stalemate? Is there now a new basis for discussion between Russia and the West?

I think the existence of the hydrogen bomb presents a perfectly clear alternative to all the Governments of the world. Will they submit to an international authority, or shall the human race die out?

I am afraid that most Governments and most individuals will refuse to face that alternative. They so dislike the idea of international government that they dodge the issue whenever they can.

Ask the man in the street if he is prepared to have the British Navy partly under the orders of Russians. His hair will stand on end.

Yet that is what we must think about.

You see no virtue in any proposal that the experiments should be stopped?

None whatever, unless we have found a way of causing the Russian experiments to be stopped, too.

In my opinion, there is only one way. It is to convince the Russians beyond doubt that they can win no victory: that they cannot ever Communize the world with the hydrogen bomb.

Perhaps they are beginning to feel that. It seems to me to be significant that the Russian leaders are now allowing the Russian people to know of the devastation to be expected from an atomic war.

But I would hasten the process. I would invite all the Governments of the world, and particularly the Russians, to send observers to see the results of the American tests. It ought to be made as plain as it can be made.

There is one more thing we should do. We should diminish the anti-Communist tirades that are now so freely indulged in.

We should try hard to bring about a return to international good manners. That would be a great help.

And if — or when — the Russians are convinced?

I think it ought to be possible to lessen the tension and to satisfy the Russians that there is no promise for them in atomic war. Then the first, vital step will have to be taken.

We shall have to set up an arrangement under which all fissionable raw material is owned by an international authority, and is only mined and processed by that authority. No nation or individual must have access to fissionable raw material.

And there would have to be an international inspectorate to ensure that this law is maintained.

The Russians have a morbid fear of being inspected. We shall have to help them to overcome it. For until they are agreeable to it nothing can be effectively done.

The H-bomb tests must be helping to persuade them. Hence to put off the tests would simply be to put off the day of agreement. It goes without saying that we, too, must always be ready to negotiate and to agree.

Once this first, vital agreement has been reached it should be possible, gradually, to extend international control.

That is the only answer I can see.

Pp. 90-111 (1954-1955)

But all this was the daily background and the relief from the dark world of international affairs in which my chief interest lay. Though the reception accorded *Human Society in Ethics and Politics* was so amiable, its publication had failed to quiet my uneasiness. I felt I *must* find some way of making the world understand the dangers into which it was running blindly, head-on. I thought that perhaps if I repeated part of *Human Society* on the BBC it would make more impression than it had hitherto made. In this, however, I was thwarted by the refusal of the BBC to repeat anything that had already been published. I therefore set to work to compose a new dirge for the human race.

Even then, in the relatively early days of the struggle against nuclear destruction, it seemed to me almost impossible to find a fresh way of putting what I had already, I felt, said in so many different ways. My first draft of the broadcast was an anaemic product, pulling all the punches. I threw it away at once, girded myself up and determined to say exactly how dreadful the prospect was unless measures were taken. The result was a distilled version of all that I had said theretofore. It was so tight-packed that anything that I have since said on the subject can be found in it at least in essence. But the BBC still made difficulties, fearing that I should bore and frighten many listeners. They asked me to hold a debate, instead, with a young and cheerful footballer who could offset my grim forebodings. This seemed to me utterly frivolous and showed so clearly that the BBC authorities understood nothing of what it was all about that I felt desperate. I refused to accede to their pleadings. At last, it was agreed that I should do a broadcast in December by myself. In it, as I have said, I stated all my fears and the reasons for them. The broadcast, now called "Man's Peril," ended with the following words: "There lies before us, if we choose, continual progress in happiness, knowledge, and wisdom. Shall we, instead, choose death, because we cannot forget our quarrels? I appeal, as a human being to human beings: remember your humanity, and forget the rest. If you can do so, the way lies open to a new Paradise; if you cannot, nothing lies before you but universal death."

The broadcast had both a private and a public effect. The private effect was to allay my personal anxiety for a time, and to give me a feeling that I had found words adequate to the subject. The public effect was more important. I received innumerable letters and requests for speeches and articles, far more than I could well deal with. And I learned a great many facts that I had not known before, some of them rather desolating: a Battersea County Councillor came to see me and told me of the provisions that the Battersea Council had promulgated that were to be followed by all the inhabitants of that district in case of nuclear attack. Upon hear-

ing the warning siren, they were to rush to Battersea Park and pile into buses. These, it was hoped, would whisk them to safety in the country.

Almost all the response to the broadcast of which I was aware was serious and encouraging. But some of my speeches had farcical interludes. One of them I remember with some smug pleasure: a man rose in fury, remarking that I looked like a monkey; to which I replied, "Then you will have the pleasure of hearing the voice of your ancestors."

I received the prize given by Pears Cyclopaedia for some outstanding work done during the past year. The year before, the prize had been given to a young man who ran a mile in under four minutes. The prize cup which I now have says "Bertrand Russell illuminating a path to Peace 1955."

One of the most impressive meetings at which I spoke was held in April 1955, in memory of the Jews who died in Warsaw in February 1943. The music was tragic and beautiful, and the emotion of the assembled company so deep and sincere as to make the meeting very moving. There were records made of my speech and of the music.

Among the first organizations to show a pronounced interest in my views were the World Parliamentarians and, more seriously perhaps, the Parliamentary World Government Association, with whom I had many meetings. They were to hold joint meetings in Rome in April 1955, at which they invited me to speak. We were put up, oddly enough, in the hotel in which I had stayed with my aunt Mande on my first trip to Rome over a half century before. It was a cold barracks that had ceased to provide meals for its guests, but was in a pleasant part of the old city. It was sprang and warm. It was a great pleasure to wander about the city and along the Tiber and up the Pincio for the otherwise unprovided meals. I found the Roman meetings very moving and interesting. I was happy that my speeches seemed to affect people, both at the meeting in the Chamber of Deputies and elsewhere. At all of them there were very mixed audiences. . . .

Meantime, as I assessed the response that my broadcast had achieved and considered what should be done next, I had realized that the point that I must concentrate upon was the need of co-operation among nations. It had occurred to me that it might be possible to formulate a statement that a number of very well-known and respected scientists of both capitalist and Communist ideologies would be willing to sign calling for further joint action. Before taking any measures, however, I had written to Einstein to learn what he thought of such a plan. He had replied with enthusiasm, but had said that, because he was not well and could hardly keep up with present commitments, he himself could do nothing to help beyond sending me the names of various scientists who, he thought, would be sympathetic. He had begged me, nevertheless, to carry out my idea and to formulate the statement myself. This I had done, basing the statement upon my Christmas broadcast, "Man's Peril." I had drawn up a list of scientists of both East and West and had written to them, enclosing the statement, shortly before I went to Rome with the Parliamentarians. I had, of course, sent the statement to Einstein for his approval, but had not yet heard what he thought of it and whether he would be willing to sign it. As we flew from Rome to Paris, where the World Government Association were to hold further meetings, the pilot announced the news of Einstein's death. I felt shattered, not only for the obvious reasons, but because I saw my plan falling through without his support. But, on

my arrival at my Paris hotel, I found a letter from him agreeing to sign. This was one of the last acts of his public life.

While I was in Paris I had a long discussion about my plan with Frédéric Joliot-Curie. He warmly welcomed the plan and approved of the statement except for one phrase: I had written, "it is feared that if many bombs are used there will be universal death — sudden only for a fortunate minority, but for the majority a slow torture of disease and disintegration." He did not like my calling the minority "fortunate." "To die is not fortunate," he said. Perhaps he was right. Irony, taken internationally, is tricky. In any case, I agreed to delete it. For some time after I returned to England, I heard nothing from him. He was ill, I learned later. Nor could I induce an answer from various other important scientists. I never did hear from the Chinese scientist to whom I had written. I think the letter to him was probably misaddressed. Einstein had advised me to enlist the help of Niels Bohr, who, he thought, would certainly be in favour of my plan and my statement. But I could achieve no reply from him for many weeks in spite of repeated letters and telegrams. Then came a short letter saying that he wished to have nothing to do with either plan or statement. The Russian Academicians, still suspicious of the West, also refused to sign, although they wrote commending the plan with some warmth. After some correspondence, Professor Otto Hahn refused to sign, because, I understood, he was working for the forthcoming "Mainau Declaration" of scientists. This declaration was already in preparation, but seemed to me to be somewhat emasculated by the fact that it was intended to include among its signatories only scientists of the West. Fortunately, others who signed the Mainau Declaration agreed with me and signed both. My most personal disappointment, was that I could not obtain the signature of Lord Adrian, the President of the Royal Society and Master of my College, Trinity. I knew that he agreed with the principles in my broadcast, which were those of the manifesto that I hoped he would sign. He had himself spoken publicly in similar vein. And I had been pleased when I learned that Trinity wished to have in its Library a manuscript of "Man's Peril." But when I discussed my statement or manifesto with him I thought I understood why he was reluctant to sign. "It is because it is too eloquent, isn't it?" I asked. "Yes," he said. Many of the scientists to whom I wrote, however, at once warmly agreed to sign, and one, Linus Pauling, who had heard of the plan only at second hand, offered his signature. I was glad to accept the offer.

When I look back upon this time I do not see how the days and nights provided time to get through all that I did. Journeys to Rome and Paris and again to Scotland, family troubles, arrangements to settle in North Wales for the holidays, letters, discussions, visitors, and speeches. I wrote innumerable articles. I had frequent interviews and much correspondence with an American, R. C. Marsh, who was collecting and editing various early essays of mine which appeared the following year under the title *Logic and Knowledge.* And I was also preparing my book *Portraits from Memory* for publication in 1956. In January, 1955, I gave a lecture at the British Academy on J. S. Mill, which I had considerable difficulty in composing. I had already spoken so often about Mill. But the speech had one phrase that I cherish: in speaking about the fact that propositions have a subject and a predicate, I said it had led to "three thousand years of important error." And the speech was acclaimed in a most gratifying manner. The audience rose, thumped and clapped.

June came and still all the replies to my letters to the scientists had not been received. I felt that in any case some concrete plan must be made as to how the manifesto should be publi-

cized. It seemed to me that it should be given a dramatic launching in order to call attention to it, to what it said and to the eminence of those who upheld it. After discarding many plans, I decided to get expert advice. I knew the editor of the *Observer* slightly and believed him to be liberal and sympathetic. He proved at that time to be both. He called in colleagues to discuss the matter. They agreed that something more was needed than merely publishing the fact that the manifesto had been written and signed by a number of eminent scientists of varying ideologies. They suggested that a press conference should be held at which I should read the document and answer questions about it. They did far more than this. They offered to arrange and finance the conference with the proviso that it not become, until later, public knowledge that they had done so. It was decided finally that the conference should take place on July 9th (1955). A room was engaged in Caxton Hall a week before. Invitations were sent to the editors of all the journals and to the representatives of foreign journals as well as to the BBC and representatives of foreign radio and TV in London. This invitation was merely to a conference at which something important of world-wide interest was to be published. The response was heartening and the room had to be changed to the largest in the Hall.

It was a dreadful week. All day long the telephone rang and the doorbell pealed. Journalists and wireless directors wanted to be told what this important piece of news was to be. Each hoped, apparently, for a scoop. Three times daily someone from the *Daily Worker* rang to say that their paper had not been sent an invitation. Daily, three times, they were told that they had been invited. But they seemed to be so used to being cold-shouldered that they could not believe it. After all, though they could not be told this, one purpose of the manifesto was to encourage cooperation between the Communist and the non-Communist world. The burden of all this flurry fell upon my wife and my housekeeper. I was not permitted to appear or to speak on the telephone except to members of the family. None of us could leave the house. I spent the week sitting in a chair in my study trying to read. At intervals, I was told later, I muttered dismally, “This is going to be a damp squib.” My memory is that it rained during the entire week and was very cold.

The worst aspect of the affair was that not long before this I had received a letter from Joliot-Curie saying that he feared that, after all, he could not sign the manifesto. I could not make out why he had changed. I begged him to come to London to discuss the matter, but he was too ill. I had been in constant touch with Dr. E. H. S. Burhop in order that the manifesto should not in any way offend those of Communist ideology. It was largely due to his efforts that the night before the conference was scheduled to take place Monsieur Biquard came from Paris to discuss with Burhop and myself Joliot-Curie’s objections. Monsieur Biquard has since taken Joliot-Curie’s place in the World Federation of Scientific Workers. They arrived at 11:30 P.M. Sometime after midnight we came to an agreement. The manifesto could not be changed from the form it had had when Einstein had signed it and, in any case, it was too late to obtain the agreement of the other signatories to a change. I suggested, therefore that Joliot-Curie’s objections be added in footnotes where necessary and be included in my reading of the text the following morning. I had hit upon this scheme in dealing with an objection of one of the Americans. Joliot-Curie’s emissary at last agreed to this and signed the manifesto for him, as he had been empowered to do if an agreement could be reached.

Another difficulty that had beset me was the finding of a chairman for the meeting who would not only add lustre to the occasion but would be equipped to help me in the technical

questions that would surely be asked. For one reason or another everyone whom I approached refused the job. I confess that I suspected their refusal to have been the result of pusillanimity. Whoever took part in this manifesto or its launching ran the risk of disapproval that might, for a time at any rate, injure them or expose them to ridicule, which they would probably mind even more. Or perhaps their refusal was the result of their dislike of the intentional dramatic quality of the occasion. Finally, I learned that Professor Josef Rotblat was sympathetic. He was, and still is, an eminent physicist at the Medical College of St. Bartholomew's Hospital and Executive Vice-President of the Atomic Scientists' Association. He bravely and without hesitation agreed to act as Chairman and did so when the time came with much skill. From the time of that fortunate meeting I have often worked closely with Professor Rotblat and I have come to admire him greatly. He can have few rivals in the courage and integrity and complete self-abnegation with which he has given up his own career (in which, however, he still remains eminent) to devote himself to combatting the nuclear peril as well as other allied evils. If ever these evils are eradicated and international affairs are straightened out, his name should stand very high indeed among the heroes.

Amongst others who encouraged me at this meeting were Alan Wood and Mary Wood, who, with Kenneth Harris of the *Observer,* executed a variety of burdensome and vexatious drudgeries to make the occasion go off well. And in the event it did go well. The hall was packed, not only with men, but with recording and television machines. I read the manifesto and the list of signatories and explained how and why it had come into being. I then, with Rotblat's help, replied to questions from the floor. The journalistic mind, naturally, was impressed by the dramatic way in which Einstein's signature had arrived. Henceforth, the manifesto was called the Einstein-Russell (or *vice-versa)* manifesto. At the beginning of the meeting a good deal of scepticism and indifference and some out and out hostility was shown by the press. As the meeting continued, the journalists appeared to become sympathetic and even approving, with the exception of one American journalist who felt affronted for his country by something I said in reply to a question. The meeting ended alter two and a half hours with enthusiasm and high hope of the outcome of the call to scientists to hold a conference.

When it was all over, however, and we had returned to our flat at Millbank where we were spending the week-end, reaction set in. I recalled the horrid fact that in making various remarks about the signatories I had said that Professor Rotblat came from Liverpool. Although he himself had not seemed to notice the slip, I felt ashamed. The incident swelled to immense proportions in my mind. The disgrace of it prevented me from even speaking of it. When we walked to the news hoardings outside of Parliament to see if the evening papers had noted the meeting and found it heralded in banner headlines, I still could not feel happy. But worse was to come. I learned that I had omitted Professor Max Born's name from the list of signatories, had, even, said that he had refused to sign. The exact opposite was the truth. He had not only signed but had been most warm and helpful. This was a serious blunder on my part, and one that I have never stopped regretting. By the time that I had learned of my mistake it was too late to rectify the error, though I at once took, and have since taken, every means that I could think of to set the matter straight. Professor Born himself was magnanimous and has continued his friendly correspondence with me. As in the case of most of the other signatories the attempt and achievement of the manifesto took precedence over personal feelings.

Word continued to pour in of the wide news coverage all over the world of the proclamation of the manifesto. Most of it was favourable. My spirits rose. But for the moment I could do nothing more to forward the next step in opposition to nuclear armament. I had to devote the next few weeks to family matters. During the dreadful week before the proclamation when the telephone was not ringing about that subject it was ringing to give me most distressing news about my elder son's illness. I now had to devote all my mind to that and to moving my family for the summer to our new house in North Wales. The latter had been painted and refurbished during our absence under the kind auspices of Rupert and Elizabeth Crawshay-Williams. The necessary new furnishing to augment what we had bought from the estate of the former tenant had been bought in London during five afternoons at the end of June. So all was more or less ready for us. We went there to prepare for the coming of the three grandchildren as soon as possible. I was glad to escape from London. Most people seem to think of me as an urban individual, but I have, in fact, spent most of my life in the country and am far happier there than in any city known to me. But, having settled the children with the nurse who had for some years taken care of them at Richmond I had to journey to Paris again for another World Government Conference. It was held in the Cité Universitaire and the meetings proved interesting. There were various parties in connection with it, some official and some less so. One was at the Quai d'Orsay. At one, a cocktail party held in the house of the great couturiére Schiaparelli, I went out into the garden where I was quickly surrounded by a group of women who thought that women should do something special to combat nuclear warfare. They wished me to support their plans. I am entirely in favour of anyone doing what they can to combat nuclear warfare, but I have never been able to understand why the sexes should not combat it together. In my experience, fathers, quite as much as mothers, are concerned for the welfare of their young. My wife was standing on a balcony above the garden. Suddenly she heard my voice rise in anguished tones: "But, you see, I am not a mother!" Someone was dispatched at once to rescue me.

After this Paris conference at the end of July, we returned to Richmond for another congress. The Association of Parliamentarians for World Government had planned in June to hold a congress for both Eastern and Western scientists and others if they could manage it during the first days of August. They, as I did, believed that the time had come for Communists and non-Communists to work together. I had taken part in their deliberations and was to speak at the first meeting. Three Russians came from the Moscow Academy as well as other people, particularly scientists, from many parts of the world. The Russians were led by Academician Topchiev of whom I was later to see much and whom I grew to respect and greatly like. This was the first time since the War that any Russian Communists had attended a conference in the West and we were all exceedingly anxious to have the meetings go well. In the main they did so. But there was a short time when, at a committee meeting towards the end of the second day, the Russians could not come to agreement with their Western colleagues. The organizers telephoned me and asked if I could do anything to soothe matters. Fortunately agreement was managed. And at the final meeting I was able to read the resolutions of the conference as having been reached unanimously. Altogether, the conference augured well for co-operation. I could return to Wales for a few weeks of real holiday with the happy feeling that things were at last moving as one would wish.

Naturally, all work did not stop even during the holiday. I had already been considering with Professors Rotblat and Powell how we could implement the scientists' manifesto, which

had called for a conference of scientists to consider all the matters concerning and allied to the nuclear dangers. Professor Joliot-Curie, who was himself too ill to take active part in our plans, encouraged us at long distance. We were fairly sure by this time of being able to get together a good group of scientists of both East and West.

In the early days of preparing the manifesto, I had hoped that I might be supported in it by the Indian scientists and Government. At the beginning of Nehru's visit to London in February 1955, my hope of it soared. Nehru himself had seemed most sympathetic. I lunched with him and talked with him at various meetings and receptions. He had been exceedingly friendly. But when I met Dr. Bahba, India's leading official scientist, towards the end of Nehru's visit, I received a cold douche. He had profound doubts about any such manifesto, let alone any such conference as I had in mind for the future. It became evident that I should receive no encouragement from Indian official scientific quarters. After the successful promulgation of the manifesto, however, Nehru's more friendly attitude prevailed. With the approval and help of the Indian Government, it was proposed that the first conference between Western and Eastern scientists be held in New Delhi in January 1957.

Throughout the early part of 1956, we perfected, so far as we could, our plans for the conference. By the middle of the year we had sent off invitations over my name to about sixty scientists. But 1956 was a year of bits and pieces for me, taken up chiefly by broadcasts and articles. An endless and pleasant stream of old friends and new acquaintances came and went. We decided to sell our Richmond house and move permanently to North Wales. We kept, however, as a *pied à terre* in London, our flat in Millbank, with its wonderful view of the river in which I delighted. Later, we were turned out of this flat for the modernization of Millbank. Politically, I took part in numberless meetings concerned with a variety of affairs, some to do with the troubles in Cyprus, some to do with World Government. (The World Government Association gave a dinner in my honour in February at the House of Commons. I have never felt sure how many of the people at the dinner knew that it had been announced as a dinner in my honour. At any rate, some of the speeches might have turned my head happily if only I could have believed them.) I was especially concerned with a campaign about the imprisonment of Morton Sobell in the United States.

At the time of the Rosenbergs' trial and death (one is tempted to say assassination) in 1951, I had paid, I am ashamed to say, only cursory attention to what was going on. Now, in 1956, in March, my cousin Margaret Lloyd brought Mrs. Sobell, Morton's Sobell's mother, to see me. Sobell had been kidnapped by the United States government from Mexico to be brought to trial in connection with the Rosenberg case. He had been condemned, on the evidence of a known perjuror, to thirty years' imprisonment, of which he had already served five. His family was trying to obtain support for him, and his mother had come to England for help. Several eminent people in America had already taken up cudgels on his behalf, but to no avail. People both here and in the United States appeared to be ignorant of his plight and what had led up to it. I remember talking of the case with a well-known and much admired Federal Court judge. He professed complete ignorance of the case of Morton Sobell and was profoundly shocked by what I told him of it. But I noted that he afterwards made no effort to get at the facts, much less to do anything to remedy them. The case seemed to me a monstrous one and I agreed to do all I could to call people's attention to it. A small society had already been formed in London to do this, and they agreed to help me. I wrote letters to the papers and articles on the matter.

One of my letters contained the phrase "a posse of terrified perjurors," which pleased me and annoyed those who did not agree with me. I was inundated by angry letters from Americans and others denying my charges and asking irately how I could be so bold as to call American justice into question. A few letters came from people, including members of the above-mentioned London group, who agreed with me, though no one in England, so far as I know, upheld my point of view publicly. I was generally and often venomously charged with being anti-American, as I often have been when I have criticized adversely any Americans or anything American. I do not know why, since I have spent long periods in that country and have many friends there and have often expressed my admiration of various Americans and American doings. Moreover, I have married two Americans. However — ten years later it had come to be generally agreed that the case against Morton Sobell did not hold water. The Court of Appeals pronounced publicly on the case in 1962-63. On reading the judges' verdict, I understood them to say that it was not worth granting Sobell a new trial. On appealing for advice from Sobell's defence lawyers on my interpretation of the verdict, I was informed: "It was terrible, though not quite so crude as you'd imagined." The defence lawyers had argued that "Ethel Rosenbergs Constitutional Fifth-Amendment rights had been violated during the trial, and that this had been fully established in a subsequent Supreme Court decision, known as the 'Grunewald' decision. This decision indicated that Ethel Rosenberg had been entitled to a new trial; and since her innocence would have established her husband's and Sobell's, they too were entitled to new trials. . . . The Rosenbergs, alas, were no longer around, but Sobell should have his day in court." Although his family continue their long, brave fight to obtain freedom for him, Morton Sobell remains in prison.*

Early in 1947 I had said in the House of Lords that in America "any person who favours the United Nations is labelled as a dangerous 'Red'." I was alarmed by such uncritical anti-Communism , especially as it was adopted increasingly by organizations purporting to be liberal. For this reason I felt obliged, early in 1953, to resign from the American Committee for Cultural Freedom. I remained Honorary President of the international Congress for Cultural Freedom. Three years later I was sent the proof of a book called *Was Justice Done? The Rosenberg-Sobell Case* by Malcolm Sharp, Professor of Law at the University of Chicago. It made it quite clear to me, and I should have thought to anyone, that there had been a miscarriage of justice. I denounced in the press the hysteria and police-state techniques which had been used against the Rosenbergs and Sobell. The response of the American Committee for Cultural Freedom seems even more absurd in the light of the evidence which has mounted during the intervening years than it seemed at the time. "There is no evidence whatsoever," the American Committee pronounced, "that the Federal Bureau of Investigation committed atrocities or employed thugs in the Rosenberg case. There is no support whatever for your charge that Sobell, an innocent man, was the victim of political hysteria. There is no ground whatever for your contention that either Sobell or the Rosenbergs were condemned on the word of perjurors, terrified or unterrified. . . . Your remarks on American judicial procedure, the analogy you draw between the technique of the Federal Bureau of Investigation and the policy (*sic*) methods of Nazi Germany or Stalin's Russia, constitute a major disservice to the cause of freedom and democracy." Having learned that the American branch approved of cultural freedom in Communist countries but not elsewhere, I resigned from the Congress for Cultural Freedom.

* Since this was written, Sobell has been released, his term having been commuted for good behavior.

But in the summer of 1956 things seemed to be moving in our direction so far as the proposed conference of scientists was concerned. Then, in October, two misfortunes overtook the world: the first was the Hungarian Revolt and its suppression; [**] the second was the Suez affair. In relation to the latter I felt shocked, as I said publicly, and sickened by our Governments machinations, military and other. I welcomed Gaitskell's speech, dry and late in coming though it was, because it said more or less officially a number of things that should have been said. But the loss of influence in international affairs which Great Britain must suffer in consequence of this ill-advised Suez exploit seemed to me well-nigh irreparable. In any case, it was obviously impossible to take the Western participants in the conference by the roundabout route then necessary to arrive in India in January 1957. So we had to replan our next move.

The problem was how the work was to be carried out and where such a conference should be held and, above all, how it could be financed. I felt very sure that the conference should not be bound by the tenets of any established body and that it should be entirely neutral and independent; and the other planners thought likewise. But we could find no individual or organization in England willing, if able, to finance it and certainly none willing to do so with no strings attached. Sometime before, I had received a warm letter of approbation for what I was doing from Cyrus Eaton in America. He had offered to help with money. Aristotle Onassis, the Greek shipping magnate, had also offered to help if the conference were to take place at Monte Carlo. Cyrus Eaton now confirmed his offer if the conference were to be held at his birthplace, Pugwash in Nova Scotia. He had held other sorts of conferences there of a not wholly dissimilar character. We agreed to the condition. Plans went ahead fast under the guidance of Professors Rotblat and Powell. They were greatly helped by Dr. Burhop and, then and later, by Dr. Patricia Lindop, a physicist of St. Bartholomew's Medical College. Her informed and dedicated devotion to the causes of peace and co-operation among scientists was, I found, comparable even to Professor Rotblat's. She managed her work, her children and household and the scientists with apparently care-free grace and tact. And the first conference took place in early July 1957, at Pugwash.

I was unable to go to this first conference because of my age and ill health. A large part of my time in 1957 was devoted to various medical tests to determine what was the trouble with my throat. In February, I had to go into hospital for a short time to find out whether or no I had cancer of the throat. The evening that I went in I had a debate over the BBC with Abbot Butler of Downside which I much enjoyed, and I think he did also. The incident went off as pleasantly as such a trying performance could do and it was discovered conclusively that I did not have cancer. But what did I have? And so the tests continued and I continued to have to live on baby's food and other such pabulum.

Since that time I have made several journeys abroad, though none so long as that to Pugwash. I fight shy of longer journeys partly because I fear if I go to one country people in other countries who have pressed me to go there will be affronted. The only way around this, for one

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[*] I am sometimes asked why I did not at the time fulminate against the Russian suppression of the Hungarian Revolt. I did not because there was no need. Most of the so-called Western World was fulminating. Some people spoke out strongly against the Suez exploit, but most people were acquiescent.

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who is not an official personage, is to renounce distant travels. In 1958, however, I journeyed to a Pugwash conference in Austria. I stayed on after the meetings and, with my wife, made a journey by motor car. . . .

But to return to Pugwash — I was kept in close touch by letter and telephone with the proceedings of the first conference and was pleased with what I heard. We had decided that not only physicists but biological and social scientists should be invited to attend. There were twenty-two participants in all — from the United States, the Soviet Union, China, Poland, Australia, Austria, Canada, France, Great Britain, and Japan. The meetings were carried on in both English and Russian. It pleased me especially that it showed that real co-operation, such as we had hoped, could be achieved among scientists of extremely divergent "ideologies" and apparently opposing scientific as well as other views.

The conference was called the Pugwash Conference of Scientists and for the sake of continuity the movement has continued to be identified by the name Pugwash. It established among other things a "Continuing Committee" of five members, of which I was the Chairman, to organize further conferences. More important, it established a form that future conferences followed. A number of plenary meetings were held at which important papers were read. There were a greater number of meetings of the small committees set up at the start, at which particular aspects of the general subjects were discussed and decided. Most important of all, it was held in an atmosphere of friendliness. Perhaps the unique characteristic of this and subsequent Pugwash Conferences was the fact that the members consorted with each other in their spare time as well as during the scheduled meetings and grew to know each other as human beings rather than merely as scientists of this or that potentially inimical belief or nation. This most important characteristic was in large part made possible by the astute understanding by Cyrus Eaton of the situation and what we wished to accomplish and by his tactful hospitality.

As I was not present, I shall not attempt to describe in detail the action or findings of this or any of the other conferences. Professor Rotblat compiled an excellent and comprehensive history of this and the following seven conferences that were held up to the time of its publication in 1962. Suffice it to say here that there were three committees at the first conference: (1) on the hazards arising from the use of atomic energy; (2) on the control of nuclear weapons, which outlined the general objectives of disarmament which subsequent conferences discussed in detail; and (3) on the social responsibilities of scientists. The findings of the first, as Professor Rotblat points out, probably comprise the first agreement reached between scientists of East and West on the effects of nuclear tests. The third committee summarized its findings in eleven items of common belief which became, little more than a year later, the basis of what is known as the "Vienna Declaration." This first Pugwash conference published a statement that was formally endorsed by the Soviet Academy of Sciences and warmly welcomed in China, but less publicized and more slowly in the West.

The Continuing Committee first met in London in December 1957, and a further and similar conference, again made possible by Cyrus Eaton, was held at Lac Beauport in Canada in the spring of 1958. Then came a more ambitious endeavour: a large conference in September 1958, at Kitzbühel in Austria. It was made possible through the good offices of Professor Hans Thirring, under the auspices of the Theodor-Koerner Foundation. It was followed by meetings held in Víenna. At the former conferences no press or observers had been permitted to attend. At this third conference not only were observers present but they included members of the

families of the participants. At the great meetings at Vienna the press was in evidence. At the meeting in the Austrian Academy of Sciences on the morning of September 20th the Vienna Declaration was promulgated. It was a statement that had been accepted with only one abstention by all the members of the conference at Kitzbühel and it forms, as Professor Rotblat has said, the *credo* of the Pugwash movement. It is too long to be included here, but may be found in his history. The meeting was opened by the President of Austria, Dr. Adolf Schaef, for the conference. had been given a very generous welcome by the Austrian State. Amongst others of both East and West I spoke in my capacity of President of the .movement and Chairman of the Continuing Committee. It seemed to me an impressive and unforgettable formal occasion. In my speech I recalled my grandfather's speech at a Congress (also in Vienna) during the Crimean War, in which he spoke in favour of peace, but was overruled. Following the great meeting, we attended the President's lunch in the Alter Hof. Then came an important meeting when ten of the participants in the conference addressed ten thousand people at the Wiener Stadhalle — but this I could not attend.

The most obvious achievement of the Pugwash movement has been the conclusion, for which it was largely responsible, of the partial Test-ban Treaty, which forbade nuclear tests above ground in peace time. I, personally, was not and am not happy about this partial ban. It seems to me to be, as I should expect it to be, a soother of consciences and fears that should not be soothed. At the same time, it is only a slight mitigation of the dangers to which we are all exposed. It seemed to me more likely to be a hindrance than a help towards obtaining the desired total ban. Nevertheless, it showed that East and West could work together to obtain what they wished to obtain and that the Pugwash movement could be effective when and where it desired to be. It was rather a give-away of the *bona fides* of the various "Disarmament Conferences" whose doings we have watched with some scepticism for a good many years.

The Pugwash movement now seems to be firmly established and part of the respectable progress of scientific relations with international affairs. I myself have had little to do directly with its progress in the last years. My interest turned to new plans towards persuading peoples and Governments to banish war and in particular weapons of mass extermination, first of all nuclear weapons. In the course of these fresh endeavours, I felt that I had become rather disreputable in the eyes of the more conservative scientists. The Pugwash movement held a great meeting of scientists from all over the world in London in September 1962. I was to speak about the founding of the movement and I warned my friends that I might be hissed — as I was fully convinced that I should be. I was deeply touched by being given a standing ovation when I rose to speak which included, I was told, all the participants, all, that is, save Lord Hailsham. He was present in his capacity as the Queen's Minister of Science. He was personally, I think, friendly enough to me, but, weighed down by office, he sat tight. That was the last occasion on which I have taken public part in a Pugwash conference.

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PRESS CONFERENCE by THE EARL RUSSELL
at Caxton Hall, Westminster, on
Saturday, 9th July, 1955

Professor J. ROTBLAT: Ladies and gentlemen, this conference was called by Lord Bertrand Russell in order to make public a statement signed by a number of scientists on the significance of nuclear warfare. I hope that each of you received a copy of the statement. I am go-

ing to call on Lord Russell to give you a short summary of this statement and afterwards it will be open to you to ask questions relating to this topic. Lord Russell.

Earl RUSSELL: Ladies and gentlemen, the purpose of this conference is to bring to your notice, and through you to the notice of the world, a statement signed by eight of the most eminent scientists in the field cognate to nuclear warfare, about the perils that are involved in nuclear warfare and the absolute necessity therefore of avoiding war.

I will just read you a brief abstract here which I think you already have:

> The accompanying statement, which has been signed by some of the most eminent scientific authorities in different parts of the world, deals with the perils of a nuclear war. It makes it clear that neither side can hope for victory in such a war, and that there is a very real danger of the extermination of the human race by dust and rain from radioactive clouds. It suggests that neither the public nor the Governments of the world are adequately aware of the danger. It points out that an agreed prohibition of nuclear weapons, while it might be useful in lessening tension, would not afford a solution, since such weapons would certainly be manufactured and used in a great war in spite of previous agreements to the contrary. The only hope for mankind is the avoidance of war. To call for a way of thinking which shall make such avoidance possible is the purpose of this statement.
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> The first move came as a collaboration between Einstein and myself. Einstein's signature was given in the last week of his life. Since his death I have approached men of scientific competence both in the East and in the West, for political disagreements should not influence men of science in estimating what is probable, but some of those approached have not yet replied. I am bringing the warning pronounced by the signatories to the notice of all the powerful Governments of the world in the earnest hope that they may agree to allow their citizens to survive.

Now I should like to say just a little about the genesis of this statement. I think it was an outcome of a broadcast which I gave on the 23rd December last year on the BBC on the perils of nuclear war. I had appreciative letters from various people, among others from Professor Joliot-Curie, the eminent French man of science, and I was particularly pleased at getting an appreciative letter from him because of his being a noted Communist.

I thought that one of the purposes that I had in view was to build a bridge between people of opposing political opinions. That is to say, to unite men of science on a statement of facts which would leave out all talk of what people thought in the matter of politics. I wrote to Einstein suggesting that eminent men of science should do something dramatic about nuclear war, and I got a reply from him saying that he agreed with every word. I therefore drew up a draft, after consultation with a certain number of people, which I sent to Einstein and he — being already not in very good health — suggested, I quote his own phrase, that I "should regard myself as dictator of the enterprise" because I think chiefly his health was not equal to doing it. When I sent him the draft he replied, "I am gladly willing to sign your excellent statement." I received this letter on the very day of his death and after I had received news of his death so that this was I suppose about the very last public act of his life.

The aims of drawing up the statement were to keep to what men of science as such can pronounce upon, to avoid politics and thus to get signatures both from the Right and from the Left. Science ought to be impartial, and I thought that one could get a body of agreement among men of differing politics on the importance of avoiding nuclear war, and I think that in that respect this document is fairly successful.

There are, apart from myself, eight signatories* of the document. All eight are exceedingly eminent in the scientific world. Most of them are nuclear physicists, some in a field which is very important in this connection, geneticists, and men who know about mutations caused by radiation, a very important subject which arises when you are considering nuclear warfare. But they were chosen solely and only for their scientific eminence and with no other view.

I applied to eighteen, I think, altogether and of these, half, or nearly half, eight in fact, agreed. Some I have not yet heard from for various reasons. In particular, I applied to the most eminent of Chinese physicists, Dr. Li Sze Kuang, and I have not yet had his answer. None of the answers I have received were unsympathetic. Those who did not sign had various good reasons, for instance, that they had official positions or were engaged in some official work which made it difficult, but nobody either of the Right or of the Left replied in a manner that was unsympathetic.

I had one signature from Professor Infeld of the University of Warsaw, who was joint author with Einstein of two books. I had not a signature, but a very sympathetic letter, from Skobeltsyn of Moscow. Professor Joliot-Curie was, in the first place, son-in-law of the discoverer of radium, but he does not depend on that for his fame, he is a Nobel Prize-winner. He is the sixth of the eight who has got the Nobel Prize for work of scientific character; and the other two I think probably will get the Nobel Prize before very long! That is the order of eminence of these men.

Mr. Joliot-Curie made two reservations, one of which was of some importance, the other not so important. I spoke of the necessity for limitations of sovereignty and he wants it added that these limitations are to be agreed by all and in the interest of all, and that is a statement which I entirely agreed to. Then there is another reservation that he made. I say, “Shall we put an end to the human race: or shall mankind renounce war?” and he wants to say, “Shall mankind renounce war as a means of settling differences between states?” With these limitations he agreed to sign the document.

Professor Muller also made a very small reservation that seemed only to be explaining what I had meant.

I will say just a few words about these men, some of whom possibly are not so well-known in the journalistic world as they are in the scientific world. They consist of two British scientists, two Americans — Einstein himself, whom I do not reckon among Americans, because Einstein’s nationality is somewhat universal — one Pole, one Frenchman , and one Japanese. Professor Rotblat I am very happy to have here. He is, as you know, Director of Research in Nuclear Physics in Liverpool.* He did a very interesting piece of what you might almost call detective work about the Bikini bomb. Those of you who are old enough may possibly re-

* Ten — Professor Max Born and Professor Linus Pauling to be added.

* Professor of Physics in the University of London.

member that in 1945 people were quite shocked by the atom bomb. Well that seems now ancient history if you think of the atom bomb as something like bows and arrows.

We advanced from that to the H-bomb which was very much worse than the atom bomb and then it turned out, at first I think through the detective work of Professor Rotblat and afterwards by the admission of the American authorities, that the bomb exploded at Bikini was very much worse than an H-bomb. The H-bomb now is ancient history. You have a twofold trigger arrangement. You have first uranium 235 to set off the hydrogen. Then you have the hydrogen to set off uranium 238, of which there are vast slag heaps discarded in producing uranium 235. Now we use uranium 238 for the purpose, it is very much cheaper to make, the bombs are very much more destructive when they are made, and so you see science advances rapidly. So far the Bikini bomb is the latest thing, but we cannot tell where we are going to come to.

I think that this statement, as I conceive it, is only a first step. It will be necessary to go on to get the men of science to make -authoritative pronouncements on the facts and I think that should be followed by an international congress of men of science from all scientific countries at which the signatories would, I hope, propose some such resolution as I have suggested at the ,end of this statement. I think resolutions with something of those terms could be suggested at the various national congresses that take place in due time. I think that the men of science should make the public and the governments of the world aware of the facts by means of a widespread popular campaign. You know it is a very difficult thing to get men of science to embark on popular campaigns; they are not used to that sort of thing and it does not come readily to them, but it is their duty, I think, at this time to make the public aware of things; they have to persuade the world to avoid war, at first by whatever expedients may suggest themselves, but ultimately by some international machinery that shall make the avoidance of war not a matter of day-to-day expedients but of world organization. I think they should emphasize that science, which has come to have a rather sinister meaning in the minds of the general public, I think, if once this question of war were out of the way, would be capable of conferring the most enormous benefits upon mankind and making the world a very much happier place than it has ever been before. I think they should emphasize that as well as the dangers that arise through war.

I am here to answer questions, and I should be very happy to do my best to answer any questions that any of you may wish to ask.

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The nuclear peril represented a danger which was likely to last as long as governments possessed nuclear weapons, and perhaps even longer if such destructive objects get into private hands. At first I imagined that the task of awakening people to the dangers should not be very difficult. I shared the general belief that the motive of self-preservation is a very powerful one which, when it comes into operation, generally overrides all others. I thought that people would not like the prospect of being fried with their families and their neighbours and every living person that they had heard of. I thought it would only be necessary to make the danger known and that, when this had been done, men of all parties would unite to restore previous safety. I found that this was a mistake. There is a motive which is stronger than self-preservation: it is the desire to get the better of the other fellow. I had discovered an important

political fact that is often overlooked, as it had been by me: people do not care so much for their own survival — or, indeed, that of the human race — as for extermination of their enemies. The world in which we live is one in which there is constant risk of universal death. The methods of putting an end to this risk are obvious to all, but they involve a very tiny chance that someone may play the traitor, and this is so galling that almost everybody prefers running the risk of nuclear war to securing safety. I thought, and I still think, that, if the risk of total destruction were made sufficiently vivid, it would have the desired effect. But how was an individual, or a collection of individuals, to bring about this vividness? In company with those who thought like me, I tried various methods with varying degrees of success. I tried first the method of reason: I compared the danger of nuclear weapons with the danger of the Black Death. Everybody said, "How true," and did nothing. I tried alerting a particular group, but though this had a limited success, it had little effect on the general public or Governments. I next tried the popular appeal of marches of large numbers. Everybody said, "These marchers are a nuisance." Then I tried methods of civil disobedience, but they, too, failed to succeed. All these methods continue to be used, and I support them all when possible, but none has proved more than partially efficacious. I am now engaged in a new attempt which consists of a mixed appeal to Governments and public. So long as I live, I shall continue the search and in all probability I shall leave the work to be continued by others. But whether mankind will think itself worth preserving remains a doubtful question.

The Russell-Einstein Manifesto

Issued in London, 9 July 1955

Bertrand Russell and Albert Einstein

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

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

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

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

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

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

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

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

Many warnings have been uttered by eminent men of science and by authorities in military strategy. None of them will say that the worst results are certain. What they do say is that these

results are possible, and no one can be sure that they will not be realized. We have not yet found that the views of experts on this question depend in any degree upon their politics or prejudices. They depend only, so far as our researches have revealed, upon the extent of the particular expert's knowledge. We have found that the men who know most are the most gloomy.

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

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

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

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

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

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

Resolution:

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

"In view of the fact that in any future world war nuclear weapons will certainly be employed, and that such weapons threaten the continued existence of mankind, we urge the governments of the world to realize, and to acknowledge publicly, that their purpose cannot be furthered by

a world war, and we urge them, consequently, to find peaceful means for the settlement of all matters of dispute between them."

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

Eliminating Nuclear Weapons: the International Debate

Rebecca Johnson, The Acronym Institute

10 November 1997

Since the end of the Cold War, the rationale for the possession of nuclear weapons has been put under closer scrutiny, resulting in increased pressure for nuclear disarmament, as military strategists and international governments have joined forces with the anti-nuclear activists of an earlier era. In 1993, the Pugwash Conferences on Science and World Affairs identified the core questions in the title of their book, which provided the inspiration for the Australian government to set up the Canberra Commission: is a nuclear weapon free world a) desirable and b) feasible?[1] These questions remain fundamental. The positions adopted by the most important actors in the nuclear debate are largely determined by their assessments of the answers.

Treaty obligations and public opinion make it unacceptable these days to assert that nuclear weapons should be kept forever, but opinion among academics and policymakers in the five declared nuclear weapons states (NWS) is divided between those who argue for nuclear stability at much lower levels[2] and those who advocate going to zero nuclear weapons. Discussions about the morality, rights and necessities of possession have transmuted to a large degree into arguments about the utility of nuclear weapons. Essentially, this debate concerns the function and role of nuclear forces in a multipolar world.

It is generally agreed that with the end of the Cold War, the tightly controlled conditions of the Soviet State have been overtaken by economic and social chaos, giving rise to organised crime, with corruption and financial desperation afflicting the military and nuclear establishments. We therefore confront the irony that Soviet disintegration may result in greater nuclear threats, from "loose nukes" and terrorists. Such threats, one argument goes, must be met by the continued strength of nuclear arsenals in the West.[3] Alternatively, others argue that nuclear weapons are not only incapable of deterring or being credibly used to counter terrorist threats, but they pre-eminently present a proliferation incentive, the risks of which have been greatly increased by the enhanced post-Cold War opportunities for acquiring weapons materiel and technology. From an essentially similar analysis of conditions in Russia, therefore, arguments for nuclear disarmament and for nuclear build-up and modernisation can simultaneously be derived.

The nuclear and military establishments of the NWS place stringent conditions on any consideration of eliminating nuclear weapons. NATO's post Cold War doctrine views nuclear weapons as instruments of "last resort" and rests on the ambiguity of potential first use.[4] NATO doctrine underpins US and British nuclear policy, but France makes some nuanced distinctions, emphasising the role of deterrence in avoiding, not winning war. Russia renounced

[1] J Steinberger, B Udgaonkar, and J Rotblat (eds.), A Nuclear Weapon-Free World: Desirable? Feasible? A Pugwash Monograph, Westview Press, Oxford, 1993.

[2] This position encompasses both those who argue for modernisation of nuclear arsenals to meet new threat assessments and those who hold that much lower numbers in the current arsenals would remain sufficient for deterrence purposes.

[3] "Nuclear weapons remain essential to deter against the gravest threats, actual and foreseeable," US Department of Defense testimony to Congress, February 12, 1997.

[4] London Declaration on a Transformed North Atlantic Alliance, published in *Survival,* Vol. XXXII, no 5, September/October 1990, pp 469-472.

the Soviet Union's declaratory policy of no first use in 1992 and is emphasising conventional deterrence and looking again at the utility of tactical nuclear weapons in light of the weakness of its conventional forces.[1] China's policy upholds the right to self defence and overtly eschews deterrence, although it is not clear how this distinction is manifested in the configuration of China's nuclear forces. China also backs the concept of a nuclear weapon convention, having long advocated an international "convention on the complete prohibition and thorough destruction of nuclear weapons."[2] The three undeclared nuclear-weapon-capable states, India, Israel and Pakistan, appear to embrace postures of existential deterrence based on nuclear ambiguity. At the same time, India and Pakistan reject the "unequal" approach to non-proliferation and disarmament embodied in the 1968 Nuclear Non-Proliferation Treaty (NPT) and place themselves at the forefront of non-aligned calls for a binding time-table for nuclear disarmament. Acceptance by the NWS of such a time-frame for eliminating their nuclear arsenals has now been set as a precondition for Indian (and therefore Pakistani) accession to multilateral measures, such as a comprehensive test ban treaty (CTBT) or fissile material production ban (fissban).

Among the non-nuclear weapon states (NNWS), the ostensible debate centres not on *whether* nuclear weapons should be eliminated, but how. In particular, the principal divide is between those who advocate a time-bound framework for elimination and those who argue for a step-by-step approach. However, the NNWS are not a homogeneous group, but have different interests. In particular, their support for particular strategies for nuclear disarmament depends on whether they are part of a nuclear alliance. In policy at least, NATO countries, Japan and South Korea, for example, continue to attach importance to the US nuclear umbrella in their political and security calculations. Some of these countries may appear to advocate nuclear disarmament because it is demanded by domestic public opinion; in real terms their policy backing may be directed towards increasing the safety and security of nuclear arsenals and reducing their size, rather than their complete elimination.

The "blueprint versus incrementalist" approaches are generally portrayed as mutually exclusive alternatives. Within each broad view, however, a number of different solutions are being proposed, some of which intersect with or would reinforce alternative strategies. This essay provides a short overview of the major arguments and their proponents.

Legal obligation

The starting point for the legal obligation on eliminating nuclear weapons is article VI of the NPT, which states: "Each of the Parties to the Treaty undertakes to pursue negotiations in good faith on effective measures relating to cessation of the nuclear arms race at an early date and to nuclear disarmament, and on a treaty on general and complete disarmament under strict and effective international control." The terms of this commitment were sufficiently vague as to enable the NWS to continue with an unchecked nuclear arms race for a further two decades be-

[1] Vladimir Belous, "Will START II be Ratified?", in *Yaderny Kontrol* No 3, Moscow, Winter 1996/97, p. 8. Belous' arguments for the utility of tactical nuclear weapons, first elaborated in 1995, were subsequently endorsed by the Defence Minister, Igor Rodionov, in December 1996. See Nikolai Sokov, "Tactical nuclear weapons: new geopolitical realities or old mistakes? in *Yaderny Kontrol* No 3, Moscow, Winter 1996/97, p 11-14. Sokov argues that in contradistinction to the majority view in the current debate in Moscow, tactical nuclear weapons would be more likely to undermine Russian security.

[2] Qian Qichen, Foreign Minister of China to the UN General Assembly, 25 September, 1996.

fore the collapse of the Soviet Union brought the Cold War to an end. During the NPT Review and Extension Conference in 1995, the non-nuclear-weapon states (NNWS) repeatedly criticised the NWS for their failure to make good progress towards the goal of nuclear disarmament. More than any other issue, the desire of the majority of NPT Parties to accelerate the full implementation of article VI caused them to impose an enhanced and more frequent review process in return for extending the NPT indefinitely.

Within weeks after the Conference ended, representatives of the British and French governments asserted that the indefinite extension of the NPT conferred an indefinitely extended right of the five declared nuclear powers to keep their weapons.[1] It was against this backdrop that the advisory opinion of the International Court of Justice dealing with legal obligation must be interpreted. The fourteen international judges unanimously held that "There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control."[2] This is not a misquote of article VI, as suggested in the UN First Committee by British diplomats in 1996, but the Court's authoritative interpretation of international law, taking into account the NPT and other relevant legal instruments.[3] The ruling adds weight to the obligation to pursue negotiations in good faith by de-linking nuclear disarmament from general and complete disarmament and by requiring that the negotiations "achieve a precise result."[4]

The strengthened review process entails ten days of meetings in each of the three years leading up to the five-yearly review conferences. According to the decisions taken in 1995, the purpose of these "Preparatory Committees" (PrepCom) is "to consider principles, objectives and ways in order to promote the full implementation of the Treaty, as well as its universality, and to make recommendations thereon to the Review Conference." The five-yearly Review Conferences "should look forward as well as back ... evaluate ... and identify the areas in which, and the means through which, further progress should be sought in the future."[5]

Strengthening the NPT or Business as Usual?

The first of the new style NPT PrepComs was held in April 1997. From the beginning, the Western NWS and their allies pushed for "business as usual," wanting to limit the work of the PrepComs to an airing of views and procedural recommendation and leave any decisions to the five yearly Review Conferences. They opposed setting up mechanisms for monitoring progress towards full implementation of the Treaty, resisted the concept of sub-groups or subsidiary bodies to work on specific issues, and continued to assert that nuclear disarmament would only come about in the context of regional stability and complete and general disarmament. Instead, the Western and Eastern European states emphasised the "Programme of Action" in the 1995 Principles and Objectives, congratulated the international community on achieving the first

[1] See R Johnson, "Indefinite Extension of the Non-Proliferation Treaty: Risks and Reckonings," ACRONYM No 7, London, September 1995.

[2] Ruling F, "International Court of Justice issues advisory opinion on legality of threat or use of nuclear weapons," International Court of Justice Press Release, ICJ/546, July 8, 1996.

[3] It must be noted that the British government in November 1997 abstained in the UN First Committee vote on this paragraph, thereby distancing itself from the argument that the ICJ misrepresented international law. This argument was, however, reiterated by the US representative, Robert Grey.

[4] "The advisory opinion of the International Court of Justice on the Question of Legality of Nuclear Weapons -- Summary," ICJ/96/23.

[5] Decision 1 on "Strengthening the Review Process for the Treaty," May 11, 1995.

item, a CTBT, by the target date, and pushed for immediate commencement of multilateral negotiations on the second item, a fissile materials production ban. The United States, in particular, emphasised the step-by-step approach of its bilateral negotiations with Russia on gradually reducing the size of the two largest strategic nuclear arsenals through the START process.

The non-aligned countries and Canada, Japan, China and New Zealand rejected the view that going to zero nuclear weapons required the accomplishment of conventional disarmament. Russia reiterated its 1994 proposal for a Treaty for Nuclear Security and Strategic Stability, which could be negotiated among the five declared NWS, with the purpose of reducing nuclear weapons and ending the production and re-use of fissionable materials for weapons purposes.[1] The Non-Aligned Movement collectively called for a nuclear disarmament committee to be established in the Conference on Disarmament (CD), to "commence negotiations on a phased programme of nuclear disarmament and for the complete elimination of nuclear weapons within a specified framework of time, including a Nuclear Weapons Convention."[2] Sweden and Japan argued for immediate implementation of measures such as taking nuclear weapons of alert and removing warheads from missiles, as recommended by the 1996 Canberra Commission. A number of countries called on the NWS to commit themselves to a policy of no first use on nuclear weapons. Several states, including Russia and China, raised concerns about the continued basing of US tactical nuclear weapons in seven European countries as part of NATO and called for them to be removed. The European Union countries and various associated Eastern European states tended to speak as a single voice. The EU statements, requiring consensus, therefore represented the nuclear policies of France and Britain and failed to challenge the view that nuclear weapons were a necessity for the foreseeable future.

"Step-by-Step" Incrementalist Approaches

The concept of a "step-by-step" approach to nuclear disarmament is embraced by all sides, but they mean different things. For example, the 1997 NAM-sponsored resolution on nuclear disarmament which received 97 votes in the United Nations First Committee, called for a "step-by-step reduction of the nuclear threat and a phased programme of progressive and balanced deep reductions of nuclear weapons..."[3] Such language would not be out of place in statements from the US government and fits well with the phased approach promoted by the Henry L Stimson Center and the US National Academy of Sciences.[4] The NAM resolution, however, put the step-by-step approach into the context of a fixed timetable: "... to carry out effective nuclear disarmament measures with a view to the total elimination of these weapons within a time-bound framework."[5] This is not what most western advocates mean when they advocate the step-by-step approach.

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[1] Boris Yeltsin, address to the UN General Assembly, New York, September 26, 1994, quoted in *Nuclear Proliferation News,* No 12, September 30, 1994.

[2] Wisnamurti, April 10, 1997.

[3] NOTE: GA vote is Dec 5, so update number if possible. Resolution on Nuclear Disarmament, A/C. 1/52/L.29. The vote was 97 for (mostly NAM), 3 9 against (mostly NATO), with 17 abstentions.

[4] The Reports of the Steering Committee Project on Eliminating Weapons of Mass Destruction, The Henry L Stimson Center, 1995-1997; The Report of the Canberra Commission on the Elimination of Nuclear Weapons, Department of Foreign Affairs and Trade, Australia, 1996; The Future of U.S. Nuclear Weapons Policy, National Academy of Sciences, Washington, D.C. 1997.

[5] Resolution on Nuclear Disarmament, A/Res/51/45/0, op. cit.

The United States, for example, continually underlines the importance of its bilateral negotiations with Russia and the necessity for the Duma to ratify START II, which originally required reductions of deployed strategic weapons down to 3,000-3,500 by the year 2003. In order to allay Russian fears that START II would leave them at a significant disadvantage, the United States and Russia set START III targets during the May 1997 Helsinki Summit, stating their intention to bring strategic arsenals (of deployed warheads) down to 2,000 to 2,500 by the year 2007. Such a target is viewed as woefully inadequate by nuclear disarmament advocates ranging from retired US General Lee Butler to the non-aligned countries. Butler, for example, argues for START III to go further and bring US and Russian strategic arsenals at least down to below 1 000, at which point the three smaller NWS should be involved in the process.[1]

The other component of the step-by-step approach advocated by the United States and its allies is the fissile materials cut-off, a mandate for which was agreed by the CD in March 1995. Negotiations have still not started, and now look further away than ever. The measure fell victim to worsening relations in the CD following the messy endgame of the CTBT, when India vetoed adoption of the test ban treaty. At first, the fissban was held up over arguments between those who wanted the fissile materials ban to include consideration of plutonium and highly enriched uranium in the weapons stockpiles (most of the NAM, led by Pakistan) and those who viewed it as restricting future production only (the NWS, India and Israel). During the past year, attitudes have hardened even further. India now insists that a fissile cut-off should not be negotiated at all unless the NWS commit to a time-table for nuclear disarmament. The United States further complicated matters and weakened the pressure on the CD to negotiate the cut-off in 1997 by insisting that the Geneva Conference should address the landmines issue as well.

All things considered, the chances of the CD negotiating a fissile materials cut-off or ban in the near future look doomed. The measure could equally be achieved through five-power negotiations or by convening a special conference outside the purview of the CD, but at present the declared NWS have ruled out any approach that would not directly bind the threshold states. At the root of the arguments blocking this measure is a fundamental difference of perspective over the relationship between non-proliferation and nuclear disarmament. For the NWS, the primary purpose of multilateral measures such as the CTBT and fissile cut-off is non-proliferation: they are viewed as instruments to curb the nuclear capabilities of emerging nuclear weapon states and are undertaken when the NWS have sufficient technological expertise and nuclear materials to be able to give up testing and fissile materials production without seriously diminishing their own capabilities. Seen from the perspective of the undeclared nuclear capable states, this equates to freezing the nuclear status quo to the advantage of the major powers. For a country such as India, military and security considerations are bolstered by media-fed public opinion to ensure that it would be politically unacceptable for a government to accept having its own disadvantaged position frozen in this way. This explains the logic behind India's rejection of nuclear arms control measures which are not part of an explicit programme of nuclear disarmament, binding on all the NWS.

[1] Personal conversation, October 2, 1997.

Steps in "qualitative" nuclear disarmament

The START process and prospects for a multilateral fissile materials production ban are blocked at present. Even if negotiations on START III and a cut-off get underway, they have extremely modest targets that many analysts and governments regard as insufficient in tackling the deeper problems of nuclear proliferation and possession. The START process does not involve the three smaller nuclear weapons states, for example. Beijing has long maintained that the largest arsenals have to come down drastically before China will talk about cutting back its own nuclear **arms.** Prior to their changes of government, the US and France also made clear that they did not contemplate participating in nuclear arms reduction talks in the near future.[1] In response to the end of the Cold War and changes in NATO's nuclear posture, Britain and France have voluntarily removed most of their tactical nuclear weapons. In Britain, the new Labour government stated in its election manifesto that "when satisfied with verified progress towards our goal of the global elimination of nuclear weapons, we will ensure that British nuclear weapons are included in multilateral negotiations."[2] At the same time, Labour has pledged to keep Trident, soon to be its only nuclear weapons system. Although the Labour government is undertaking a Strategic Defence Review, government officials have made it clear that they do not envisage Britain engaging in nuclear arms *reduction* talks in the lifetime of this Parliament (the next five years). However, the Strategic Defence Review is presently considering the possibility of Britain's involvement in joint talks on aspects of nuclear use. These talks may take place as part of the NATO-Russia Joint Council or, most practically, within the context of five-power negotiations involving all the declared NWS.

In policy circles in the United States, and increasingly in the other NWS, there is a growing interest in taking nuclear forces off alert. Not only would de-alerting nuclear weapons reduce the risks of launch on warning and unauthorised or accidental firing of nuclear missiles, the policy would also diminish the likelihood of first strike. Yeltsin also raised this possibility in his speech following adoption of the 1997 Founding Act on Mutual Relations, Co-operation and Security between the Russian Federation and NATO although there was confusion about what he had in mind.[3] Scientists from the United States and Russia have already held unofficial meetings to exchange ideas and information on the technical and verification requirements

[1] In response to arguments from South Africa, Canada and others at the 1997 NPT PrepCom, that all five NWS should engage in nuclear arms reduction talks, Britain reiterated its version of China's position that when the largest arsenals were brought below a thousand, the UK would be prepared to join multilateral nuclear disarmament talks. The French representative said that its participation in nuclear arms negotiations was "not relevant now," pointing out that France's capabilities were still much smaller than those of Russia and the United States. See Rebecca Johnson, "Reviewing the NPT: the 1997 PrepCom," in *Disarmament Diplomacy,* No 14, London, April 1997. For a discussion of China's position, see Alastair lain Johnston, "Prospects for Chinese Nuclear Force Modernization: Limited Deterrence versus Multilateral Arms Control," The China Quarterly, June 1996.

[2] "New Labour: because Britain deserves better," the Labour Party Manifesto, London, 1997, p. 38.

[3] Boris Yeltsin, remarks at the signing of the Russia-NATO Founding Act on Mutual Relations, Co-operation and Security between the Russian Federation and the North Atlantic Treaty Organisation in Paris on 27 May, 1997, quoted in *Disarmament Diplomacy, No* 15, May 1997, p 26. Yeltsin's initiative was immediately "re-interpreted" by Russian officials to mean de-targeting, which is already agreed between Russia and the United States and Britain. However, President Chirac of France appeared to take the proposal seriously. See *Disarmament Diplomacy,* No 16, June 1997, p 43.

of taking different weapons systems off alert.[1] So far, most of the discussions have focused on the nuclear arsenals of the two ma or nuclear powers, but recently officials in China have also begun showing interest in de-alerting as a verifiable component of a no-first-use regime, Beijing's long-standing demand. British defence officials, too, have confirmed that the Labour government is looking at taking Trident off full alert as one of the options under consideration in the Strategic Defence Review, due to report in early 1998.

Taking nuclear weapons off alert would make inroads into NATO's doctrine of last resort (and Russia's post-1992 policy), which continue to rely on the threat of potential first use of nuclear weapons. In its pre-election policy document, Britain's Labour government pledged support for "a negotiated, multilateral no first use agreement" among the NWS[2] and for the first time there appears to be some possibility that NATO countries might be prepared to consider negotiations on legally binding security assurances, which may include no first use. In the emerging debate among NATO analysts over the advantages and disadvantages of no first use, the following questions are paramount: under what conditions, if any, would NATO, with its overwhelming conventional force, decide to escalate a conflict by using nuclear weapons? If first use of nuclear weapons is renounced for "conventional" warfare, should the potentiality be retained in the event of attacks using chemical or biological weapons? (This would amount to a policy of no first use of weapons of mass destruction.) Should NATO seize the opportunity to push for a no first use agreement now that Russia is reassessing the role of its nuclear forces in relation to its conventional weakness, or is it already too late? Would a P-5 declaration or agreement on no first use be sufficient, or is it necessary to negotiate and sign a multilateral treaty?

Other issues which relate to nuclear doctrine, policy and use postures are also being discussed more frequently and have been proposed by defence analysts for inclusion in five-power negotiations. These include the Russian demand that all sub-strategic nuclear weapons be withdrawn to the territory of the NWS; consideration of an inventory of military nuclear materials and weapons holdings (as voluntary transparency measures or for inclusion in a nuclear arms register); commitments by the three smaller NWS not to increase their nuclear arsenals as long as the bilateral reduction process continues; and pledges by the NWS not to keep modernise their forces with qualitatively new or advanced nuclear weapons. Additionally, as the US plans for theatre and ballistic missile defence continue to put the 1972 Anti-Ballistic Missile (ABM) Treaty under pressure, there is some talk among British and Chinese analysts of reinforcing the ABM regime by opening it to accession by the other NWS.

Several of these issues are bubbling below the surface of disarmament discussions and it may be some time before they are seriously addressed. Others, such as de-alerting and the Russian proposal on withdrawing tactical nuclear weapons, look set for early inclusion on the agenda. At present, US resources on nuclear arms control are being almost entirely directed towards bilateral relations with Russia, particularly implementation of the March 1997 Helsinki commitments on further reductions, warhead dismantlements and the de-activation of stra-

[1] For a comprehensive overview, see Bruce G B lair, Harold A Feiveson, Frank N von Hippel, "Taking Nuclear Weapons off Hair-Trigger Alert," *Scientific American,* New York, November 1997, pp 74-81.

[2] "A Fresh Start for Britain: Labour's Strategy for Britain in the Modem World," The Labour Party, London, 1996, p 14.

tegic delivery vehicles.[1] In the aftermath of the Cold War, tactical nuclear weapons were withdrawn from Germany, leaving the United States with around 150 tactical warheads in seven European countries (Belgium, Britain, Germany, Greece, Italy, the Netherlands and Turkey). Although there was no binding agreement, it is clear that Moscow had thought that, as a consequence of the "four plus four" talks, if Russia moved its forces out of former Warsaw Pact and Soviet territories, NATO would not move in. The expansion of NATO left Russia feeling double-crossed and vulnerable, with little incentive to trust the US Secretary of State's declared "three no's."[2]

Timebound Framework

The NAM have adopted a policy calling for negotiations on a timetable for nuclear disarmament, a concept that is rejected by the majority of Western states and arms control advocates. Whilst ridicule of time-bound nuclear disarmament is a useful mechanism for governments who want to prevent any level of significant progress on nuclear disarmament, some supporters of nuclear disarmament oppose strict timetables on the grounds that they are too rigid, with the risk that the whole process becomes undermined if one deadline fails to be met. This could lead to competing demands and recriminations, in which an unrealistic timetable becomes an impediment to genuine prospects for progress. South Africa and Chile took this latter view when they refused to join consensus in a non-aligned states' initiative for a "Programme of action for the elimination of nuclear weapons" which was subsequently put forward at the CD by 28 countries.[3]

The G-28 Programme envisaged a timetable of 24 years to accomplish the abolition of nuclear weapons, in three suggested stages: 1996-2000, which would concentrate on confidence-building and "standing down" the existing arsenals, with concurrent commencement of multilateral negotiations on a range of measures, including a fissile materials ban, no first use, security assurances, and a treaty for eliminating nuclear weapons; 2000-2010, aiming at deep cuts, transparency and verification of nuclear holdings; and 2010-2020, intended to consolidate the abolition of nuclear weapons and full implementation of a global treaty on nuclear disarmament. The Programme was spearheaded by Mexico and Egypt, who stressed that it was intended to contribute to the debate on nuclear disarmament and accelerate the pace of progress. However, the Western NWS have responded as if presented with a non-negotiable plan. As such, they can use it as a whipping post to ridicule the "blueprint" approach to nuclear disarmament as all-or-nothing impossibilism, ideologically driven and impractical. Nevertheless, successive meetings of NAM heads of state in Cartagena in 1996 and New Delhi in 1997, have confirmed that the concept of an agreed framework for achieving the elimination of nuclear weapons, with dates, is central to the collective policy of non-aligned states.

Although they do not endorse the G-28 programme, some of the moderate Western-allied states have a more nuanced approach to time-frames than the outright rejection shown by the Western NWS and their principal allies. In the vote on a Malaysian-sponsored resolution on the ICJ advisory opinion in the 1997 UN First Committee, Sweden, New Zealand and Ireland

[1] Joint Statement on Parameters on Future Reductions in Nuclear Forces, White House text, Helsinki, March 21, 1997.

[2] "NATO has no intention, no plan and no need to station nuclear weapons on the territory of any new members" Warren Christopher, US Secretary of State, April 5, 1995.

[3] "Programme of action for the elimination of nuclear weapons," CD/ 1419, August 7, 1996.

voted for a preambular paragraph emphasising "the need for the Conference on Disarmament to commence negotiations on a phased programme for the complete elimination of nuclear weapons with a specified framework of time."[1] Interpretations of this paragraph differ among countries. Both its detractors and some of its proponents take the maximalist view that it means a fixed time-table, with set dates for the achievement of each measure in the schedule. Other states, including several who have endorsed the concept, point out that target dates are often set for the conclusion of treaties, as in the case of the CTBT, and that many treaties, including the Intermediate Nuclear Forces (INF) and START Treaties, set deadlines for accomplishing certain stages towards their implementation. They argue that specific time-tables are not new in arms control, but emphasise the need for the overall framework to be more flexible and have the capability of slowing down or speeding up in response to changing security conditions.

Nuclear Weapon Convention

The concept of a convention prohibiting nuclear weapons has been around for a long time, but is now gaining currency as an achievable objective. In 1996, Malaysia submitted a resolution to the UN General Assembly calling for multilateral negotiations "leading to an early conclusion of a nuclear weapons convention prohibiting the development, production, testing, deployment, stockpiling, transfer, threat or use of nuclear weapons and providing for their elimination."[2] There were 115 votes in favour, including China; 22 votes against, including Britain, France, Russia and the United States; and 32 abstentions. When a similar resolution was submitted to the UN First Committee on November 10, 1 997, the tally was: 103:26:24. While the nuclear weapon states voted as in the previous year, Ukraine joined Sweden, New Zealand and Ireland in voting for the resolution.[3]

The idea continues to be dismissed by most Western governments and analysts, but within one year of being introduced as a UN resolution, many statements to the 1997 UN General Assembly and First Committee endorsed the nuclear weapon convention. An influential speech from the Vatican's representative, Archbishop Renato R Martino, showed how far this initiative has moved into mainstream disarmament debates. A "model nuclear weapon convention," drafted by international non-governmental lawyers and scientists, was submitted to the UN General Secretary by Costa Rica and will be circulated as an official document of the UN during 1998. The purpose of such a model is not to provide the answers or lay down a blueprint; as with Sweden's draft CTBTs during the 1980s, the intention is to mobilise support for the concept of a nuclear weapon convention and focus debate on the political, technical and verification issues which will have to be addressed. While there is a clear recognition that a treaty eliminating nuclear weapons is still some distance away, there is growing momentum in the post-Cold War environment for abolishing nuclear weapons. In that event, the legal regime necessary to oversee the destruction of arsenals, registration of weapon-usable materials, and safeguards against violations (retention or acquisition of nuclear explosive devices) would no doubt have to be codified in some form of Convention, as with chemical and biological weapons. By advocating a nuclear weapon convention now, NNWS intend to provide a clear objective and exert pressure on the NWS for further progress towards nuclear disarmament.

[1] A/C. 1/52/L.37*, voted in First Committee, November 10, 1997 (may update with UNGA vote).
[2] UNGA res. 51/45M, December 10, 1996.
[3] A/C. 1/52/L.37*, voted in First Committee, November 10, 1997 (may update with UNGA vote).

Conclusion

The end of the Cold War has undoubtedly increased pressure on the NWS to eliminate their nuclear weapons, but this has not resulted in effective alliances and strategies to overcome the continued strong resistance to nuclear disarmament at the top of their decision-making structures. Although the strategic environment has altered profoundly from a bi-polar to a multi-polar context, little has actually changed in the security culture of the major nuclear powers. New threat assessments focusing on rogue states and terrorists have been elicited by policy-makers in the defence establishments to justify continued possession of nuclear weapons, including modernisation of arsenals.[1] Although such threats are taken seriously by the rest of the world, most countries now reject the conclusion that nuclear weapons can provide a credible means of deterrence or retaliation. Such terrorist scenarios are thought more likely to involve selective, non-missile-delivered attacks, against which nuclear weapons would be useless. The retention of nuclear weapons by a small number of states is viewed as inherently unstable, thereby creating the incentive and opportunity for proliferators.

There is little convergence between the debates among non-aligned states and the NWS, as evidenced by the deadlock in the Conference on Disarmament and the lack of constructive ideas for making progress in the strengthened review process of the NPT. When assessing the international debate on nuclear disarmament, it is necessary to make distinctions between rhetoric and actual intentions and perceived interests Public backing for the goal of nuclear disarmament often conceals an ambivalence regarding its desirability and achievability.

Despite the differences of declaratory policy among the NWS, the five powers have many common concerns and interests, with comparable problems in their nuclear infrastructure. Each of the NWS must manage internal debates pitting the departments defending military, research and nuclear interests against departments more concerned with finance, foreign policy and domestic and environmental issues. Whilst it appeared that US-Russian interests were converging in the immediate aftermath of the Cold War, some important differences in policy outlook are now emerging. The Clinton Administration is most concerned with the US' bilateral relations with Russia and have thus prioritised the Helsinki agenda, safety and security. Although the laboratories and sections of the Pentagon are keen to keep building up the US nuclear arsenal, the so-called "revolution in military affairs" (RMA) is resulting in greater focus on US dominance in information systems and sophisticated conventional weaponry. In this context, nuclear weapons may be increasingly perceived by the US armed services as a liability, which could fuel a US-led drive for their elimination sooner rather than later.

By contrast, Russia's intelligence and conventional forces have been weakened on all fronts, prompting a re-evaluation of nuclear weapons -- including tactical weapon systems -- as deterrent and power broker, keeping Russia at the top table in international decision-making. Despite this developing divergence of perceptions, both the United States and Russia have an interest in sharing information, keeping better inventories of nuclear warheads and materials, and in reducing the burden of large arsenals.[2] Both sides are showing a growing interest in tak-

[1] Modernisation is being actively pursued by the United States using laboratory tests and simulation, although it is not clear whether constraints on testing under the CTBT will affect certification and military confidence in new weapons.

[2] If US plans for theatre and ballistic missile defence development are forced through, Russia's fínance-driven interest in reducing its arsenal could be reversed on security grounds.

ing nuclear weapons off alert, which could become the next major breakthrough in nuclear arms control.

The smaller NWS have their own security calculations based on the political and security functions of their nuclear policies. China and France will welcome significant reductions in the larger arsenals, but are unlikely to want to go to zero (despite China's declared position): rather, they would prefer to see a new level of nuclear stability based on possession of a few hundred nuclear warheads by a small number of states, themselves included. Britain's attachment to nuclear weapons is already severely eroded. Unless its nuclear weapons are negotiated away first, London may well abandon its nuclear status once the last remaining strategic system, Trident, goes out of service in 20-25 years time. The smaller NWS will be unwilling to engage in nuclear reduction talks until the bilateral START process brings US and Russian arsenals close to a thousand, but there are indications that they may be more open to the possibility of joining five-power talks on a range of "qualitative" nuclear disarmament issues, such as de-alerting, no first use, no modernisation and some confidence-building measures, including registration of nuclear weapons and fissile materials holdings.

The undeclared NWS are characterised by a duality of competing and converging interests. All three exhibit similar attitudes towards the NPT and reject any global approaches to nuclear disarmament that do not adequately address their regional and security conditions. Israel's nuclear policy is dependent both on its relationship with the United States, and also on regional security conditions and the perceived role of other weapons of mass destruction in the military postures of its neighbours. Despite their nuclear capability, India and Pakistan are important members of the 113 -member Movement of Non-aligned States. The rejection by these two countries of incremental steps, which they perceive as feeding into a primarily "non-proliferation" agenda, strongly influences NAM approaches to nuclear disarmament, resulting in considerable energy being devoted to demands for an immediate and time-bound programme of elimination, which is a non-starter as far as the NWS are concerned. The majority of other NNWS position themselves according to their relation to nuclear alliances; those in NATO or under a comparable nuclear umbrella almost always vote with the US on major issues relating to nuclear weapons.

The CTBT will prove to be the last nuclear arms control treaty on the multilateral agenda for many years. If India continues to refuse to sign the CTBT, as looks certain, the test ban treaty will face major hurdles before it can take legal effect. There is little realistic prospect that the CD will be able to resolve its ideological and political conflicts over its programme of work in the near future. The CD works by consensus and for each of the significant options -- landmines, fissile material cut-off or nuclear disarmament -- there are powerful opponents to undertaking negotiations in the Conference. There are slightly more positive chances that the NPT Review Process could develop more effective mechanisms for impelling and monitoring disarmament progress by the NWS, but there is presently little indication of the alliances and strategies necessary to bring such achievement about.

In the long term, momentum will increase for a convention on eliminating and prohibiting nuclear weapons. In the interim, any progress towards nuclear disarmament is likely to take place in the bilateral and five-power plurilateral arenas.

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Legal or Illegal?

The Perennial Controversy Over Nuclear Weapons

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1. INTRODUCTION

Proposals for banning nuclear weapons date back to the beginning of the nuclear age. The very first session of the UN General Assembly, convened in January 1946, called for the elimination of these weapons of mass destruction from national armouries. Since then, several nuclear arms limitation measures have been brought into effect, but the goal of nuclear disarmament, as set by the United Nations, is far from being achieved.

In the course of the past decades of international arms control debates and negotiations, a controversy has developed regarding the legality of nuclear weapons. In recent years, this controversy has become particularly acute. This article reviews and assesses the arguments of the proponents of the thesis that nuclear weapons are already prohibited by the existing rules of international law.

In formulating my conclusions, I do not claim to have found a way to reconcile the divergent opinions. Comments from the readers would be appreciated.

2. LEGAL STATUS OF NUCLEAR WEAPONS

It is universally recognized that weapons and war tactics must, in their application, be confined to military targets; be proportional to their military objectives as well as reasonably necessary to the attainment of these objectives; not cause unnecessary suffering to the victims; and not harm human beings and property in neutral countries — those not participating in the hostilities. Rules prohibiting or regulating the use of weapons or methods of warfare form part of the law of armed conflict. Those restricting or banning the manufacture and possession of weapons belong to the law of arms control and disarmament.[2]

2.1 Law of Armed Conflict

Agreements regarding the use of weapons include the 1868 Declaration of St Petersburg, the 1899 Hague Declarations, the 1907 Hague Declaration and Conventions, the 1925 Geneva Protocol, the 1977 Environmental Modification Convention, the 1977 Protocol I additional to the 1949 Geneva Conventions and relating to the protection of victims of international armed conflicts, and the 1981 Inhumane Weapons Convention.

In particular, it is prohibited to use bullets that expand or flatten in the human body; to use poison or poisoned weapons; to lay unanchored automatic contact naval mines as well as anchored mines which do not become harmless as soon as they have broken loose from their moorings; to use torpedoes which do not become harmless when they have missed their target;

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[2] The treaties and agreements referred to throughout this article can be found in whole or in excerpts in Jozef Goldblat, *Arms Control. A Guide to Negotiations and Agreements* (London: SAGE Publications, 1994).

to use asphyxiating, poisonous or other gases and all analogous liquids, materials and devices, as well as bacteriological methods of warfare; to use environmental modification techniques as means of destruction, damage or injury; to carry out attacks affecting military objectives and civilians or civilian objects without distinction; and to use certain conventional weapons which may be deemed to be excessively injurious or have indiscriminate effects. None of the above rules deals explicitly with nuclear weapons.

2.2 Law of Arms Control and Disarmament

Agreements banning the manufacture and possession of non-nuclear weapons include the 1972 Biological Weapons Convention and the 1993 Chemical Weapons Convention. Those dealing with nuclear weapons provide only for partial bans.

Thus, the testing of nuclear explosive devices is limited under the 1963 Partial Test Ban Treaty, the 1974 Threshold Test Ban Treaty and the 1976 Peaceful Nuclear Explosions Treaty. The presence of nuclear weapons is proscribes in Antarctica under the 1959 Antarctic Treaty, in Latin America and the Caribbean under the 1967 Treaty of Tlatelolco, and in the South Pacific under the 1985 Treaty of Rarotonga. The deployment of nuclear weapons is prohibited in outer space under the 1967 Outer Space Treaty, specifically on the moon under the 1979 Moon Agreement, and on the seabed under the 1971 Seabed Treaty. The acquisition of nuclear weapons by non-nuclear-weapon states is forbidden under the 1968 Non-Proliferation Treaty. Moreover, the nuclear arsenals of the United States and the Soviet Union/Russia have been reduced by the 1987 INF Treaty and are to be further reduced by the 1991 START I Treaty and the 1993 START II Treaty. All these agreements have had a constraining effect on the spread of nuclear weapons, but they have not outlawed either the possession of these weapons or their use.

2.3 Applicability of Existing Law to Nuclear Weapons

One can envisage situations in which the use of nuclear weapons might be deliberately initiated: in a surprise pre-emptive attack aimed at disarming an adversary who may or may not be nuclear-armed; or in the course of escalating hostilities started with conventional means of warfare.

The first situation, usually referred to as ‘first strike’, is covered by the fundamental rule of international law enshrined in the UN Charter. The threat or use of force against the territorial integrity or political independence of any state is unconditionally prohibited, irrespective of the type of weapon employed — nuclear or non-nuclear.

The second situation, usually referred to as ‘first use’, applies to the use of nuclear weapons in war in response to the use of conventional weapons by an adversary. It involves the right to self-defence, which is also enshrined in the UN Charter. If an armed attack occurs against a member of the United Nations, all states may defend themselves, individually or collectively, until the UN Security Council has taken measures necessary to restore and maintain international peace and security. The Charter does not specify which weapons may or may not be used by states in such a situation. However, the right of self-defence is not unlimited.

In discussing the existing limitations, one should start from the rule embodied in the 1907 Hague Convention IV on laws and customs of land warfare which prohibits the employment of arms causing ‘unnecessary’ suffering or the destruction of the enemy’s property, unless such

destruction is 'imperatively demanded' by the necessities of war. This rule seems to have little practical value, because no suffering caused by weapons of war can be deemed necessary, and because military necessity is a subjective notion. Nevertheless, the 1868 St Petersburg Declaration was already quite specific as to what was allowed and what was forbidden. It proclaimed that the only legitimate objective which states may endeavour to accomplish during war is to weaken the military forces of the enemy, and that, consequently, the employment of arms which uselessly aggravate the suffering of disabled men, or render their death inevitable, is contrary to the laws of humanity. Since nuclear explosions could cause massive injury to people and massive damage to property, and since mass destruction can hardly be a necessity, it would be nearly impossible to observe the relevant rule in a nuclear war.

It is conceivable that a small tactical nuclear weapon might be used against a selected military objective without causing indiscriminate harm to the civilian population or irreparable damage to the environment. However, once the nuclear threshold has been crossed, there can be no guarantee that nuclear warfare would be kept limited in scope. There will always be a risk of uncontrollable nuclear escalation on the part of the attacker, as well as on the part of the attacked nation if the latter, too, possesses nuclear weapons. Thus a single use — irrespective of motivation — could provoke a large-scale nuclear war. In any event, it is not the targeting that should be decisive in an attempt to determine the legality of the first use of nuclear weapons. It is rather the enormous destructive potential of these weapons that should render their first use illegal. With today's technology, it is possible to release from one nuclear weapon in one micro-second more energy than that released from all conventional weapons in all wars throughout history.

Customary international law, reiterated in the 1949 Geneva Conventions for the protection of war victims, makes a clear distinction not only between military and non-military objectives, but also between combatants and non-combatants. Belligerents are under strict obligation to protect civilians not taking part in hostilities against the consequences of war. The indiscriminate nature of nuclear weapons renders this rule very difficult to comply with. Even if exclusively military targets were aimed at, civilian casualties could be an important by-product; in many cases they might outnumber the military ones.

Yet another iniquitous aspect of nuclear warfare is the inability of belligerents to comply with the demand of the world order to respect the inviolability of the territory of neutral states, those not involved in an armed conflict. It is impossible to confine the effects of nuclear explosions, particularly radioactive contamination, to the territories of states at war.

Furthermore, the nuclear radiation and radioactive fall-out produced by nuclear explosions inflict damage on the biological tissue of humans, animals and plants. This can, for the purpose of international law, be compared to poison, the use of which as a method of warfare is prohibited by the 1907 Hague Convention IV and the 1925 Geneva Protocol. And since nuclear explosions may be expected to cause widespread, long-term and severe damage to the natural environment, their use would also contravene Protocol I additional to the 1949 Geneva Conventions and relating to the protection of victims of international armed conflicts.

Finally, it is worth noting that, in placing limitations on the conduct of hostilities, the 1907 Hague Convention IV included the so-cared Martens Clause, subsequently re-affirmed in several treaties. This Clause makes usages which have been established among civilized peoples,

the laws of humanity and the dictates of the public conscience obligatory by themselves, even in the absence of a specific treaty prohibiting a particular type of weapon. It was this legal yardstick that the International Military Tribunal convened in Nuremberg to prosecute Nazi leaders after World War 11 applied in concluding that the law of war is to be found not only in treaties but also in customs and practices of states, and that, by its continual adaptation, this law follows the needs of a changing world. Thus, also weapons and tactics which may be resorted to in the exercise of legitimate self-defence must not be violative of the existing norms, whether or not these norms are spelled out in formal international agreements.

The cumulative effect of the generally accepted restraints on the use of weapons is such that nuclear war cannot be initiated with obedience to the rules of customary international law. This may explain why, in the 1963 Shimoda Case, the District Court of Tokyo concluded that nuclear attacks on Hiroshima and Nagasaki had violated international law as it existed in 1945. Moreover, in its judgement of 1986 in the case concerning military and paramilitary activities in and against Nicaragua, the International Court of justice recognized that customary law has the same standing as treaty law.

Nonetheless, in view of the special character of nuclear weapons, a ban on their use cannot be simply deduced from restrictions regarding other types of weapon or from an isolated domestic court decision. Similar reasoning must have guided those who in 1925 decided to sign the Geneva Protocol banning the use of chemical and bacteriological means of warfare, even though the use of these means had already been condemned by the 'general opinion of the civilized world', as stated in the Protocol itself. In other words, prohibitions concerning specific weapons must be clearly stated in positive law, as they are in the case of chemical and biological weapons, and there is no express ban on the use of nuclear weapons. The controversy over the legality of nuclear weapons is political in nature. Even an opinion formulated by the International Court of Justice would not affect the political attitudes of states.

3. PROSPECTS FOR A BAN ON NUCLEAR WEAPONS

The political developments of recent years, especially in Europe, have rendered another world conflict highly unlikely. The superpowers have openly espoused the thesis that nuclear war cannot be won and should not be fought. Indeed, studies about the effects of nuclear weapons have made it obvious that nuclear destruction would outweigh any of the political interests meant to be served by nuclear weapons; hence the relative ease with which even unilateral cuts in nuclear arsenals can be made. The recent departure from the NATO strategic doctrine, based on early use of nuclear weapons, may be taken to mean that the option to employ nuclear weapons at the outset of hostilities that had started with conventional arms has been abandoned, and that the employment of nuclear weapons by NATO is now envisaged only as a last resort.

Nevertheless, the difficult search for an internationally acceptable formula for non-use of nuclear weapons against non-nuclear-weapon states continues. However, even if such a formula were eventually found, the assurances sought would be of questionable value and in practical terms redundant. All generally recognized nuclear-weapon powers possess conventional armed forces quantitatively and/or qualitatively superior to those of their potential non-nuclear adversaries and might not need to have recourse to nuclear weapons to stop an aggression launched by the latter. Under all imaginable circumstances, the use of nuclear weapons by the

great powers against non-aligned countries not having such weapons on their territory and these are the countries most insistent on obtaining non-use assurances — is inconceivable.

3.1 No First Use

Only a formal assurance of no first use of nuclear weapons, given to all countries whatever their status — nuclear or non-nuclear, aligned or non-aligned — would have significance. Such a new rule of the law of armed conflict could even have arms control implications: it might require changes in the composition and deployment of nuclear forces, and — in the first place — the elimination of those nuclear weapon systems that have first-strike characteristics. The role of the remaining nuclear weapons would be reduced to deterring the use of the same weapons by others. The firebreak separating conventional and nuclear warfare would be reinforced, and the risk of nuclear war minimized. A no-first-use commitment valid *erga omnes* would better serve the cause of international security than would assurances accorded selectively to any given category of states.

To carry real weight, the proposed obligation must be included in a multilateral treaty. Such a treaty should be signed not only by the nuclear-weapon powers, but by all nations; it would then be applicable also to the so-called nuclear-threshold states which have not joined the Non-Proliferation Treaty and have not given up the nuclear-weapon option. The treaty would have to specify that the first use of nuclear weapons in response to, or in anticipation of, a prior non-nuclear armed attack would gravely violate international law. Once the first use of nuclear weapons has been prohibited, the very threat of such use will become unlawful. Consequently, the doctrine of nuclear deterrence, which consists in threatening a nuclear attack in response to any armed aggression, would have to be substantially modified.

3.2 Retaliatory Use

If no first use were recognized as a norm of international law, and if this norm were generally and strictly observed, any use of nuclear weapons would be practically excluded. However, like all laws of war agreed in time of peace, a no first use rule may not resist the pressure of military expedience generated in the course of hostilities. Some governments may be prepared to resort to any means, including nuclear ones, in order to avoid defeat in a war affecting their vital interests. That, in turn, may lead to reprisals.

Belligerent reprisals are usually considered legitimate, if they are proportionate to illegitimate practices and if they are adopted with the sole purpose of inducing the guilty party to desist from those practices. They need not to be of the same kind as the original illegal act, but they must bear a reasonable relationship to the degree of violation committed by the enemy. The right to such reprisals is limited by the prohibition on attacking the civilian population and other targets protected by international law.

It is clear that the use of nuclear weapons as a reprisal for ‘ordinary’ violations of the law of armed conflict would be excessive. It is less clear whether a victim of a nuclear aggression should not have the right to retaliate in kind by using the same weapon. Some people argue that, given the particularly inhumane nature of weapons of mass destruction, their second use must be considered to be as illegal as their first use. Many countries have adopted this attitude with regard to chemical and/or biological weapons by recognizing the prohibition on their use to be absolute and valid under any circumstance.

3.3 Ban on Possession

At present, the possession of nuclear weapons is prohibited only for non-nuclear-weapon parties to the Non-Proliferation Treaty and for parties to treaties establishing nuclear weapon-free zones. It would not become illegal for all states even if the first use of nuclear weapons were universally banned. The situation would be different if an absolute ban on the use of nuclear weapons — both first and retaliatory — were adopted. Possession would then imply preparation for a prohibited act and could therefore, according to the 1946 Nuremberg Charter, be considered a violation of international law. Logically, an unconditional ban on the use of a weapon, whether nuclear or non-nuclear, should be followed by a treaty banning its development, production and stockpiling. The regimes of non-use and of non-possession of weapons are mutually supportive.

Total nuclear disarmament would have to be preceded by significant reductions of conventional forces and armaments all over the world, accompanied by complete transparency of military holdings. Equally imperative is to set up mechanisms — more effective than the present United Nations — to deal with and, if possible, prevent the outbreak of armed conflicts.

ADVISORY OPINION OF THE INTERNATIONAL COURT OF JUSTICE (ICJ) ON THE LEGALITY OF THE THREAT OR USE OF NUCLEAR WEAPONS[1]

Note by the Secretary-General

1. At its forty-ninth session, the General Assembly on 15 December 1994 adopted resolution 49/75 K by which it decided, pursuant to Article 96, paragraph 1, of the Charter of the United Nations, to request the International Court of Justice urgently to render its advisory opinion on the following question:

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

2. On 8 July 1996, the International Court of Justice delivered its advisory opinion on the above question addressed to it by the General Assembly.

3. On 8 July 1996, I received the duly signed and sealed copy of this advisory opinion of the Court.

4. I herewith transmit to the General Assembly the advisory opinion given by t~\e International Court of Justice on 8 July 1996, as well as declarations, separate opinions and dissenting opinion to the advisory opinion, in the case concerning the legality of the threat or use of nuclear weapons.

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Document A/51/218 0f 19 July 1996 contains the advisory opinion of the International Court of Justice on the legality of the threat or use of nuclear weapons, as well as the various individual opinions of the judges on the subject. [2]

The ICJ examined the following questions:

1. Jurisdiction of the Court to give the advisory opinion requested
- Article 65, paragraph 1, of the Statute
- Body authorized to request an opinion
- Article 96, paragraphs 1 and 2, of the Charter
- Activities of the General Assembly
- "Legal question"
- Political aspects of the question posed
- Motives said to have inspired the request and political implications that the opinion might have.

2. Discretion of the Court as to whether or not it will give an opinion

[1] Document A/51/218 of 19 July 1996.

[2] With the death in October 1995 of Judge Andrés Aguilar Mawdsley (Venezuela), the Court was reduced to fourteen magistrates: Mohammed Bedjaoui (Algeria); Stephen M. Schwebel (United States); Shigeru Oda (Japan); Gilbert Guillaume (France); Mohamed Shahabuddeen (Guyana); Christopher G. Weeramantry (Sri Lanka); Raymond Ranjeva (Madagascar); Géza Herczegh (Hungary); Shi Jiuyong (China); Carl-August Fleischhauer (Germany); Abdul G. Koroma (Sierra Leone); Vladlen S. Vereshchetin (Russian Federation); Luigi Ferrari Bravo (Italy); and Rosalyn Higgins (United Kingdom). On 28 February 1996 the United Nations General Assembly and Security Council elected Gonzalo Parra-Aranguren (Venezuela) to fill the vacancy.

- Article 65, paragraph 1, of the Statute
- Compelling reasons
- Vague and abstract question
- Purposes for which the opinion is sought
- Possible effects of the opinion on current negotiations
- Duty of the Court not to legislate.

3. Formulation of the question posed
   - English and French texts
   - Clear objective
   - Burden of proof.
4. Applicable law
   - International Covenant on Civil and Political Rights
   - Arbitrary deprivation of life
   - Convention on the Prevention and Punishment of the Crime of Genocide
   - Intent against a group as such
   - Existing norms relating to the safeguarding and protection of the environment
   - Environmental considerations as an element to be taken into account in the implementation of the law applicable in armed conflict
   - Application of most directly relevant law: law of the Charter and law applicable in armed conflict.
5. Unique characteristics of nuclear weapons.
6. Provisions of the Charter relating to the threat or use of force
   - Article 2, paragraph 4
   - The Charter neither expressly prohibits, nor permits, the use of any specific weapon
   - Article 51
   - Conditions of necessity and proportionality
   - The notions of "threat" and ·use" of force stand together
   - Possession of nuclear weapons, deterrence and threat.
7. Specific rules regulating the lawfulness or unlawfulness of the recourse to nuclear weapons as such
   - Absence of specific prescription authorizing the threat or use of nuclear weapons
   - Unlawfulness *per se*: treaty law
   - Instruments prohibiting the use of poisoned weapons
   - Instruments expressly prohibiting the use of certain weapons of mass destruction
   - Treaties concluded prohibiting the use of certain weapons of mass destruction
   - Treaties concluded in order to limit the acquisition, manufacture and possession of nuclear weapons, the deployment and testing of nuclear weapons
   - Treaty of Tlatelolco
   - Treaty of Rarotonga
   - Declarations made .by nuclear-weapon States on the occasion of the extension of the Non-Proliferation Treaty
   - Absence of comprehensive and universal conventional prohibition of the use or the threat of use of nuclear weapons as such
   - Unlawfulness *per se*: customary law

- Consistent practice of non-utilization of nuclear weapons
- Policy of deterrence
- General Assembly resolutions affirming the illegality of nuclear weapons
- Continuing tensions between the nascent *opinio juris* and the still strong adherence to the practice of deterrence.

8. Principles and rules of international humanitarian law
   - Prohibition of methods and means of warfare precluding any distinction between civilian and military targets or resulting in unnecessary suffering to combatants
   - Martens Clause
   - Principle of neutrality
   - Applicability of these principles and rules to nuclear weapons
   - Conclusions.
9. Right of a State to survival and right to resort to self-defence
   - Policy of deterrence
   - Reservations to undertakings given by certain nuclear-weapon States not to resort to such weapons.
10. Current state of international law and elements of fact available to the Court
    - Use of nuclear weapons in an extreme circumstance of self-defence in which the very survival of a State is at stake.
11. Article VI of the Non-Proliferation Treaty
    - Obligation to negotiate in good faith and to achieve nuclear disarmament in all its aspects.

*

The point of departure of the deliberations of the ICJ was resolution 49/75 K, adopted by the United Nations General Assembly on 15 December 1994. The text of that resolution is the following:

> *The General Assembly*,
>
> *Conscious* that the continuing existence and development of nuclear weapons pose serious risks to humanity,
>
> *Mindful* that states have an obligation under the Charter of the United Nations to refrain from the threat or use of force against the territorial integrity or political independence of any State,
>
> *Recalling* its resolutions 1653 (XVI) of 24 November 1961, 33/71 B of 14 December 1978, 34/83 G of 11 December 1979, 35/152 D of 12 December 1980, 36/92 I of 9 December 1981, 45/59 B of 4 December 1990 and 46/37 D of 6 December 1991, in which it declared that the use of nuclear weapons would be a violation of the Charter and a crime against humanity,
>
> *Welcoming* the progress made on the prohibition and elimination of weapons of mass destruction, including the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their De-

struction[1] and the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction,[2]

Convinced that the complete elimination of nuclear weapons is the only guarantee against the threat of nuclear war,

Noting the concerns expressed in the Fourth Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons that insufficient progress has been made towards the complete elimination of nuclear weapons at the earliest possible time,

Recalling that, convinced of the need to strengthen the rule of law in international relations, it has declared the period 1990-1999 the United Nations Decade of International Law,[3]

Noting that Article 96, paragraph 1, of the Charter empowers the General Assembly to request the International Court of Justice to give an advisory opinion on any legal question,

Recalling the recommendation of the Secretary-General, made in his report entitled 'An Agenda for Peace',[4] that United Nations organs that are authorized to take advantage of the advisory competence of the International Court of Justice turn to the Court more frequently for such opinions,

Welcoming resolution 46/40 of 14 May 1993 of the Assembly of the World Health Organization, in which the organization requested the International Court of Justice to give an advisory opinion on whether the use of nuclear weapons by a State in war or other armed conflict would be a breach of its obligations under international law, including the Constitution of the World Health Organization,

Decides, pursuant to Article 96, paragraph 1, of the Charter of the United Nations, to request the International Court of Justice urgently to render its advisory opinion on the following question: "Is the threat or use of nuclear weapons in any circumstance permitted under international law?"

*

A summary of the advisory opinion is given below.

[1] Resolution 2826 (XXVI), Annex.

[2] See Official Records of the 47th Session of the General Assembly, Supplement No. 27 (A/47/27), Appendix I.

[3] Resolution 44/23.

[4] A/47/277-S/24111.

LEGALITY OF THE THREAT OR USE OF NUCLEAR WEAPONS
Advisory Opinion of 8 July 1996

The following summary has been prepared by the Court's Registry for public information purposes and do not involve the responsibility of the Court itself. They therefore cannot be quoted against the actual text of the judgments, advisory opinions or orders, of which they do not constitute an interpretation.

The Court handed down its Advisory Opinion on the request made by the General Assembly of the United Nations on the question concerning the Legality of the Threat or Use of Nuclear Weapons. The final paragraph of the Opinion reads as follows:

"For these reasons,

THE COURT

(1) By thirteen votes to one,

Decides to comply with the request for an advisory opinion;

IN FAVOUR: President Bedjaoui; Vice-President Schwebel; Judges Guillaume, Shahabuddeen, Weeramantry, Ranjeva, Herczegh, Shi, Fleischhauer, Koroma, Vereshchetin, Ferrari Bravo, Higgins;

AGAINST: Judge Oda.

(2) Replies in the following manner to the question put by the General Assembly:

A. Unanimously,

There is in neither customary nor conventional international law any specific authorization of the threat or use of nuclear weapons;

B. By eleven votes to three,

There is in neither customary nor conventional international law any comprehensive and universal prohibition of the threat or use of nuclear weapons as such;

IN FAVOUR: President Bedjaoui; Vice-President Schwebel; Judges Oda, Guillaume, Ranjeva, Herczegh, Shi, Fleischhauer, Vereshchetin, Ferrari Bravo, Higgins;

AGAINST: Judges Shahabuddeen, Weeramantry, Koroma.

C. Unanimously,

A threat or use of force by means of nuclear weapons that is contrary to Article 2, paragraph 4, of the United Nations Charter and that fails to meet all the requirements of Article 51, is unlawful;

D. Unanimously,

A threat or use of nuclear weapons should also be compatible with the requirements of the international law applicable in armed conflict particularly those of the principles and rules of international humanitarian law, as well as with specific obligations under treaties and other undertakings which expressly deal with nuclear weapons;

E. By seven votes to seven, by the President's casting vote,

It follows from the above-mentioned requirements that the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law;

However, in view of the current state of international law, and of the elements of fact at its disposal, the Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake;

IN FAVOUR: President Bedjaoui; Judges Ranjeva, Herczegh, Shi, Fleischhauer, Vereshchetin, Ferrari Bravo;

AGAINST: Vice-President Schwebel; Judges Oda, Guillaume, Shahabuddeen, Weeramantry, Koroma, Higgins.

F. Unanimously,

There exists an obligation to pursue in good faith and bring to a conclusion negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.

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The Court was composed as follows: President Bedjaoui, Vice-President Schwebel; Judges Oda, Guillaume, Shahabuddeen, Weeramantry, Ranjeva, Herczegh, Shi, Fleischhauer, Koroma, Vereshchetin, Ferrari Bravo, Higgins; Registrar Valencia-Ospina.

President Bedjaoui, Judges Herczegh, Shi, Vereshchetin and Ferrari Bravo appended declarations to the Advisory Opinion of the Court; Judges Guillaume, Ranjeva and Fleischhauer appended separate opinions; Vice-President Schwebel, Judges Oda Shahabuddeen, Weeramantry, Koroma and Higgins appended dissenting opinions.

Submission of the request and subsequent procedure (paras. 1-9)

The Court begins by recalling that by a letter dated 19 December 1994, filed in the Registry on 6 January 1995, the Secretary-General of the United Nations officially communicated to the Registrar the decision taken by the General Assembly to submit a question to the Court for an advisory opinion. The final paragraph of Resolution 49/75 K, adopted by the General Assembly on 15 December 1994, which sets forth the question, provides that the General Assembly

"Decides, pursuant to Article 96, paragraph 1, of the Charter of the United Nations, to request the International Court of Justice urgently to render its advisory opinion on the following question: 'Is the threat or use of nuclear weapons in any circumstance permitted under international law?'."

The Court then recapitulates the various stages of the proceedings.

Jurisdiction of the Court (paras. 10-18)

The Court first considers whether it has the jurisdiction to give a reply to the request of the General Assembly for an Advisory Opinion and whether, should the answer be in the affirmative, there is any reason it should decline to exercise any such jurisdiction.

The Court observes that it draws its competence in respect of advisory opinions from Article 65, paragraph 1, of its Statute, while Article 96, paragraph 1 of the Charter provides that:

"The General Assembly or the Security Council may request the International Court of Justice to give an advisory opinion on any legal question."

Some States which oppose the giving of an opinion by the Court argued that the General Assembly and Security Council may ask for an advisory opinion on any legal question only within the scope of their activities. In the view of the Court, it matters little whether this interpretation of Article 96, paragraph 1, is or is not correct; in the present case, the General Assembly has competence in any event to seise the Court. Referring to Articles 10, 11 and 13 of the Charter, the Court finds that, indeed, the question put to the Court has a relevance to many aspects of the activities and concerns of the General Assembly including those relating to the threat or use of force in international relations, the disarmament process, and the progressive development of international law.

"Legal Question" (para. 13)

The Court observes that it has already had occasion to indicate that questions

"framed in terms of law and rais[ing] problems of international law . . . are by their very nature susceptible of a reply based on law . . . [and] appear . . . to be questions of a legal character" (Western Sahara, Advisory Opinion, I.C.J. Reports 1975, p. 18, para. 15).

It finds that the question put to the Court by the General Assembly is indeed a legal one, since the Court is asked to rule on the compatibility of the threat or use of nuclear weapons with the relevant principles and rules of international law. To do this, the Court must identify the existing principles and rules, interpret them and apply them to the threat or use of nuclear weapons, thus offering a reply to the question posed based on law.

The fact that this question also has political aspects, as, in the nature of things, is the case with so many questions which arise in international life, does not suffice to deprive it of its character as a "legal question" and to "deprive the Court of a competence expressly conferred on it by its Statute". Nor are the political nature of the motives which may be said to have inspired the request or the political implications that the opinion given might have of relevance in the establishment of the Court's jurisdiction to give such an opinion.

Discretion of the Court to give an advisory opinion (paras. 14-19)

Article 65, paragraph 1, of the Statute provides: "The Court may give an advisory opinion . . ." (Emphasis added.) This is more than an enabling provision. As the Court has repeatedly emphasized, the Statute leaves a discretion as to whether or not it will give an advisory opinion that has been requested of it, once it has established its competence to do so. In this context, the Court has previously noted as follows:

"The Court's Opinion is given not to the States, but to the organ which is entitled to request it; the reply of the Court, itself an 'organ of the United Nations', represents its participation in the activities of the Organization, and, in principle, should not be refused." (Interpretation of Peace Treaties with Bulgaria, Hungary and Romania, First Phase, Advisory Opinion, I.C.J. Reports 1950, p. 71; . . .)"

In the history of the present Court there has been no refusal, based on the discretionary power of the Court, to act upon a request for advisory opinion; in the case concerning the Legality of the Use by a State of Nuclear Weapons in Armed Conflict the refusal to give the World Health Organization the advisory opinion requested by it was justified by the Court's lack of jurisdiction in that case.

Several reasons were adduced in these proceedings in order to persuade the Court that in the exercise of its discretionary power it should decline to render the opinion requested by the

General Assembly. Some States, in contending that the question put to the Court is vague and abstract, appeared to mean by this that there exists no specific dispute on the subject-matter of the question. In order to respond to this argument, it is necessary to distinguish between requirements governing contentious procedure and those applicable to advisory opinions. The purpose of the advisory function is not to settle — at least directly — disputes between States, but to offer legal advice to the organs and institutions requesting the opinion. The fact that the question put to the Court does not relate to a specific dispute should consequently not lead the Court to decline to give the opinion requested. Other arguments concerned the fear that the abstract nature of the question might lead the Court to make hypothetical or speculative declarations outside the scope of its judicial function; the fact that the General Assembly has not explained to the Court for what precise purposes it seeks the advisory opinion; that a reply from the Court in this case might adversely affect disarmament negotiations and would, therefore, be contrary to the interest of the United Nations; and that in answering the question posed, the Court would be going beyond its judicial role and would be taking upon itself a law-making capacity.

The Court does not accept those arguments and concludes that it has the authority to deliver an opinion on the question posed by the General Assembly, and that there exist no "compelling reasons" which would lead the Court to exercise its discretion not to do so. It points out, however, that it is an entirely different question whether, under the constraints placed upon it as a judicial organ, it will be able to give a complete answer to the question asked of it. But that is a different matter from a refusal to answer at all.

Formulation of the question posed (paras. 20 and 22)

The Court finds it unnecessary to pronounce on the possible divergences between the English and French texts of the question put. Its real objective is clear: to determine the legality or illegality of the threat or use of nuclear weapons. And the argument concerning the legal conclusions to be drawn from the use of the word "permitted", and the questions of burden of proof to which it was said to give rise, are found by the Court to be without particular significance for the disposition of the issues before it.

The Applicable Law (paras. 23-34)

In seeking to answer the question put to it by the General Assembly, the Court must decide, after consideration of the great corpus of international law norms available to it, what might be the relevant applicable law.

The Court considers that the question whether a particular loss of life, through the use of a certain weapon in warfare, is to be considered an arbitrary deprivation of life contrary to Article 6 of the International Covenant on Civil and Political Rights, as argued by some of the proponents of the illegality of the use of nuclear weapons, can only be decided by reference to the law applicable in armed conflict and not deduced from the terms of the Covenant itself. The Court also points out that the prohibition of genocide would be pertinent in this case if the recourse to nuclear weapons did indeed entail the element of intent, towards a group as such, required by Article II of the Convention on the Prevention and Punishment of the Crime of Genocide. In the view of the Court, it would only be possible to arrive at such a conclusion after having taken due account of the circumstances specific to each case. And the Court further finds that while the existing international law relating to the protection and safeguarding of the environment does not specifically prohibit the use of nuclear weapons, it indicates important

environmental factors that are properly to be taken into account in the context of the implementation of the principles and rules of the law applicable in armed conflict.

In the light of the foregoing the Court concludes that the most directly relevant applicable law governing the question of which it was seised, is that relating to the use of force enshrined in the United Nations Charter and the law applicable in armed conflict which regulates the conduct of hostilities, together with any specific treaties on nuclear weapons that the Court might determine to be relevant.

Unique characteristics of nuclear weapons (paras. 35 and 36)

The Court notes that in order correctly to apply to the present case the Charter law on the use of force and the law applicable in armed conflict, in particular humanitarian law, it is imperative for it to take account of the 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.

Provisions of the Charter relating to the threat or use of force (paras. 37-50)

The Court then addresses the question of the legality or illegality of recourse to nuclear weapons in the light of the provisions of the Charter relating to the threat or use of force.

In Article 2, paragraph 4, of the Charter the use of force against the territorial integrity or political independence of another State or in any other manner inconsistent with the purposes of the United Nations is prohibited.

This prohibition of the use of force is to be considered in the light of other relevant provisions of the Charter. In Article 51, the Charter recognizes the inherent right of individual or collective self-defence if an armed attack occurs. A further lawful use of force is envisaged in Article 42, whereby the Security Council may take military enforcement measures in conformity with Chapter VII of the Charter.

These provisions do not refer to specific weapons. They apply to any use of force, regardless of the weapons employed. The Charter neither expressly prohibits, nor permits, the use of any specific weapon, including nuclear weapons.

The entitlement to resort to self-defence under Article 51 is subject to the conditions of necessity and proportionality. As the Court stated in the case concerning Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America) (I.C.J. Reports 1986, p. 94, para. 176): “there is a specific rule whereby self-defence would warrant only measures which are proportional to the armed attack and necessary to respond to it, a rule well established in customary international law”.

The proportionality principle may thus not in itself exclude the use of nuclear weapons in self-defence in all circumstances. But at the same time, a use of force that is proportionate under the law of self-defence, must, in order to be lawful, also meet the requirements of the law applicable in armed conflict which comprise in particular the principles and rules of humanitarian law. And the Court notes that the very nature of all nuclear weapons and the profound risks associated therewith are further considerations to be borne in mind by States believing they can exercise a nuclear response in self-defence in accordance with the requirements of proportionality.

In order to lessen or eliminate the risk of unlawful attack, States sometimes signal that they possess certain weapons to use in self-defence against any State violating their territorial integ-

rity or political independence. Whether a signalled intention to use force if certain events occur is or is not a "threat" within Article 2, paragraph 4, of the Charter depends upon various factors. The notions of "threat" and "use" of force under Article 2, paragraph 4, of the Charter stand together in the sense that if the use of force itself in a given case is illegal — for whatever reason — the threat to use such force will likewise be illegal. In short, if it is to be lawful, the declared readiness of a State to use force must be a use of force that is in conformity with the Charter. For the rest, no State — whether or not it defended the policy of deterrence — suggested to the Court that it would be lawful to threaten to use force if the use of force contemplated would be illegal.

Rules on the lawfulness or unlawfulness of nuclear weapons as such (paras. 49-73)

Having dealt with the Charter provisions relating to the threat or use of force, the Court turns to the law applicable in situations of armed conflict. It first addresses the question whether there are specific rules in international law regulating the legality or illegality of recourse to nuclear weapons per se; it then examines the question put to it in the light of the law applicable in armed conflict proper, i.e. the principles and rules of humanitarian law applicable in armed conflict, and the law of neutrality.

The Court notes by way of introduction that international customary and treaty law does not contain any specific prescription authorizing the threat or use of nuclear weapons or any other weapon in general or in certain circumstances, in particular those of the exercise of legitimate self-defence. Nor, however, is there any principle or rule of international law which would make the legality of the threat or use of nuclear weapons or of any other weapons dependent on a specific authorization. State practice shows that the illegality of the use of certain weapons as such does not result from an absence of authorization but, on the contrary, is formulated in terms of prohibition.

It does not seem to the Court that the use of nuclear weapons can be regarded as specifically prohibited on the basis of certain provisions of the Second Hague Declaration of 1899, the Regulations annexed to the Hague Convention IV of 1907 or the 1925 Geneva Protocol. The pattern until now has been for weapons of mass destruction to be declared illegal by specific instruments. But the Court does not find any specific prohibition of recourse to nuclear weapons in treaties expressly prohibiting the use of certain weapons of mass destruction; and observes that, although, in the last two decades, a great many negotiations have been conducted regarding nuclear weapons, they have not resulted in a treaty of general prohibition of the same kind as for bacteriological and chemical weapons.

The Court notes that the treaties dealing exclusively with acquisition, manufacture, possession, deployment and testing of nuclear weapons, without specifically addressing their threat or use, certainly point to an increasing concern in the international community with these weapons; It concludes from this that these treaties could therefore be seen as foreshadowing a future general prohibition of the use of such weapons, but that they do not constitute such a prohibition by themselves. As to the treaties of Tlatelolco and Rarotonga and their Protocols, and also the declarations made in connection with the indefinite extension of the Treaty on the Non-Proliferation of Nuclear Weapons, it emerges from these instruments that:

(a) a number of States have undertaken not to use nuclear weapons in specific zones (Latin America; the South Pacific) or against certain other States (non-nuclear-weapon States which are parties to the Treaty on the Non-Proliferation of Nuclear Weapons);

(b) nevertheless, even within this framework, the nuclear-weapon States have reserved the right to use nuclear weapons in certain circumstances; and

(c) these reservations met with no objection from the parties to the Tlatelolco or Rarotonga Treaties or from the Security Council.

The Court then turns to an examination of customary international law to determine whether a prohibition of the threat or use of nuclear weapons as such flows from that source of law.

It notes that the Members of the international community are profoundly divided on the matter of whether non-recourse to nuclear weapons over the past fifty years constitutes the expression of an *opinio juris*. Under these circumstances the Court does not consider itself able to find that there is such an *opinio juris*. It points out that the adoption each year by the General Assembly, by a large majority, of resolutions recalling the content of resolution 1653 (XVI), and requesting the member States to conclude a convention prohibiting the use of nuclear weapons in any circumstance, reveals the desire of a very large section of the international community to take, by a specific and express prohibition of the use of nuclear weapons, a significant step forward along the road to complete nuclear disarmament. The emergence, as *lex lata*, of a customary rule specifically prohibiting the use of nuclear weapons as such is hampered by the continuing tensions between the nascent *opinio juris* on the one hand, and the still strong adherence to the doctrine of deterrence (in which the right to use those weapons in the exercise of the right to self-defence against an armed attack threatening the vital security interests of the State is reserved) on the other.

International humanitarian law (paras. 74-87)

Not having found a conventional rule of general scope, nor a customary rule specifically proscribing the threat or use of nuclear weapons per se, the Court then deals with the question whether recourse to nuclear weapons must be considered as illegal in the light of the principles and rules of international humanitarian law applicable in armed conflict and of the law of neutrality.

After sketching the historical development of the body of rules which originally were called "laws and customs of war"and later came to be termed "international humanitarian law", the Court observes that the cardinal principles contained in the texts constituting the fabric of humanitarian law are the following. The first is aimed at the protection of the civilian population and civilian objects and establishes the distinction between combatants and non-combatants; States must never make civilians the object of attack and must consequently never use weapons that are incapable of distinguishing between civilian and military targets. According to the second principle, it is prohibited to cause unnecessary suffering to combatants: it is accordingly prohibited to use weapons causing them such harm or uselessly aggravating their suffering. In application of that second principle, States do not have unlimited freedom of choice of means in the weapons they use.

The Court also refers to the Martens Clause, which was first included in the Hague Convention II with Respect to the Laws and Customs of War on Land of 1899 and which has proved to be an effective means of addressing the rapid evolution of military technology. A modern version of that clause is to be found in Article 1, paragraph 2, of Additional Protocol I of 1977, which reads as follows:

"In cases not covered by this Protocol or by other international agreements, civilians and combatants remain under the protection and authority of the principles of international law derived

from established custom, from the principles of humanity and from the dictates of public conscience."

The extensive codification of humanitarian law and the extent of the accession to the resultant treaties, as well as the fact that the denunciation clauses that existed in the codification instruments have never been used, have provided the international community with a corpus of treaty rules the great majority of which had already become customary and which reflected the most universally recognized humanitarian principles. These rules indicate the normal conduct and behaviour expected of States.

Turning to the applicability of the principles and rules of humanitarian law to a possible threat or use of nuclear weapons, the Court notes that nuclear weapons were invented after most of the principles and rules of humanitarian law applicable in armed conflict had already come into existence; the Conferences of 1949 and 1974-1977 left these weapons aside, and there is a qualitative as well as quantitative difference between nuclear weapons and all conventional arms. However, in the Court's view, it cannot be concluded from this that the established principles and rules of humanitarian law applicable in armed conflict did not apply to nuclear weapons. Such a conclusion would be incompatible with the intrinsically humanitarian character of the legal principles in question which permeates the entire law of armed conflict and applies to all forms of warfare and to all kinds of weapons, those of the past, those of the present and those of the future. In this respect it seems significant that the thesis that the rules of humanitarian law do not apply to the new weaponry, because of the newness of the latter, has not been advocated in the present proceedings.

The principle of neutrality (paras. 88 and 89)

The Court finds that as in the case of the principles of humanitarian law applicable in armed conflict, international law leaves no doubt that the principle of neutrality, whatever its content, which is of a fundamental character similar to that of the humanitarian principles and rules, is applicable (subject to the relevant provisions of the United Nations Charter), to all international armed conflict, whatever type of weapons might be used.

Conclusions to be drawn from the applicability of international humanitarian law and the principle of neutrality (paras. 90-97)

The Court observes that, although the applicability of the principles and rules of humanitarian law and of the principle of neutrality to nuclear weapons is hardly disputed, the conclusions to be drawn from this applicability are, on the other hand, controversial.

According to one point of view, the fact that recourse to nuclear weapons is subject to and regulated by the law of armed conflict, does not necessarily mean that such recourse is as such prohibited. Another view holds that recourse to nuclear weapons, in view of the necessarily indiscriminate consequences of their use, could never be compatible with the principles and rules of humanitarian law and is therefore prohibited. A similar view has been expressed with respect to the effects of the principle of neutrality. Like the principles and rules of humanitarian law, that principle has therefore been considered by some to rule out the use of a weapon the effects of which simply cannot be contained within the territories of the contending States.

The Court observes that, in view of the unique characteristics of nuclear weapons, to which the Court has referred above, the use of such weapons in fact seems scarcely reconcilable with respect for the requirements of the law applicable in armed conflict. It considers nevertheless, that it does not have sufficient elements to enable it to conclude with certainty that the use of

nuclear weapons would necessarily be at variance with the principles and rules of law applicable in armed conflict in any circumstance. Furthermore, the Court cannot lose sight of the fundamental right of every State to survival, and thus its right to resort to self-defence, in accordance with Article 51 of the Charter, when its survival is at stake. Nor can it ignore the practice referred to as "policy of deterrence", to which an appreciable section of the international community adhered for many years.

Accordingly, in view of the present state of international law viewed as a whole, as examined by the Court, and of the elements of fact at its disposal, the Court is led to observe that it cannot reach a definitive conclusion as to the legality or illegality of the use of nuclear weapons by a State in an extreme circumstance of self-defence, in which its very survival would be at stake.

Obligation to negotiate nuclear disarmament (paras. 98-103)

Given the eminently difficult issues that arise in applying the law on the use of force and above all the law applicable in armed conflict to nuclear weapons, the Court considers that it needs to examine one further aspect of the question before it, seen in a broader context.

In the long run, international law, and with it the stability of the international order which it is intended to govern, are bound to suffer from the continuing difference of views with regard to the legal status of weapons as deadly as nuclear weapons. It is consequently important to put an end to this state of affairs: the long-promised complete nuclear disarmament appears to be the most appropriate means of achieving that result.

In these circumstances, the Court appreciates the full importance of the recognition by Article VI of the Treaty on the Non-Proliferation of Nuclear Weapons of an obligation to negotiate in good faith a nuclear disarmament. The legal import of that obligation goes beyond that of a mere obligation of conduct; the obligation involved here is an obligation to achieve a precise result — nuclear disarmament in all its aspects — by adopting a particular course of conduct, namely, the pursuit of negotiations on the matter in good faith. This twofold obligation to pursue and to conclude negotiations formally concerns the 182 States parties to the Treaty on the Non-Proliferation of Nuclear Weapons, or, in other words, the vast majority of the international community. Indeed, any realistic search for general and complete disarmament, especially nuclear disarmament, necessitates the co-operation of all States.

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The Court finally emphasizes that its reply to the question put to it by the General Assembly rests on the totality of the legal grounds set forth by the Court above (paragraphs 20 to 103), each of which is to be read in the light of the others. Some of these grounds are not such as to form the object of formal conclusions in the final paragraph of the Opinion; they nevertheless retain, in the view of the Court, all their importance.

Declaration of President Bedjaoui

After having pointed out that paragraph E of the operative part was adopted by seven votes to seven, with his own casting vote, President Bedjaoui began by stressing that the Court had been extremely meticulous and had shown an acute sense of its responsibilities when proceeding to consider all the aspects of the complex question put to it by the General Assembly. He indicated that the Court had, however, had to find that in the current state of international law,

the question was one to which it was unfortunately not in a position to give a clear answer. In his view, the Advisory Opinion thus rendered does at least have the merit of pointing to the imperfections of international law and inviting the States to correct them.

President Bedjaoui indicated that the fact that the Court was unable to go any further should not "in any way be interpreted as leaving the way open to the recognition of the lawfulness of the threat or use of nuclear weapons". According to him, the Court does no more than place on record the existence of a legal uncertainty. After having observed that the voting of the Members of the Court on paragraph E of the operative part is not the reflection of any geographical dividing line, he gives the reasons that led him to approve the pronouncement of the Court.

To that end, he began by emphasising the particularly exacting nature of international law and the way in which it is designed to be applied in all circumstances. More specifically, he concluded that "the very nature of this blind weapon therefore has a destabilizing effect on humanitarian law which regulates discernment in the type of weapon used. Nuclear weapons, the ultimate evil, destabilize humanitarian law which is the law of the lesser evil. The existence of nuclear weapons is therefore a challenge to the very existence of humanitarian law, not to mention their long-term effects of damage to the human environment, in respect to which the right to life can be exercised".

President Bedjaoui considered that "self-defence — if exercised under extreme circumstances in which the very survival of a State is in question — cannot engender a situation in which a State would exonerate itself from compliance with the "intransgressible" norms of international humanitarian law". According to him it would be very rash to accord, without any hesitation, a higher priority to the survival of a State than to the survival of humanity itself.

As the ultimate objective of any action in the field of nuclear weapons is nuclear disarmament, President Bedjaoui concludes by stressing the importance of the obligation to negotiate in good faith for nuclear disarmament — which the Court has moreover recognized. He considers for his part that it is possible to go beyond the conclusions of the Court in this regard and to assert "that there in fact exists a twofold general obligation, opposable erga omnes, to negotiate in good faith and to achieve a specified result"; in other words, given the at least formally unanimous support for that object, that obligation has now — in his view — assumed customary force.

Declaration of Judge Herczegh

Judge Herczegh, in his declaration, takes the view that the Advisory Opinion could have included a more accurate summary of the present state of international law with regard to the question of the threat and use of nuclear weapons "in any circumstance". He voted in favour of the Advisory Opinion and, more particularly, in favour of paragraph 105, sub-paragraph E, as he did not wish to disassociate himself from the large number of conclusions that were expressed and integrated into the Advisory Opinion, and which he fully endorses.

Declaration of Judge Shi

Judge Shi has voted in favour of the operative paragraphs of the Advisory Opinion of the Court. However, he has reservations with regard to the role which the Court assigns to the pol-

icy of deterrence in determining the existence of a customary rule on the use of nuclear weapons.

In his view, “nuclear deterrence” is an instrument of policy to which certain nuclear- weapon States, supported by those States accepting nuclear umbrella protection, adhere in their relations with other States. This practice is within the realm of international politics and has no legal value from the standpoint of the formation of a customary rule prohibiting the use of the weapons as such.

It would be hardly compatible with the Court's judicial function if the Court, in determining a rule of existing law governing the use of the weapons, were to have regard to the “policy of deterrence”.

Also, leaving aside the nature of the policy of deterrence, States adhering to the policy of deterrence, though important and powerful members of the international community and playing an important role on the stage of international politics, by no means constitute a large proportion of the membership of the international community.

Besides, the structure of the community of states is built on the principle of sovereign equality. The Court cannot view these nuclear-weapon States and their allies in terms of material power, rather should have regard of them from the standpoint of international law. Any undue emphasis on the practice of these materially powerful States, constituting a fraction of membership of the community of States, would not only be contrary to the principle of sovereign equality of States, but also make it more difficult to give an accurate and proper view of the existence of a customary rule on the use of nuclear weapons.

Declaration of Judge Vereshchetin

In his declaration Judge Vereshchetin explains the reasons which have led him to vote in favour of paragraph 2E of the dispositif, which carries the implication of the indecisiveness of the Court. In his view, in advisory procedure, where the Court is requested not to resolve an actual dispute, but to state the law as it finds it, the Court may not try to fill any lacuna or improve the law which is imperfect. The Court cannot be blamed for indecisiveness or evasiveness where the law, upon which it is called to pronounce, is itself inconclusive.

Judge Vereshchetin is of the view that the Opinion adequately reflects the current legal situation and shows the most appropriate means to putting an end to the existence of any “grey areas” in the legal status of nuclear weapons.

Declaration of Judge Ferrari Bravo

Judge Ferrari Bravo regrets that the Court should have arbitrarily divided into two categories the long line of General Assembly resolutions that deal with nuclear weapons. Those resolutions are fundamental. This is the case of resolution 1 (I) of 24 January 1946, which clearly points to the existence of a truly solemn undertaking to eliminate all forms of nuclear weapons, whose presence in military arsenals was declared unlawful. The Cold War, which intervened shortly afterwards, prevented the development of this concept of illegality, while giving rise to the concept of nuclear deterrence which has no legal value. The theory of deterrence, while it has occasioned a practice of the nuclear-weapon States and their allies, has not been able to create a legal practice serving as a basis for the incipient creation of an international

custom. It has, moreover, helped to widen the gap between Article 2, paragraph 4 of the Charter and Article 51.

The Court should have proceeded to a constructive analysis of the role of the General Assembly resolutions. These have, from the outset, contributed to the formation of a rule prohibiting nuclear weapons. The theory of deterrence has arrested the development of that rule and, while it has prevented the implementation of the prohibition of nuclear weapons, it is nonetheless still the case that that "bare" prohibition has remained unchanged and continues to produce its effects, at least with regard to the burden of proof, by making it more difficult for the nuclear powers to vindicate their policies within the framework of the theory of deterrence.

Separate opinion of Judge Guillaume

After having pondered upon the admissibility of the request for advisory opinion, Judge Guillaume begins by expressing his agreement with the Court with regard to the fact that nuclear weapons, like all weapons, can only be used in the exercise of the right of self-defence recognized by Article 51 of the Charter. On the other hand, he says he has had doubts about the applicability of traditional humanitarian law to the use — and above all the threat of use — of nuclear weapons. He goes on to say, however, that he has no choice in the matter but to defer to the consensus that has emerged before the Court between the States.

Moving on to an analysis of the law applicable to armed conflict, he notes that that law essentially implies comparisons in which humanitarian considerations have to be weighed against military requirements. Thus the collateral damage caused to the civilian population must not be "excessive" as compared to the "military advantage" offered. The harm caused to combatants must not be "greater than that unavoidable to achieve legitimate military objectives". On that account, nuclear weapons of mass destruction can only be used lawfully in extreme cases.

In an attempt to define those cases, Judge Guillaume stresses that neither the Charter of the United Nations, nor any conventional or customary rule can detract from the natural right of self-defence recognized by Article 51 of the Charter. He deduces from this that international law cannot deprive a State of the right to resort to nuclear weaponry if that resort constitutes the ultimate means by which it can ensure its survival.

He regrets that the Court has not explicitly recognized this, but stresses that it has done so implicitly. It has certainly concluded that it could not, in those extreme circumstances, make a definitive finding either of legality of illegality in relation to nuclear weapons. In other words, it has taken the view that, in such circumstances, the law provides no guidance to States. However if the law is silent on that matter, the States, in the exercise of their sovereignty, remain free to act as they think fit.

Consequently, it follows implicitly but necessarily from paragraph 2 E of the Court's Advisory Opinion that the States may resort to "the threat or use of nuclear weapons in an extreme circumstance of self-defence, in which the very survival of a State would be at stake". When recognizing such a right the Court, by so doing, has recognized the legality of policies of deterrence.

Separate opinion of Judge Ranjeva

In his separate opinion, Judge Ranjeva has made a point of emphasising that, for the first time, the Court has unambiguously stated that the use or threat of use of nuclear weapons is contrary to the rules of international law applicable inter alia to armed conflict and, more particularly, to the principles and rules of humanitarian law. That indirect response to the question of the General Assembly is, in his view, justified by the very nature of the law of armed conflict, applicable without regard to the status of victim or of aggressor, and that explains why the Court has not gone so far as to uphold the exception of extreme self-defence when the very survival of the State is at stake, as a condition for the suspension of illegality. In his view, the State practice shows that a point of no return has been reached: the principle of the legality of the use or threat of use of nuclear weapons has not been asserted; it is on the basis of a justification of an exception to that principle, accepted as being legal, that the nuclear-weapon States attempt to give the reasons for their policies, and the increasingly closer-knit legal r,gimes of nuclear weapons have come about in the context of the consolidation and implementation of the final obligation to produce a specific result, i.e., generalized nuclear disarmament. These "givens" thus represent the advent of a consistent and uniform practice: an emergent opinio juris.

Judge Ranjeva considers, however, that the equal treatment that the Advisory Opinion has given to the principles of legality and illegality cannot be justified. The General Assembly gave a very clear definition of the object of its question: does international law authorize the use or threat of use of nuclear weapons in any circumstance? By dealing at the same time and, above all, on the same level with both legality and illegality, the Court has been led to adopt a liberal acceptation of the concept of a "legal question" in an advisory proceeding, as henceforth any question whose object is to ask the Court to look into matters that some people do not seek to understand, will be seen as admissible.

In conclusion, Judge Ranjeva, while being aware of the criticisms that specialists in law and judicial matters will be bound to level at the Advisory Opinion, ultimately considers that it does declare the law as it is, while laying down boundaries the exceeding of which is a matter for the competence of States. He nonetheless hopes that no Court will ever have to reach a decision along the lines of the second sub-paragraph of paragraph E.

Separate opinion of Judge Fleischhauer

Judge Fleischhauer's separate opinion highlights that international law is still grappling with and has not yet overcome the dichotomy that is created by the very existence of nuclear weapons between the law applicable in armed conflict, and in particular the rules and principles of humanitarian law on the one side, and the inherent right of self-defence on the other. The known qualities of nuclear weapons let their use appear scarcely reconcilable with humanitarian law, while the right to self-defence would be severely curtailed if for a State, victim of an attack with nuclear, chemical or bacteriological weapons or otherwise constituting a deadly menace for its very existence, nuclear weapons were totally ruled out as an ultimate legal option.

The separate opinion endorses the Court's finding that international law applicable in armed conflict, and particularly the rules and principles of humanitarian law, apply to nuclear weapons. It goes on to agree with the Court's Conclusion that the threat or use of nuclear weapons

would generally be contrary to the rules applicable in armed conflict, and in particular the principles and rules of humanitarian law. The separate opinion then welcomes that the Court did not stop there, but that the Court admitted that there can be qualifications to that finding. Had the Court not done so, then it would have given prevalence to one set of the principles involved over the other. The principles involved are, however, all legal principles of equal rank.

The separate opinion continues that the Court could and should have gone further and that it could and should have stated, that in order to reconcile the conflicting principles, their smallest common denominator would apply. That means that recourse to nuclear weapons could remain a justified legal option in an extreme case of individual or collective self-defence as the last resort of a State victim of an attack with nuclear, bacteriological or chemical weapons or otherwise threatening its very existence. The separate opinion sees a confirmation of this view in the legally relevant State practice relating to matters of self-defence.

For a recourse to nuclear weapons to be considered justified, however, not only would the situation have to be extreme, but all the conditions on which the lawfulness of the exercise of the right of self-defence depends in international law, including the requirement of proportionality, would have to be met. Therefore the margin for considering that a particular threat or use of nuclear weapons could be legal, is extremely narrow.

Finally, the separate opinion endorses the existence of a general obligation of States to pursue in good faith, and bring to a conclusion, negotiations leading to nuclear disarmament in all its aspects under strict and effective international control.

Dissenting opinion of Vice-President Schwebel

Vice-President Schwebel, while agreeing with much of the body of the Court's Opinion, dissented because of his “profound” disagreement with its principal operative conclusion: “The Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful an extreme circumstance of self-defence, in which the very survival of a State would be at stake.” The Court thereby concluded “on the supreme issue of the threat or use of force of our age that it has no opinion . . . that international law and hence the Court have nothing to say. After many months of agonizing appraisal of the law, the Court discovers that there is none. When it comes to the supreme interests of State, the Court discards the legal progress of the Twentieth Century, puts aside the provisions of the United Nations Charter of which it is 'the principal judicial organ', and proclaims, in terms redolent of Realpolitik, its ambivalence about the most important provisions of modern international law. If this was to be its ultimate holding, the Court would have done better to have drawn on its undoubted discretion not to render an Opinion at all.”

The Court's inconclusiveness was in accordance neither with its Statute, nor its precedent, nor with events which demonstrate the legality of the threat or use of nuclear weapons in extraordinary circumstances. E.g., the threat which Iraq took as a nuclear threat that may have deterred it from using chemical and biological weapons against coalition forces in the Gulf War was “not only eminently lawful but intensely desirable”.

While the principles of international humanitarian law govern the use of nuclear weapons, and while “it is extraordinarily difficult to reconcile the use . . . of nuclear weapons with the application of those principles”, it does not follow that the use of nuclear weapons necessarily and invariably will contravene those principles. But it cannot be accepted that the use of nuclear

weapons on a scale which would — or could — result in the deaths of "many millions in indiscriminate inferno and by far-reaching fallout . . . and render uninhabitable much or all of the earth, could be lawful." The Court's conclusion that the threat or use of nuclear weapons "generally" would be contrary to the rules of international law applicable in armed conflict "is not unreasonable."

The case as a whole presents an unparalleled tension between State practice and legal principle. State practice demonstrates that nuclear weapons have been manufactured and deployed for some 50 years; that in that deployment inheres a threat of possible use ("deterrence"); and that the international community, far from outlawing the threat or use of nuclear weapons in all circumstances, has recognized in effect or in terms that in certain circumstances nuclear weapons may be used or their use threatened. This State practice is not that of a lone and secondary persistent objector, but a practice of the permanent Members of the Security Council, supported by a large and weighty number of other States, who together represent the bulk of the world's power and much of its population.

The Nuclear Non-Proliferation Treaty and the negative and positive security assurances of the nuclear Powers unanimously accepted by the Security Council indicate the acceptance by the international community of the threat or use of nuclear weapons in certain circumstances. Other nuclear treaties equally infer that nuclear weapons are not comprehensively prohibited either by treaty or customary international law.

General Assembly resolutions to the contrary are not law-making or declaratory of existing international law. When faced with continuing and significant opposition, the repetition of General Assembly resolutions is a mark of ineffectuality in law formation as it is in practical effect.

Dissenting opinion of Judge Oda

Judge Oda voted against part one of the Court's Advisory Opinion because of his view that, for the reasons of judicial propriety and judicial economy, the Court should have exercised its discretionary power to refrain from rendering an Opinion in response to the Request.

In the view of Judge Oda, the question in the Request is not adequately drafted and there was a lack of meaningful consensus of the General Assembly with regard to the 1994 Request. After examining the developments of the relevant General Assembly resolutions on a convention on the prohibition of the use of nuclear weapons up to 1994, he notes that the General Assembly is far from having reached an agreement on the preparation of a Convention rendering the use of nuclear weapons illegal. In the light of that history, the Request was prepared and drafted — not in order to ascertain the status of existing international law on the subject but to try to promote the total elimination of nuclear weapons — that is to say, with highly political motives.

He notes that the perpetuation of the NPT régime recognizes two groups of States — the five nuclear-weapon States and the non-nuclear-weapon States. As the five nuclear-weapon States have repeatedly given assurances to the non-nuclear-weapon States of their intention not to use nuclear weapons against them, there is almost no probability of any use of nuclear weapons given the current doctrine of nuclear deterrence.

Judge Oda maintains that an advisory opinion should only be given in the event of a real need. In the present instance there is no need and no rational justification for the General Assembly's

request that the Court give an advisory opinion on the existing international law relating to the use of nuclear weapons. He also emphasizes that from the standpoint of judicial economy the right to request an advisory opinion should not be abused.

In concluding his Opinion, Judge Oda stresses his earnest hope that nuclear weapons will be eliminated from the world but states that the decision on this matter is a function of political negotiations among States in Geneva (the Conference on Disarmament) or New York (United Nations) but not one which concerns this judicial institution in The Hague.

He voted against sub-paragraph E as the equivocations contained therein serve, in his view, to confirm his point that it would have been prudent for the Court to decline from the outset to give any opinion at all in the present case.

Dissenting opinion of Judge Shahabuddeen

In Judge Shahabuddeen's dissenting opinion, the essence of the General Assembly's question was whether, in the special case of nuclear weapons, it was possible to reconcile the imperative need of a State to defend itself with the no less imperative need to ensure that, in doing so, it did not imperil the survival of the human species. If a reconciliation was not possible, which side should give way? The question was, admittedly, a difficult one; but the responsibility of the Court to answer it was clear. He was not persuaded that there was any deficiency in the law or the facts which prevented the Court from returning a definitive answer to the real point of the General Assembly's question. In his respectful view, the Court should and could have given a definitive answer — one way or another.

Dissenting opinion of Judge Weeramantry

Judge Weeramantry's Opinion is based on the proposition that the use or threat of use of nuclear weapons is illegal in any circumstances whatsoever. It violates the fundamental principles of international law, and represents the very negation of the humanitarian concerns which underlie the structure of humanitarian law. It offends conventional law and, in particular, the Geneva Gas Protocol of 1925, and Article 23(a) of the Hague Regulations of 1907. It contradicts the fundamental principle of the dignity and worth of the human person on which all law depends. It endangers the human environment in a manner which threatens the entirety of life on the planet.

He regretted that the Court had not so held, directly and categorically.

However, there were some portions of the Court's Opinion which were of value, in that it expressly held that nuclear weapons were subject to limitations flowing from the United Nations Charter, the general principles of international law, the principles of international humanitarian law, and by a variety of treaty obligations. It was the first international judicial determination to this effect and further clarifications were possible in the future.

Judge Weeramantry's Opinion explained that from the time of Henri Dunant, humanitarian law took its origin and inspiration from a realistic perception of the brutalities of war, and the need to restrain them in accordance with the dictates of the conscience of humanity. The brutalities of the nuclear weapon multiplied a thousand-fold all the brutalities of war as known in the pre-nuclear era. It was doubly clear therefore that the principles of humanitarian law governed this situation.

His Opinion examined in some detail the brutalities of nuclear war, showing numerous ways in which the nuclear weapon was unique, even among weapons of mass destruction in injuring human health, damaging the environment, and destroying all the values of civilization.

The nuclear weapon caused death and destruction; induced cancers, leukaemia, keloids and related afflictions; caused gastro intestinal, cardiovascular and related afflictions; continued, for decades after its use, to induce the health-related problems mentioned above; damaged the environmental rights of future generations; caused congenital deformities, mental retardation and genetic damage; carried the potential to cause a nuclear winter; contaminated and destroyed the food chain; imperilled the eco-system; produced lethal levels of heat and blast; produced radiation and radioactive fall-out; produced a disruptive electromagnetic pulse; produced social disintegration; imperilled all civilization; threatened human survival; wreaked cultural devastation; spanned a time range of thousands of years; threatened all life on the planet; irreversibly damaged the rights of future generations; exterminated civilian populations; damaged neighbouring States; produced psychological stress and fear syndromes — as no other weapons do.

While it was true that there was no treaty or rule of law which expressly outlawed nuclear weapons by name, there was an abundance of principles of international law, and particularly international humanitarian law, which left no doubt regarding the illegality of nuclear weapons, when one had regard to their known effects.

Among these principles were the prohibition against causing unnecessary suffering, the principle of proportionality, the principle of discrimination between combatants and civilians, the principle against causing damage to neutral states, the prohibition against causing serious and lasting damage to the environment, the prohibition against genocide, and the basic principles of human rights law.

In addition, there were specific treaty provisions contained in the Geneva Gas Protocol (1925), and the Hague Regulations (1907) which were clearly applicable to nuclear weapons as they prohibited the use of poisons. Radiation directly fell within this description, and the prohibition against the use of poisons was indeed one of the oldest rules of the laws of war.

Judge Weeramantry's Opinion also draws attention to the multicultural and ancient origins of the laws of war, referring to the recognition of its basic rules in Hindu, Buddhist, Chinese, Judaic, Islamic, African, and modern European cultural traditions. As such, the humanitarian rules of warfare were not to be regarded as a new sentiment, invented in the nineteenth century, and so slenderly rooted in universal tradition that they may be lightly overridden.

The Opinion also points out that there cannot be two sets of the laws of war applicable simultaneously to the same conflict — one to conventional weapons, and the other to nuclear weapons.

Judge Weeramantry's analysis includes philosophical perspectives showing that no credible legal system could contain a rule within itself which rendered legitimate an act which could destroy the entire civilization of which that legal system formed a part. Modern juristic discussions showed that a rule of this nature, which may find a place in the rules of a suicide club, could not be part of any reasonable legal system — and international law was pre-eminently such a system.

The Opinion concludes with a reference to the appeal in the Russell-Einstein Manifesto to “remember your humanity and forget the rest”, without which the risk arises of universal

death. In this context, the Opinion points out that international law is equipped with the necessary array of principles with which to respond, and that international law could contribute significantly towards rolling back the shadow of the mushroom cloud, and heralding the sunshine of the nuclear- free age.

The question should therefore have been answered by the Court — convincingly, clearly, and categorically.

Dissenting opinion of Judge Koroma

In his Dissenting Opinion, Judge Koroma stated that he fundamentally disagreed with the Court's finding that:

“in view of the current state of international law, and of the elements of fact at its disposal, the Court cannot conclude definitively whether the threat or use of nuclear weapons would be lawful or unlawful in an extreme circumstance of self-defence, in which the very survival of a State would be at stake”.

Such a finding, he maintained, could not be sustained on the basis of existing international law, nor in the face of the weight and abundance of evidence and material presented to the Court. In his view, on the basis of the existing law, particularly humanitarian law and the material available to the Court, the use of nuclear weapons in any circumstance would at the very least result in the violation of the principles and rules of that law and is therefore unlawful.

Judge Koroma also pointed out that although the views of states are divided on the question of the effects of the use of nuclear weapons, or as to whether the matter should have been brought before the Court, he took the view that once the Court had found that the General Assembly was competent to pose the question, and that no compelling reason existed against rendering an opinion, the Court should have performed its judicial function and decide the case on the basis of existing international law. He expressed his regret that the Court, even after holding that:

“the threat or use of nuclear weapons would generally be contrary to the rules of international law applicable in armed conflict, and in particular the principles and rules of humanitarian law”

A finding with which he concurred, save for the word “generally” — the Court had flinched from answering the actual question put to it that the threat or use of nuclear weapons in any circumstance would be unlawful under international law.

He maintained that the Court's answer to the question had turned on the “survival of the state”, whereas the question posed to the Court was about the lawfulness of the use of nuclear weapons. He therefore found the Court's judgment not only untenable in law, but even potentially destabilizing of the existing international legal order, as it not only made states that might be disposed to use such weapons judges about the lawfulness of the use of the use of such weapons, but it also threw the regime regarding the prohibition of the use of force and self-defence as regulated by the United Nations Charter into doubt, while at the same time albeit unintentionally it made inroads into the legal restraints imposed on nuclear weapon states regarding such weapons.

Judge Koroma, in his Dissenting Opinion, undertook a survey of what, in his view, is the law applicable to the question, analyzed the material before the Court and came to the conclusion

that it is wholly unconvincing for the Court to have ruled that in view of the "current state of the law", it could not conclude definitively whether the use of nuclear weapons would be illegal. In his opinion, not only does the law exist in substantial and ample form, but it is also precise and the purported lacuna is entirely unpersuasive. In his opinion, there was no room for a finding of non liquet in the matter before the Court.

On the other hand, after analysing the evidence, Judge Koroma came to the conclusion as the Court that nuclear weapons, when used, are incapable of distinguishing between civilians and military personnel, would result in the death of thousands if not millions of civilians, cause superfluous injury and unnecessary suffering to survivors, affect future generations, damage hospitals and contaminate the natural environment, food and drinking water, with radioactivity, thereby depriving survivors of the means of survival contrary to the Geneva Conventions of 1949 and the 1977 Additional Protocol I thereto. It followed, therefore, that the use of such weapons would be unlawful.

His dissent from the Court's main finding notwithstanding, Judge Koroma stated that the Opinion should not be viewed as entirely without legal significance or merit. The normative findings contained in it should be regarded as a step forward in the historic process of imposing legal restraints in armed conflicts and in reaffirming that nuclear weapons are subject to international law and to the rule of law. The Court's Advisory Opinion, in his view, constitutes for the first in history that a tribunal of this standing has declared and reaffirmed that the threat or use of nuclear weapons that is contrary to Article 2, paragraph 4, of the Charter prohibiting the use of force is unlawful and would be incompatible with the requirements of international law applicable in armed conflict. The finding, though qualified, tantamounts to a rejection of the argument that because nuclear weapons were invented after the advent of humanitarian law, they are therefore not subjected to that law.

In conclusion, Judge Koroma regretted that the Court did not follow through with those normative conclusions and make the only and inescapable finding that because of their established characteristics, it is impossible to conceive of any circumstance when the use of nuclear weapons in an armed conflict would not be unlawful. Such a conclusion by the Court would have been a most invaluable contribution by the Court as the guardian of legality of the United Nations system to what has been described as the most important aspect of international law facing humanity today.

Dissenting opinion of Judge Higgins

Judge Higgins appended a dissenting opinion in which she explained that she was not able to support that key finding of the court in paragraph 2E. In her view the Court had not applied the rules of humanitarian law in a systematic and transparent way to show how it reached the conclusion in the first part of paragraph 2E of the dispositif. Nor was the meaning of the first part of paragraph 2E clear. Judge Higgins also opposed the non-liquet in the second part of paragraph 2E, believing it to be unnecessary and wrong in law.

Some issues regarding the peaceful uses of nuclear energy

The peaceful uses of nuclear energy entail a variety of problems, including the safety of nuclear plants and the transport of radioactive material. At the same time, they are subjected to a ferocious commercial competition. The following five ítems illustrate those problems.

1. The dismantling of the *Superphénix* nuclear reactor.
Look up *Superphénix* in the Internet and read about it. You may want to start with the article under Wikipedia.

2. Russia to Finish Iranian Reactor[1]
By David Hoffman, *Washington Post Service*

It Will Expand Role Despite U.S. and Israeli Objections

MOSCOW — Russia has decided to expand its role in building a controversial nuclear power station in Iran, despite objections from the United that the technology could be useful in creating a nuclear weapons program.

At issue is Russia's $780 million contract to build a 1,000-megawatt light water reactor at Bushehr on the Gulf coast, finishing a project that was started by Germany in 1979 and later suspended.

The United States has sought to thwart completion of the atomic power plant even though Iran and Russia have denied that it could provide Iran with nuclear weapons technology.

Viktor Mikhailov, the Russian minister of atomic energy, said that he had recently visited the site and found the construction lagging.

He said Russia was "finishing" the first of two planned atomic reactors. The surrounding buildings and auxiliary construction were supposed to be handled by the Iranians, but they "probably will not be able to cope" with that task, he added.

"So, in my last meeting with the Iranian vice president, I suggested that we build that unit on a turn-key basis and he went along with me," Mr. Mikhailov said. "Otherwise all the deadlines will be broken." He said that the original deadline for finishing the atomic power station was 55 months, but that in the last 25 months, the Iranians had completed only the equivalent of five months of construction.

"There is a terrific lag," he said, because of the Iranians' difficulties, which he did not specify. "All the rest, Russia will do itself."

He vowed that Russia would finish the full power plant in 30 months.

Iran has offered to put the plant under international safeguards. Under pressure from President Bill Clinton, President Boris Yeltsin of Russia agreed in 1995 not to sell Iran gas-centrifuge uranium-enrichment technology, which could be used to make bomb-grade uranium.

But some U.S. and Israeli officials have continued to question the nature of Russia's cooperation with Iran on nuclear rnatters and in transferring technology for building intercontinental ballistic missiles.

[1] *International Herald Tribune*, 23 de febrero de 1998.

"I am sometimes asked, perhaps is Iran making a nuclear bomb?" Mr. Mikhailov said. "Well, it is not. And at the risk of offending my Iranian colleagues, Iran's potential today is such that perhaps they dream of building a nuclear bomb.

"But, he said, "It still has a long way to go."

EU to Discuss Iran

Tensions between the European Union and the United States over relations with Iran appear ready to resurface this week, Agence France-Presse reported from Brussels.

At talks in the Belgian capital Monday, EU foreign ministers are expected to take the first step toward normalizing relations with Tehran. These have effectively been on ice since the Islamic regime was implicated in terrorism in Germany last year.

Diplomats said EU governments had reached a consensus on the need to respond positively to the more conciliatory signals coming out of Iran recently.

The terms of the new relationship are to be thrashed out by the ministers, but diplomats said it was unlikely that the EU would end its current tight controls on Iranian embassies in Europe, many of which have been used as bases for secret service activities.

The EU's decision to suspend its previous policy of "critical dialogue" with Iran, made last April, followed a German court ruling that senior Iranian officials were involved in the organization of the assassination of four Kurdish dissidents in a Berlin restaurant in 1992.

3. Caribbean anger at nuclear cargo[1]

By Canute James in Kingston

Caribbean governments have warned that the passage through the region this week of a ship carrying nuclear waste from Europe to Japan is a danger to the area.

But the British and French companies shipping the waste contend that it is safe, and that there were no problems with earlier shipments.

The Pacific Swan, a UK-flag vessel built specifically to carry nuclear waste, is passing through the Panama Canal after leaving Cherbourg, France, 10 days ago, with a cargo of vitrified nuclear waste.

British Nuclear Fuels and Cogema of France, the companies making the shipment, said the waste had been packed to meet safety standards set by the International Atomic Energy Agency, and the French and Japanese governments.

Prime ministers of several eastern Caribbean countries said recently they were opposed to the shipment of the waste through the region, as an accident could hit tourism, fishing and commercial shipping industries.

The shipment has also been attacked by Greenpeace, the environmental lobby, which has questioned its safety.

Ralph Maraj, Trinidad and Tobago's foreign minister said: "With our Caribbean neighbours, we have made our position consistently clear and continue to call on those responsible for this dangerous practice to be sensitive to the concerns of the peoples of the Caribbean.

"We will continue to object strongly to the use of the Caribbean Sea as a transshipment route."

[1] *The Financial Times*, 3 de febrero de 1998.

The Pacific Swan had carried nuclear waste through the Panama Canal 28 times in the past, British Nuclear Fuels said, in rejecting the criticism. Over 4,000 special casks containing nuclear fuel had been safely transported between Japan and Europe since the 1960s in over 160 shipments, the company added.

Pacific Nuclear Transport, which operates the Pacific Swan, was "the most experienced company in the world for transporting this type of cargo, having covered 4.5m miles without a single incident resulting in the release of radioactivity," said British Nuclear Fuels.

4. Ten Bundesliga matches postponed because of nuclear waste transport[1]

Ten matches of the [German] Bundesliga, scheduled between 20 March and 26 April [1998] have been postponed n sido aplazados debido al transporte en ese periodo de desechos nucleares. Grandes manifestaciones de militantes antinucleares se llevan a cabo cada año por ese motivo y obligan a movilizar a importantes efectivos de la policía, lo que impide garantizar la seguridad en los partidos.

5. New Zealand's ban of nuclear-powered ships

Here is an article on the subject.

Why the nuclear-powered ship ban must stay

By Robert Green[2]
December 5, 2003

In August 1992 New Zealand anti-nuclear groups invited me, as a former British Navy Commander concerned about the safety of nuclear power, to conduct a national speaking tour, and meet politicians and members of the Special Committee on Nuclear Propulsion.

Telling evidence of safety risks with nuclear-powered ships

I brought a video of a UK TV documentary called *Polaris in Deep Water* which had not been shown in this country. It investigated reports of cracks in reactor coolant pipes in both the Royal Navy's Polaris nuclear-armed ballistic missile submarine force and other nuclear-powered attack submarines.

In it, the Chair of the UK Nuclear Powered Warships Safety Committee admitted that British nuclear submarines were currently banned from foreign port visits because of these cracks. A copy of the transcript of the interview had arrived in the mail with eight pages, which covered the admission, ripped out. The documentary maker suspected harassment by British government agents monitoring my upcoming visit.

Inaccurate claims about the safey of the ships

The Special Committee's report 'The Safety of Nuclear Powered Ships', published in December 1992, was irresponsibly unscientific and simply wrong when it claimed: "The presence in New Zealand ports of nuclear-powered vessels of the navies of the United States and United Kingdom would be safe." It was so aggressively pro-nuclear that the National government did not risk using it for its obvious purpose — to justify removing the nuclear propulsion ban in the 1987 Nuclear Free Zone Act — and instead quietly buried it.

[1] *El País*, 25 January 1998.

[2] Commander Green served in the Royal Navy 1962-82, navigating Buccaneer nuclear strike aircraft and anti-submarine helicopters and serving in Fleet intelligence. He now coordinates the New Zealand Peace Foundation's Disarmament & Security Centre in Christchurch with his wife Dr Kate Dewes

Revealing evidence of possible risks

Within months, *The Scotsman* newspaper revealed in August 1993 that the Royal Navy had contingency plans for a worst-case accident in a nuclear-powered submarine based in Faslane, near Glasgow, which included evacuation of an area out to 10 km depending on wind strength and direction because of the potential radioactive contamination.

New Zealand must stand firm on the ban

A decade later, the New Zealand government must stand firm against pressure from the Bush administration to link a possible preferential trade deal with withdrawal of the ban. Some reasons follow.

New Zealand's nuclear-free legislation is not anti-American. It is pro-human and environmental security for New Zealand.

The Precautionary Principle

Banning nuclear-powered warships is a rare example of application of the precautionary principle. Adopted at the Earth Summit in 1992, this recognises the vulnerability of the environment, acknowledges the limitations of science and engineering, reverses the burden of proof, and assesses alternatives.

US and UK governments accept liability but do not have insurance

The US and UK governments have to accept absolute liability for the consequences of a nuclear accident in one of their warships. However, no commercial insurance company has ever insured either nuclear-powered merchant ships (which were all economic failures) or electricity generation plants, because a worst-case accident, like the 1986 Chernobyl reactor explosion, cannot be ruled out.

US and UK navies' procedure for accident in foreign port

The US and UK Navy show a high level of concern about safety and preparedness for an accident in a nuclear-powered warship in a foreign port, with detailed instructions on how to deal with media and local authorities. This reflects their sensible assessment of the unacceptable consequences for their operations if an accident causes damage to life and property ashore.

Nuclear-powered warships a prime terrorist target

Following the successful terrorist attack on the destroyer *USS Cole* in Aden in 2000, the US Navy recognized that nuclear-powered warships in port (like shore-based power plants) are prime terrorist targets, because the consequences of a successful attack would be potentially catastrophic.

Because of this, even before 11 September 2001, the US Navy did not allow its nuclear-powered ships to visit New York and several other major US ports. US pressure to allow visits to foreign ports by its nuclear-powered warships, therefore, means that it is willing to place other countries at risk of terrorist attack.

Nuclear-powered ships banned from Sydney

Despite Australia being a close US ally, the Australian Nuclear Safety Bureau does not allow any nuclear-powered warship to visit Sydney.

Safety problems in UK nuclear submarines

Safety problems in UK nuclear submarines persist. In 2000, different, more serious pipe cracks in *HMS Tireless* were repaired in the British colony of Gibraltar after a major emergency in the Mediterranean, causing deep concern over many months among both Gibraltarians and the southern Spanish people.

In 1996 another submarine of the same class, *HMS Torbay*, had a steering gear failure while entering Devonport in the UK, prompting a nuclear safety alert to emergency services until tugs regained control.

The grounding of the UK nuclear attack submarine *HMS Trafalgar* off the Isle of Skye in Scotland on 6 November 2002 was immediately followed by a reassuring Royal Navy statement that there was no nuclear risk to the public.

Contrast this with the near-sinking of the British destroyer *HMS Nottingham* after striking rocks off Lord Howe Island in the Tasman in July 2002, which would have risked a major environmental catastrophe had she been nuclear-powered.

Ironically, she was rumoured to have been there to intercept the British Nuclear Fuels ship *Pacific Pintail* — carrying spent fuel rods back to the UK after rejection by Japan because BNFL had falsified records about them — in order to escort it through the Tasman where a protest flotilla of yachts had gathered.

Pollution dangers with uranium mining and radioactive waste

Opposition to nuclear-powered warship visits is also based on wider rejection of the activities and processes used to gain and maintain nuclear technology for military purposes. Mining uranium, its processing for use as fuel in warship reactors or in weapons, and the poisonous radioactive waste cause long-lasting pollution and damage to the health of affected workers and public, including genetic effects. Also, no environmentally safe way has yet been found to dispose of the highly radioactive decommissioned warship reactors.

Nuclear-free status gives right to criticise

New Zealand's unequivocal nuclear-free status gives it a unique freedom and authority to criticise the safety of nuclear propulsion and electricity generation, and their incestuous link to creating fissile materials for nuclear weapons.

Nuclear-armed states which have followed this path include the UK, Israel, North Korea, India and Pakistan. Many other countries, especially those allied to the US or with an indigenous nuclear industry, are inevitably muzzled.

Value of NZ's 'clean, green' image

The economic benefits of New Zealand's 'clean, green' image will always outweigh any marginal US trade concessions.

Anxiety in Japan

US pressure could also be linked to its concern that the 'Kiwi disease' will spread to Japan, where the last conventionally powered aircraft-carrier *USS Kitty Hawk* based there must soon be replaced by a nuclear-powered one. Apart from the scandal about BNFL falsifying records referred to earlier, there is associated sensitivity in Japan about the growing crisis of confidence in the Japanese nuclear energy industry following several accidents and revelations that safety inspections had concealed cracks and leaks in reactors since 1986.

New Zealand must maintain its independent position

Caving in on the nuclear propulsion ban would be seen by the world as the beginning of the end of New Zealand's courageous, hard-won global role as a relatively independent honest broker and leader in promoting alternative security policies which are not locked into US nuclear war-fighting strategies, uphold international law and are environmentally responsible.

WHAT IS DEPLETED URANIUM?

Depleted uranium is a waste obtained from producing fuel for nuclear reactors and atomic bombs. The material used in civil and nuclear military industry is uranium U-235, the isotope which can be fissioned. Since this isotope is found in very low proportions in nature, the uranium ore has to be enriched, i.e., its proportion of the U-235 isotope has to be industrially increased. This pocess produces a large amount of radioactive depleted uranium waste, thus named because it is mainly formed by the other non-fissionable uranium isotope, U-238 and a minimum proportion of U-235.

American military industry has been using depleted uranium to coat conventional weaponry (artillery, tanks and aircraft) since 1977, to protect its own tanks, as a counterweight in aircraft and Tomahawk missiles and as a component for navigation instruments. This is due to depleted uranium having characteristics making it highly attractive for military technology: firstly, it is extremely dense and heavy (1 cm3 weighs almost 19 grammes), such that projectiles with a depleted uranium head can penetrate the armoured steel of military vehicles and buildings; secondly, it is a spontaneous pyrophoric material, i.e., it inflames when reaching its target generating such heat that it explodes.

After more than 50 years producing atomic weapons and nuclear energy, the USA has 500,000 tonnes of depleted uranium stored, according to official data. Depleted uranium is radioactive also and has an average lifetime of 4.5 thousand million years. This is why such waste has to be stored safely for an indefinite period of time, an extremely costly procedure. In order to save money and empty their tanks, the Department of Defence and Energy assigns depleted uranium free of charge to national and foreign armament companies. Apart from the USA, countries like the United Kingdom, France, Canada, Russia, Greece, Turkey, Israel, the Gulf monarchies, Taiwan, South Korea, Pakistan or Japan purchase or manufacture weapons with depleted uranium.

When a projectile hits a target, 70% of its depleted uranium burns and oxidizes, bursting into highly toxic, radioactive micro particles. Being so tiny, these particles can be ingested or inhaled after being deposited on the ground or carried kilometres away by the wind, the food chain or water. A 1995 technical report issued by the American Army indicates that “if depleted uranium enters the body, it has the potentiality of causing serious medical consequences. The associated risk is both chemical and radiological”. Deposited in the lungs or kidneys, uranium 238 and products from its decay (thorium 234, protactinium and other uranium isotopes) give off alpha and beta radiations which cause cell death and genetic mutations causing cancer in exposed individuals and genetic abnormalities in their descendents over the years.

In its 110,000 air raids against Iraq, the US A-10 Warthog aircraft launched 940,000 depleted uranium projectiles, and in the land offensive, its M60, M1 and M1A1 tanks fired a further 4,000 larger caliber also uranium projectiles.

It is estimated that there are 300 tonnes of radioactive waste in the area which might have already affected 250,000 Iraqis. After the Gulf War, Iraqi and international epidemiological investigations have enabled the environmental pollution due to using this kind of weapon to be associated with the appearance of new, very difficult to diagnose diseases (serious immunodeficiencies, for instance) and the spectacular increase in congenital malformations and cancer, both in the Iraqi population and amongst several thousands of American and British veterans

and in their children, a clinical condition known as Gulf War Syndrome. Similar symptoms to those of the Gulf War have been described amongst a thousand children residing in areas of the former Yugoslavia (Bosnia) where American aviation also used depleted uranium bombs in 1996, the same as in the NATO intervention against Yugoslavia in 1999.

Half Life: The Lethal Legacy of America's Nuclear Waste

National Geographic Magazine, July 2002

Michael E. Long

The search for permanent solutions heats up as tons of highly radioactive sludge, spent fuel, and contaminated soil pile up around the nation.

World War II was still being fought in the Pacific during the first week of August 1945, a time when my father and I were vacationing in Atlantic City, New Jersey, eating soft-shell crabs and lazing by the ocean. In a games arcade I fed nickels to a toy machine gun and fired at Japanese Zero fighters flitting across a screen. On the boardwalk, rifles shouldered, platoons of United States soldiers marched and sang: The Stars and Stripes will fly over Tokyo, Fly over Tokyo, fly over Tokyo, The Stars and Stripes will fly over Tokyo, When the 991st gets there. . . .

One morning my dad showed me a newspaper with red headlines that said a huge bomb had been dropped on Hiroshima, Japan. Three days later another bomb was dropped on Nagasaki, and Japan surrendered. The bombs were so big that the boys of the 991st wouldn't have to go to Tokyo after all.

The strong nuclear force, the binding energy that makes atomic nuclei the most tightfisted entities in all creation, had been sundered, unleashing enormous power—the equivalent of 15,000 tons (13,600 metric tons) of TNT in the Hiroshima bomb—as well as a race to create bigger weapons. Seven years later our first hydrogen device, code-named Mike, yielded a blast equal to 10.4 million tons (9.4 million metric tons) of TNT. Mike would have leveled all five boroughs of New York City.

By the mid-1960s, the height of the Cold War, the U.S. had stockpiled around 32,000 nuclear warheads, as well as mountains of radioactive garbage from the production of plutonium for these weapons. Just one kilogram, or 2.2 pounds, of plutonium required around a thousand tons of uranium ore. Generated from uranium bombarded by neutrons in a nuclear reactor, the plutonium was later separated from the uranium in hellish baths of acids and solvents still awaiting disposal.

A long deferred cleanup is now under way at 114 of the nation's nuclear facilities, which encompass an acreage equivalent to Rhode Island and Delaware combined. Many smaller sites, the easy ones, have been cleansed, but the big challenges remain. What's to be done with 52,000 tons (47,000 metric tons) of dangerously radioactive spent fuel from commercial and defense nuclear reactors? With 91 million gallons (345 million liters) of high-level waste left over from plutonium processing, scores of tons of plutonium, more than half a million tons of depleted uranium, millions of cubic feet of contaminated tools, metal scraps, clothing, oils, solvents, and other waste? And with some 265 million tons (240 million metric tons) of tailings from milling uranium ore—less than half stabilized—littering landscapes?

Here are four texts from the World Nuclear Association:

1. Nuclear Power in the World Today

2. World Nuclear Power Reactors 2011 and Uranium Requirements

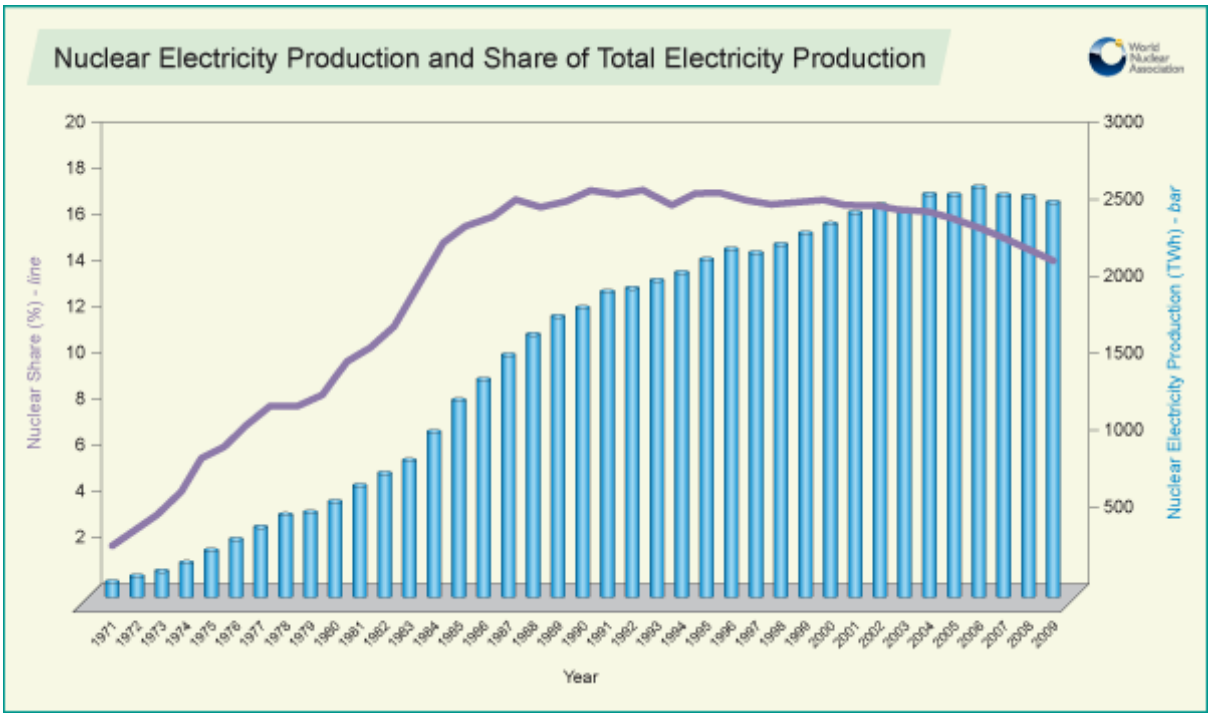
3. Nuclear share figures, 1999-2009

4. Nuclear-Powered Ships

1. Nuclear Power in the World Today *(February 2011)* [1]

- The first commercial nuclear power stations started operation in the 1950s.
- There are now over 440 commercial nuclear power reactors operating in 30 countries, with 377,000 MWe of total capacity.
- They provide about 14% of the world's electricity as continuous, reliable base-load power, and their efficiency is increasing.
- 56 countries operate a total of about 250 research reactors and a further 180 nuclear reactors power some 140 ships and submarines.

Nuclear technology uses the energy released by splitting the atoms of certain elements. It was first developed in the 1940s, and during the Second World War research initially focussed on producing bombs by splitting the atoms of either uranium or plutonium.



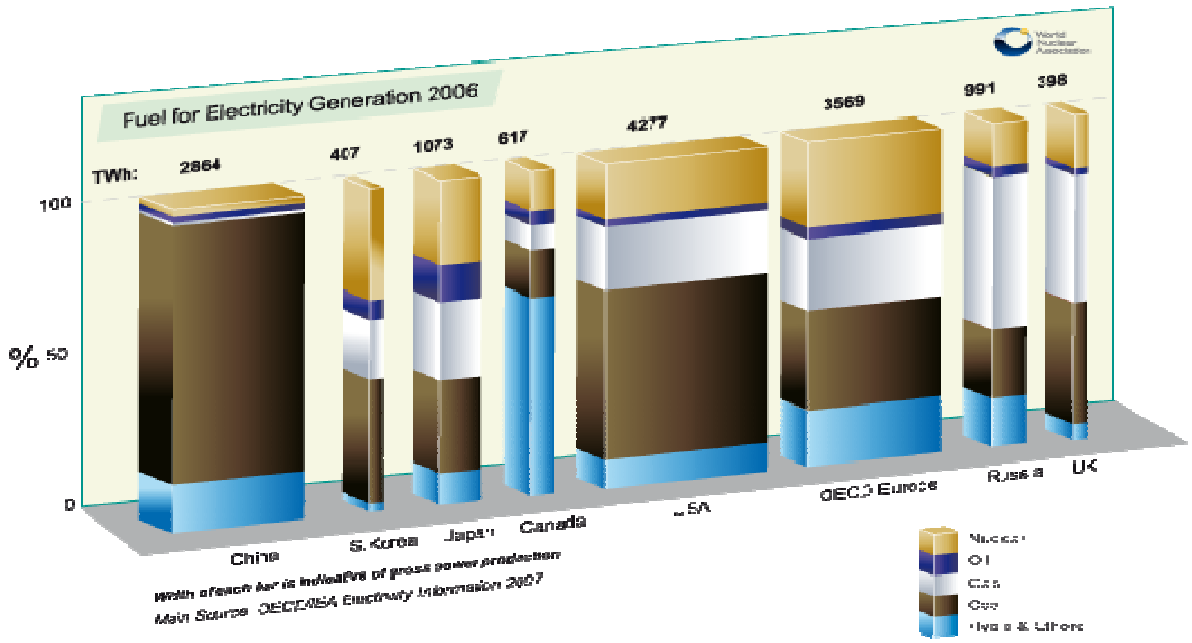
[1] ***Sources:*** *WNA, data to publication date; IAEA.*

In the 1950s attention turned to the peaceful purposes of nuclear fission, notably for power generation. Today, the world produces as much electricity from nuclear energy as it did from all sources combined in 1960. Civil nuclear power can now boast over 14,000 reactor years of experience and supplies almost 14% of global electricity needs, from reactors in 30 countries. In fact, many more than 30 countries use nuclear-generated power.

Many countries have also built research reactors to provide a source of neutron beams for scientific research and the production of medical and industrial isotopes.

Today, only eight countries are known to have a nuclear weapons capability. By contrast, 56 operate civil research reactors, and 30 host some 440 commercial nuclear power reactors with a total installed capacity of over 377,000 MWe (see table). This is more than three times the total generating capacity of France or Germany from all sources. Over 60 further nuclear power reactors are under construction, equivalent to 17% of existing capacity, while over 150 are firmly planned, equivalent to 46% of present capacity.

Sixteen countries depend on nuclear power for at least a quarter of their electricity. France gets around three quarters of its power from nuclear energy, while Belgium, Bulgaria, Czech Republic, Hungary, Slovakia, South Korea, Sweden, Switzerland, Slovenia and Ukraine get one third or more. Japan, Germany and Finland get more than a quarter of their power from nuclear energy, while in the USA one fifth is from nuclear. Among countries which do not host nuclear power plants, Italy gets about 10% of its power from nuclear, and Denmark about 8%.



Improved performance from existing nuclear reactors

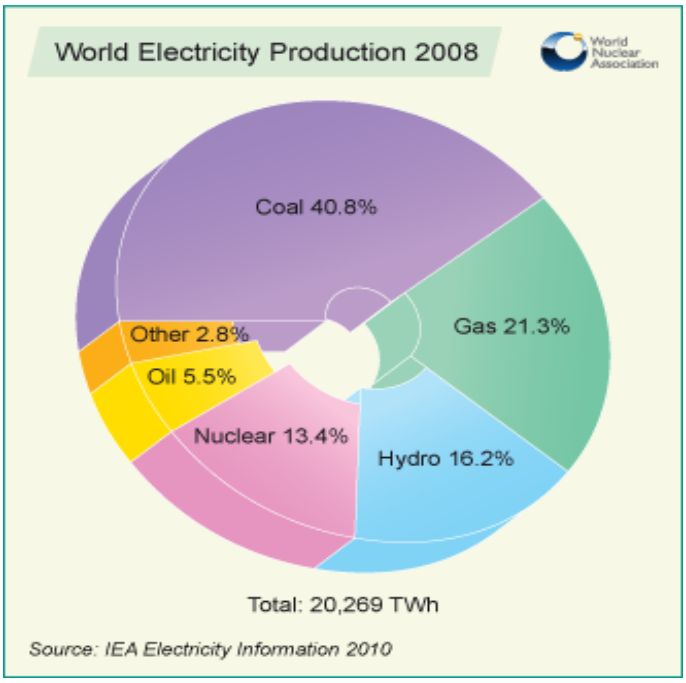
As nuclear power plant construction returns to the levels reached during the 1970s and 1980s, those now operating are producing more electricity. In 2007, production was 2608 billion kWh. The increase over the six years to 2006 (210 TWh) was equal to the output from 30 large new nuclear power plants. Yet between 2000 and 2006 there was no net increase in reactor numbers (and only 15 GWe in capacity). The rest of the improvement is due to better per-

formance from existing units. In 2007 performance dropped back by 50 TWh due to plant closures in Germany, UK and Japan.

In a longer perspective, from 1990 to 2006, world capacity rose by 44 GWe (13.5%, due both to net addition of new plants and uprating some established ones) and electricity production rose 757 billion kWh (40%). The relative contributions to this increase were: new construction 36%, uprating 7% and availability increase 57%.

One quarter of the world's reactors have load factors of more than 90%, and nearly two thirds do better than 75%, compared with about a quarter of them in 1990. For 15 years Finnish plants topped the performance tables, but the USA now dominates the top 25 positions, followed by Japan and South Korea.

US nuclear power plant performance has shown a steady improvement over the past twenty years, and the average load factor now stands at around 90%, up from 66% in 1990 and 56% in 1980. This places the USA as the performance leader with nearly half of the top 25 reactors, the 25th achieving more than 98%. The USA accounts for nearly one third of the world's nuclear electricity.



In 2009 and 2010 nine countries averaged better than 80% load factor, while French reactors averaged 73%, despite many being run in load-following mode, rather than purely for base-load power.

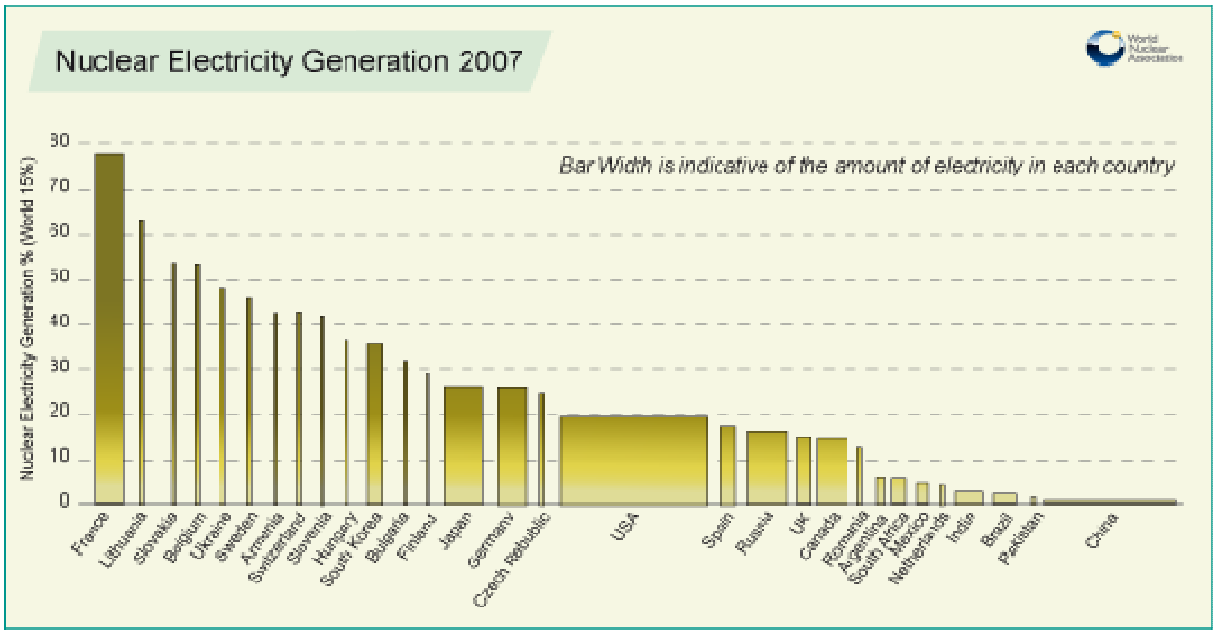
Some of these figures suggest near-maximum utilisation, given that most reactors have to shut down every 18-24 months for fuel change and routine maintenance. In the USA this used to take over 100 days on average but in the last decade it has averaged about 40 days. Another performance measure is unplanned capability loss, which in the USA has for the last few years been below 2%.

Other nuclear reactors

In addition to commercial nuclear power plants, there are about 250 research reactors operating, in 56 countries, with more under construction. These have many uses including research and the production of medical and industrial isotopes, as well as for training.

The use of reactors for marine propulsion is mostly confined to the major navies where it has played an important role for five decades, providing power for submarines and large surface vessels. About 140 ships are propelled by some 180 nuclear reactors and over 13,000 reactor-years of experience has been gained with marine reactors. Russia and the USA have decommissioned many of their nuclear submarines from the Cold War era.

Russia also operates a fleet of six large nuclear-powered icebreakers and a 62,000 tonne cargo ship which are more civil than military. It is also completing a floating nuclear power plant with two 40 MWe reactors for use in remote regions.



Note: Taipower uses nuclear energy to generate 22% of electricity on the island of Taiwan.

2. **World Nuclear Power Reactors & Uranium Requirements** (2 March 2011)

This table includes only those future reactors envisaged in specific plans and proposals and expected to be operating by 2030. Longer-range estimates based on national strategies, capabilities and needs may be found in the WNA Nuclear Century Outlook. The WNA country papers linked to this table cover both areas: near-term developments and the prospective long-term role for nuclear power in national energy policies.

COUNTRY	NUCLEAR ELECTRICITY GENERATION 2009		REACTORS OPERABLE 1 Mar 2011		REACTORS UNDER CONSTRUCTION 1 Mar 2011		REACTORS PLANNED March 2011		REACTORS PROPOSED March 2011		URANIUM REQUIRED 2011
	billion kWh	% e	No.	MWe net	No.	MWe gross	No.	MWe gross	No.	MWe gross	tonnes U
Argentina	7.6	7.0	2	935	1	745	2	773	1	740	208
Armenia	2.3	45	1	376	0	0	1	1060			56
Bangladesh	0	0	0	0	0	0	2	2000	0	0	0
Belarus	0	0	0	0	0	0	2	2000	2	2000	0
Belgium	45	51.7	7	5943	0	0	0	0	0	0	1052
Brazil	12.2	3.0	2	1901	1	1405	0	0	4	4000	311
Bulgaria	14.2	35.9	2	1906	0	0	2	1900	0	0	275
Canada	85.3	14.8	18	12679	2	1500	3	3300	3	3800	1884
Chile	0	0	0	0	0	0	0	0	4	4400	0
China	65.7	1.9	13	10234	27	29790	50	57830	110	108000	4402
Czech Republic	25.7	33.8	6	3722	0	0	2	2400	1	1200	680
Egypt	0	0	0	0	0	0	1	1000	1	1000	0
Finland	22.6	32.9	4	2721	1	1700	0	0	2	3000	468
France	391.7	75.2	58	63130	1	1720	1	1720	1	1100	9221
Germany	127.7	26.1	17	20339	0	0	0	0	0	0	3453
Hungary	14.3	43	4	1880	0	0	0	0	2	2200	295
India	14.8	2.2	20	4385	5	3900	18	15700	40	49000	1053
Indonesia	0	0	0	0	0	0	2	2000	4	4000	0
Iran	0	0	0	0	1	1000	2	2000	1	300	150
Israel	0	0	0	0	0	0	0	0	1	1200	0
Italy	0	0	0	0	0	0	0	0	10	17000	0
Japan	263.1	28.9	55	47348	2	2756	12	16538	1	1300	8195
Jordan	0	0	0	0	0	0	1	1000			0
Kazakhstan	0	0	0	0	0	0	2	600	2	600	0
Korea DPR (North)	0	0	0	0	0	0	0	0	1	950	0
Korea RO (South)	141.1	34.8	21	18675	5	5800	6	8400	0	0	3586
Lithuania	10.0	76.2	0	0	0	0	0	0	1	1700	0
Malaysia	0	0	0	0	0	0	0	0	1	1200	0
Mexico	10.1	4.8	2	1600	0	0	0	0	2	2000	247
Netherlands	4.0	3.7	1	485	0	0	0	0	1	1000	107
Pakistan	2.6	2.7	2	400	1	300	2	600	2	2000	68
Poland	0	0	0	0	0	0	6	6000	0	0	0
Romania	10.8	20.6	2	1310	0	0	2	1310	1	655	175
Russia	152.8	17.8	32	23084	10	8960	14	16000	30	28000	3757
Slovakia	13.1	53.5	4	1816	2	880	0	0	1	1200	267
Slovenia	5.5	37.9	1	696	0	0	0	0	1	1000	145
South Africa	11.6	4.8	2	1800	0	0	0	0	6	9600	321
Spain	50.6	17.5	8	7448	0	0	0	0	0	0	1458
Sweden	50.0	34.7	10	9399	0	0	0	0	0	0	1537

COUNTRY	NUCLEAR ELECTRICITY GENERATION 2009		REACTORS OPERABLE 1 Mar 2011		REACTORS UNDER CONSTRUCTION 1 Mar 2011		REACTORS PLANNED March 2011		REACTORS PROPOSED March 2011		URANIUM REQUIRED 2011
	billion kWh	% e	No.	MWe net	No.	MWe gross	No.	MWe gross	No.	MWe gross	tonnes U
Switzerland	26.3	39.5	5	3252	0	0	0	0	3	4000	557
Thailand	0	0	0	0	0	0	0	0	5	5000	0
Turkey	0	0	0	0	0	0	4	4800	4	5600	0
Ukraine	77.9	48.6	15	13168	0	0	2	1900	20	27000	2037
UAE	0	0	0	0	0	0	4	5600	10	14400	0
United Kingdom	62.9	17.9	19	10962	0	0	4	6680	9	12000	2235
USA	798.7	20.2	104	101229	1	1218	9	11662	23	34000	19427
Vietnam	0	0	0	0	0	0	2	2000	12	13000	0
WORLD**	**2560**	**14**	**443**	**377,750**	**62**	**64,374**	**158**	**176,773**	**324**	**368,295**	**68,971**
	billion kWh	**% e**	**No.**	**MWe**	**No.**	**MWe**	**No.**	**MWe**	**No.**	**MWe**	**tonnes U**
	NUCLEAR ELECTRICITY GENERATION		REACTORS OPERATING		REACTORS BUILDING		ON ORDER or PLANNED		PROPOSED		URANIUM REQUIRED

Sources:
Reactor data: WNA to 1/3/11
IAEA- for nuclear electricity production & percentage of electricity (% e) 3/5/10.
WNA: Global Nuclear Fuel Market report 2009 (reference scenario) — for U.

Operating = Connected to the grid; Building/Construction = first concrete for reactor poured, or major refurbishment under way; Planned = Approvals, funding or major commitment in place, mostly expected in operation within 8-10 years; Proposed = Specific program or site proposals, expected operation mostly within 15 years.

New plants coming on line are balanced by old plants being retired. Over 1996-2009, 43 reactors were retired as 49 started operation. There are no firm projections for retirements over the period covered by this Table, but WNA estimates that at least 60 of those now operating will close by 2030, most being small plants. The 2009 WNA Market Report reference case has 143 reactors closing by 2030.

TWh = Terawatt-hours (billion kilowatt-hours), MWe = Megawatt (electrical as distinct from thermal), kWh = kilowatt-hour.

68,971 tU = 81,338 t U_3O_8

** The world total includes 6 reactors operating on Taiwan with a combined capacity of 4927 MWe, which generated a total of 39.9 billion kWh in 2009 (accounting for 20.7% of Taiwan's total electricity generation). Taiwan has two reactors under construction with a combined capacity of 2700 MWe, and one proposed, 1350 MWe. U demand of 1344 t is expected in 2011.

3. **Nuclear share figures, 1999-2009** (May 2010)

Country or area	**Nuclear share (%)**											Nuclear electricity production (TWh)	Nuclear electricity production (TWh)
	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2008	2009
Argentina	9.0	7.3	8.2	7.2	8.6	8.2	6.9	6.9	6.2	6.2	7.0	**6.8**	**7.6**
Armenia	36.4	33.0	34.8	40.	35.	38.	42.	42.	43.5	39.	45.	**2.3**	**2.3**
Belgium	57.7	55.3	58.0	57.	55.	55.	55.	54.	54.1	53.	51.	**43.4**	**45.0**
Brazil	1.1	1.4	4.3	4.0	3.6	3.0	2.5	3.3	2.8	3.1	3.0	**14.0**	**12.2**
Bulgaria	47.1	45.0	41.6	47.	37.	41.	44.	43.	32.1	32.	35.	**14.7**	**14.2**
Canada	12.4	11.8	12.9	12.	12.	15.	14.	15.	14.7	14.	14.	**88.6**	**85.3**
China													
- Mainland	1.1	1.2	1.1	1.4	2.2	-	2.0	1.9	1.9	2.2	1.9	**65.3**	**65.7**
- Taiwan	25.3	23.6	21.6	22.	21.	-	-	19.	19.3	17.	20.	**39.3**	**39.9**
Czech Rep	20.8	26.7	19.8	24.	31.	31.	30.	31.	30.3	32.	33.	**25.0**	**25.7**
Finland	33.0	30.0	30.6	29.	27.	26.	32.	28.	28.9	29.	32.	**22.0**	**22.6**
France	75.0	76.4	77.1	78.	77.	78.	78.	78.	76.9	76.	75.	**418.3**	**391.7**
Germany	31.2	34.5	30.5	29.	28.	32.	31.	31.	25.9	28.	26.	**140.9**	**127.7**
Hungary	38.3	40.6	39.1	36.	32.	33.	37.	37.	36.8	37.	43.	**14.0**	**14.3**
India	2.6	3.1	3.7	3.7	3.3	2.8	2.8	2.6	2.5	2.0	2.2	**13.2**	**14.8**
Japan	36.0*	33.8	34.3	34.	25.	29.	29.	30.	27.5	24.	28.	**240.5**	**263.1**
Kazakhstan	na	na	na	na	na	na	na	na	na	na	na	**na**	**na**
Korea, S	42.8	40.9	39.3	38.	40.	37.	44.	38.	35.3	35.	34.	**144.3**	**141.1**
Lithuania	73.1	73.7	77.6	80.	79.	72.	69.	72.	64.4	72.	76.	**9.1**	**10.0**
Mexico	5.2	4.5	3.7	4.1	5.2	5.2	5.0	4.9	4.6	4.0	4.8	**9.4**	**10.1**
Netherlands	4.0	na	4.2	4.0	4.5	3.8	3.9	3.5	4.1	3.8	3.7	**3.9**	**4.0**
Pakistan	0.1	1.7	2.9	2.5	2.4	2.4	2.8	2.7	2.3	1.9	2.7	**1.7**	**2.6**
Romania	10.7	10.3	10.5	10.	9.3	10.	8.6	9.0	13.0	17.	20.	**7.1**	**10.8**
Russia	14.4	14.9	15.4	16.	16.	15.	15.	15.	16.0	16.	17.	**152.1**	**152.8**
Slovakia	47.0	53.4	53.4	65.	57.	55.	56.	57.	54.3	56.	53.	**15.5**	**13.1**
Slovenia	37.2	37.4	39.0	40.	40.	38.	42.	40.	41.6	41.	37.	**6.0**	**5.5**
South Africa	7.1	6.7	6.7	5.9	6.0	6.6	5.5	4.4	5.5	5.3	4.8	**12.7**	**11.6**
Spain	31.0	27.	28.8	25.	23.	22.	19.	19.	17.4	18.	17.	**56.4**	**50.6**
Sweden	46.8	39.0	43.	45.	49.	51.	46.	48.	46.1	42.	34.	**61.3**	**50.0**
Switzerland	36.0	38.2	36.0	39.	39.	40.	32.	37.	40.0	39.	39.	**26.3**	**26.3**
UK	28.9	21.9	22.	22.	23.	19.	19.	18.	15.	13.	17.	**52.5**	**62.9**
Ukraine	43.8	45.3	46.	45.	45.	51.	48.	47.	48.1	47.	48.	**84.3**	**77.9**
USA	19.8	19.8	20.4	20.	19.	19.	19.	19.	19.4	19.	20.	**809.0**	**796.9**
TOTAL												**2601**	**2558**

Legend:
na data not yet available
***** estimate

NB: *The figures in this table are liable to change as new data become available.*
Sources: **WNA, IAEA**

4. **Nuclear-Powered Ships** *(19 November 2010)*[1]

- Nuclear power is particularly suitable for vessels which need to be at sea for long periods without refuelling, or for powerful submarine propulsion.
- Some 140 ships are powered by more than 180 small nuclear reactors and more than 12,000 reactor years of marine operation has been accumulated.
- Most are submarines, but they range from icebreakers to aircraft carriers.
- In future, constraints on fossil fuel use in transport may bring marine nuclear propulsion into more widespread use. So far, exaggerated fears about safety have caused political restriction on port access.

Work on nuclear marine propulsion started in the 1940s, and the first test reactor started up in USA in 1953. The first nuclear-powered submarine, *USS Nautilus*, put to sea in 1955.

This marked the transition of submarines from slow underwater vessels to warships capable of sustaining 20-25 knots submerged for weeks on end. The submarine had come into its own.

Nautilus led to the parallel development of further (*Skate*-class) submarines, powered by single pressurised water reactors, and an aircraft carrier, *USS Enterprise*, powered by eight reactor units in 1960. A cruiser, *USS Long Beach*, followed in 1961 and was powered by two of these early units. Remarkably, the *Enterprise* remains in service.

By 1962 the US Navy had 26 nuclear submarines operational and 30 under construction. Nuclear power had revolutionised the Navy.

The technology was shared with Britain, while French, Russian and Chinese developments proceeded separately.

After the Skate-class vessels, reactor development proceeded and in the USA a single series of standardised designs was built by both Westinghouse and GE, one reactor powering each vessel. Rolls Royce built similar units for Royal Navy submarines and then developed the design further to the PWR-2.

Russia developed both PWR and lead-bismuth cooled reactor designs, the latter not persisting. Eventually four generations of submarine PWRs were utilised, the last entering service in 1995 in the *Severodvinsk* class.

The largest submarines are the 26,500 tonne Russian *Typhoon*-class, powered by twin 190 MWt PWR reactors, though these were superseded by the 24,000 t *Oscar-II* class (eg *Kursk*) with the same power plant.

The safety record of the US nuclear navy is excellent, this being attributed to a high level of standardisation in naval power plants and their maintenance, and the high quality of the Navy's

[1] **Sources:** *Jane's Fighting Ships,* 1999-2000 edition; J Simpson 1995, *Nuclear Power from Underseas to Outer Space*, American Nuclear Society *The Safety of Nuclear Powered Ships*, 1992 Report of NZ Special Committee on Nuclear Propulsion Bellona 1996, *The Russian Northern Fleet* and *Civil Nuclear Powered Vessels* (on web) M B Maerli, in Bull. Atomic Scientists Sep-Oct 2001. Rawool-Sullivan et al 2002, Technical and proliferation-related aspects of the dismantlement of Russian Alfa-class submarines, *Nonproliferation Review*, Spring 2002. Thompson, C 2003, Recovering the Kursk, *Nuclear Engineering Int'l*, Dec 2003. Mitenkov F.M. et al 2003, Prospects for using nuclear power systems in commercial ships in Northern Russia, *Atomic Energy* 94, 4.

training program. However, early Soviet endeavours resulted in a number of serious accidents — five where the reactor was irreparably damaged, and more resulting in radiation leaks. However, by Russia's third generation of marine PWRs in the late 1970s safety and reliability had become a high priority.

Lloyd's Register shows about 200 nuclear reactors at sea, and that some 700 have been used at sea since the 1950s.

Nuclear Naval Fleets

Russia built 248 nuclear submarines and five naval surface vessels (plus 9 icebreakers) powered by 468 reactors between 1950 and 2003, and was then operating about 60 nuclear naval vessels.

At the end of the Cold War, in 1989, there were over 400 nuclear-powered submarines operational or being built. At least 300 of these submarines have now been scrapped and some on order cancelled, due to weapons reduction programs[1]. Russia and USA had over one hundred each in service, with UK and France less than twenty each and China six. The total today is understood to be about 130, including new ones commissioned.

India launched its first submarine in 2009, the 6000 dwt *Arihant* SSBN, with a single 85 MW PWR driving a 70 MW steam turbine. It is reported to have cost US$ 2.9 billion, and several more are planned. India is also leasing an almost-new 7900 dwt (12,770 tonne submerged) Russian *Akula-II* class nuclear attack submarine for ten years from 2010, at a cost of US$ 650 million: the *Chakra*, formerly *Nerpa*. It has a single 190 MWt VM-5/ OK-650 PWR driving a 32 MW steam turbine and two 2 MWe turbogenerators.

The USA has the main navy with nuclear-powered aircraft carriers, while both it and Russia have had nuclear-powered cruisers (USA: 9, Russia 4). The USA had built 219 nuclear-powered vessels to mid 2010, and then had five submarines and an aircraft carrier under construction. All US aircraft carriers and submarines are nuclear-powered.

The US Navy has accumulated over 6200 reactor-years of accident-free experience over the course of 230 million kilometres, and operated 82 nuclear-powered ships (11 aircraft carriers, 71 submarines — 18 SSBN/SSGN, 53 SSN) with 103 reactors as of March 2010.

The Russian Navy has logged over 6000 nautical reactor-years. It appears to have eight strategic submarines (SSBN/SSGN) in operation and 13 nuclear-powered attack submarines (SSN), plus some diesel subs. Russia has announced that it will build eight new nuclear SSBN submarines in its plan to 2015. Its only nuclear-powered carrier project was cancelled in 1992. It has one nuclear-powered cruiser in operation and three others being overhauled.

France has a nuclear-powered aircraft carrier and ten nuclear submarines (4 SSBN, 6 Rubis class SSN). The UK has 12 submarines, all nuclear powered (4 SSBN, 8 SSN). China is understood to have about ten nuclear submarines (possibly 3 SSBN, 7 SSN).

[1] In 2007 Russia had about 40 retired subs from its Pacific fleet alone awaiting scrapping. In November 2008 it was reported that Russia intended to scrap all decommissioned nuclear submarines by 2012, the total being more than 200 of the 250 built to date. Most Northern Fleet submarines had been dismantled at Severodvinsk, and most remaining to be scrapped were with the Pacific Fleet.

Civil Vessels

Nuclear propulsion has proven technically and economically essential in the Russian Arctic where operating conditions are beyond the capability of conventional icebreakers. The power levels required for breaking ice up to 3 metres thick, coupled with refuelling difficulties for other types of vessels, are significant factors. The nuclear fleet, with six nuclear icebreakers and a nuclear freighter, has increased Arctic navigation from 2 to 10 months per year, and in the Western Arctic, to year-round.

The icebreaker *Lenin* was the world's first nuclear-powered surface vessel (20,000 dwt), commissioned in 1959. It remained in service for 30 years to 1989, being retired due to the hull being worn thin from ice friction. It initially had three 90 MWt OK-150 reactors, but these were badly damaged during refueling in 1965 and 1967. In 1970 they were replaced by two 171 MWt OK-900 reactors providing steam for turbines which generated electricity to deliver 34 MW at the propellers.

It led to a series of larger icebreakers, the six 23,500 dwt *Arktika*-class, launched from 1975. These powerful vessels have two 171 MWt OK-900 reactors delivering 54 MW at the propellers and are used in deep Arctic waters. The *Arktika* was the first surface vessel to reach the North Pole, in 1977. *Rossija, Sovetskiy Soyuz* and *Yamal* were in service towards the end of 2008, with *Sibir* decommissioned and *Arktika* retired in October 2008.

The seventh and largest *Arktika* class icebreaker — *50 Years of Victory (50 Let Pobedy)* — was built by the Baltic shipyard at St Petersburg and after delays during construction it entered service in 2007 (twelve years later than the 50-year anniversary of 1945 it was to commemorate). It is 25,800 dwt, 160 m long and 20m wide, and is designed to break through ice up to 2.8 metres thick. Its performance in service has been impressive.

For use in shallow waters such as estuaries and rivers, two shallow-draft *Taymyr*-class icebreakers of 18,260 dwt with one reactor delivering 35 MW were built in Finland and then fitted with their nuclear steam supply system in Russia. They are built to conform with international safety standards for nuclear vessels and were launched from 1989.

Development of nuclear merchant ships began in the 1950s but on the whole has not been commercially successful. The 22,000 tonne US-built *NS Savannah*, was commissioned in 1962 and decommissioned eight years later. It was a technical success, but not economically viable. It had a 74 MWt reactor delivering 16.4 MW to the propeller. The German-built 15,000 tonne *Otto Hahn* cargo ship and research facility sailed some 650,000 nautical miles on 126 voyages in 10 years without any technical problems. It had a 36 MWt reactor delivering 8 MW to the propeller. However, it proved too expensive to operate and in 1982 it was converted to diesel.

The 8000 tonne Japanese *Mutsu* was the third civil vessel, put into service in 1970. It had a 36 MWt reactor delivering 8 MW to the propeller. It was dogged by technical and political problems and was an embarrassing failure. These three vessels used reactors with low-enriched uranium fuel (3.7 — 4.4% U-235).

In 1988 the *NS Sevmorput* was commissioned in Russia, mainly to serve northern Siberian ports. It is a 61,900 tonne 260 m long LASH-carrier (taking lighters to ports with shallow water) and container ship with ice-breaking bow. It is powered by the same KLT-40 reactor as

used in larger icebreakers, delivering 32.5 propeller MW from the 135 MWt reactor, and it needed refuelling only once to 2003.

A more powerful Russian icebreaker of 110 MW net and 55,600 dwt is planned, with further dual-draught ones of 32,400 dwt and 60 MW power at propellers. The first of these third-generation icebreakers is expected to be finished in 2015 at a cost of RUB 17 billion.

Russian experience with nuclear powered Arctic ships totals about 300 reactor-years in 2009. In 2008 the Arctic fleet was transferred from the Murmansk Shipping Company under the Ministry of Transport to Atomflot, under Rosatom.

In August 2010 two *Arktika*-class icebreakers escorted the 100,000 dwt tanker *Baltika*, carrying 70,000 tonnes of gas condensate, from Murmansk to China via the Arctic route, saving some 8000 km compared with the Suez Canal route. There are plans to ship iron ore and base metals on the northern sea route also.

Nuclear propulsion systems

Naval reactors (with the exception of the ill-fated Russian *Alfa* class described below) have been pressurised water types, which differ from commercial reactors producing electricity in that:

- they deliver a lot of power from a very small volume and therefore run on highly-enriched uranium (>20% U-235, originally c 97% but apparently now 93% in latest US submarines, c 20-25% in some western vessels, 20% in the first and second generation Russian reactors (1957-81)[1], then 45% in 3rd generation Russian units, 40% in India's *Arihant*).

- the fuel is not UO_2 but a uranium-zirconium or uranium-aluminium alloy (c15%U with 93% enrichment, or more U with less — eg 20% — U-235) or a metal-ceramic (Kursk: U-Al zoned 20-45% enriched, clad in zircaloy, with c 200kg U-235 in each 200 MW core),

- they have long core lives, so that refuelling is needed only after 10 or more years, and new cores are designed to last 50 years in carriers and 30-40 years (over 1.5 million kilometres) in most submarines,

- the design enables a compact pressure vessel while maintaining safety. The *Sevmorput* pressure vessel for a relatively large marine reactor is 4.6 m high and 1.8 m diameter, enclosing a core 1 m high and 1.2 m diameter.

- thermal efficiency is less than in civil nuclear power plants due to the need for flexible power output, and space constraints for the steam system,

- there is no soluble boron used in naval reactors (at least US ones).

The long core life is enabled by the relatively high enrichment of the uranium and by incorporating a “burnable poison” such as gadolinium — which is progressively depleted as fission

[1] An IAEA Tecdoc reports discharge assay of early submarine used fuel reprocessed at Mayak being 17% U-235.

products and actinides accumulate. These accumulating poisons would normally cause reduced fuel efficiency, but the two effects cancel one another out.

However, the enrichment level for newer French naval fuel has been dropped to 7.5% U-235, the fuel being known as 'caramel', which needs to be changed every ten years or so. This avoids the need for a specific military enrichment line, and some reactors will be smaller versions of those on the *Charles de Gaulle*. In 2006 the Defence Ministry announced that *Barracuda* class subs would use fuel with "civilian enrichment, identical to that of EdF power plants," which may be an exaggeration but certainly marks a major change there.

Long-term integrity of the compact reactor pressure vessel is maintained by providing an internal neutron shield. (This is in contrast to early Soviet civil PWR designs where embrittlement occurs due to neutron bombardment of a very narrow pressure vessel.)

The Russian, US, and British navies rely on steam turbine propulsion, the French and Chinese in submarines use the turbine to generate electricity for propulsion.

Russian ballistic missile submarines as well as all surface ships since the *Enterprise* are powered by two reactors. Other submarines (except some Russian attack subs) are powered by one. A new Russian test-bed submarine is diesel-powered but has a very small nuclear reactor for auxiliary power.

The Russian *Alfa*-class submarines had a single liquid metal cooled reactor (LMR) of 155 MWt and using very highly enriched uranium — 90% enriched U-Be fuel. These were very fast, but had operational problems in ensuring that the lead-bismuth coolant did not freeze when the reactor was shut down. The design was unsuccessful and used in only eight trouble-plagued vessels.

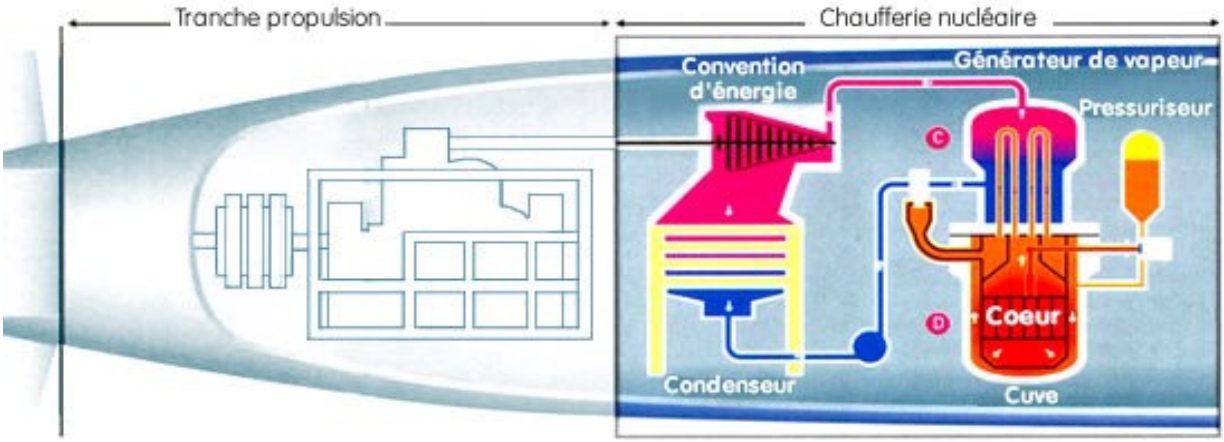
The US Navy's second nuclear submarine had a sodium-cooled power plant (S2G). The *USS Seawolf*, *SSN-575*, operated for nearly two years 1957-58 with this. The intermediate-spectrum reactor raised its incoming coolant temperature over ten times as much as the N*autilus*' water-cooled plant, providing superheated steam, and it offered an outlet temperature of 454 C, compared with the Nautilus' 305 C. It was highly efficient, but offsetting this, the plant had serious operational disadvantages. Large electric heaters were required to keep the plant warm when the reactor was down to avoid the sodium freezing. The biggest problem was that the sodium became highly radioactive, with a half-life of 15 hours, so that the whole reactor system had to be more heavily shielded than a water-cooled plant, and the reactor compartment couldn't be entered for many days after shutdown. The reactor was replaced with a PWR type (S2Wa) similar to *Nautilus*.

Reactor power ranges from 10 MWt (in a prototype) up to 200 MWt in the larger submarines and 300 MWt in surface ships such as the *Kirov*-class battle cruisers.

The smallest nuclear submarines are the French *Rubis*-class attack subs (2600 dwt) in service since 1983, and these have a 48 MW integrated PWR reactor from Technicatome which is variously reported as needing no refuelling for 30 years, or requiring refuelling every seven years. The French aircraft carrier *Charles de Gaulle* (38,000 dwt), commissioned in 2000, has two K15 integrated PWR units driving 61 MW Alstom turbines and the system can provide 5 years running at 25 knots before refuelling. The *Le Triomphant* class of ballistic missile submarines (12,640 dwt — the last launched in 2008) uses these K15 naval PWRs of 150 MWt and 32

shaft MW. The *Barracuda* class (4765 dwt) attack submarines, will have hybrid propulsion: electric for normal use and pump-jet for higher speeds. Areva TA (formerly Technicatome) will provide six reactors apparently of only 50 MWt and based on the K15 for the *Barracuda* submarines, the first to be commissioned in 2017. As noted above, they will use low-enriched fuel.

British *Vanguard* class ballistic missile submarines of 15,800 t have a single PWR2 reactor with two steam turbines driving a single pump jet of 20.5 MW. New versions of this with "Core H" will require no refuelling over the life of the vessel[1]. UK *Astute* class attack subs of 7800t have a modified PWR2 reactor driving two steam turbines and a single pump jet variously reported as 11.5 or 20.5 MW, and are being commissioned from 2010. Russia's 19,400 tonne *Oscar-II* class has two 190 MWt reactors with steam turbines delivering 73 MW, and its 12,700 tonne *Akula-II* class has a single 190 MWt unit powering a 32 MW steam turbine.



French integrated PWR system for submarine (steam generator within reactor pressure vessel)

Russia's large *Arktika* class icebreakers use two OK-900A (essentially KLT-40) nuclear reactors of 171 MW each with 241 or 274 fuel assemblies of 45-75% enriched fuel and 3-4 year refuelling interval. They drive steam turbines and each produces up to 33 MW at the propellers, though overall power is 54 MW. The two *Tamyr* class icebreakers have a single 171 MW KLT-40 reactor giving 35 MW propulsive power. *Sevmorput* uses one 135 MW KLT-40 unit producing 32.5 MW propulsive, and all those use 90% enriched fuel. (The now-retired Lenin's first OK-150 reactors used 5% enriched fuel but were replaced by OK-900 units with 45-75% enriched fuel.) Most of the Arktika-class vessels have had operating life extensions based on engineering knowledge built up from experience with Arktika itself. It was originally designed for 100,000 hours of reactor life, but this was extended first to 150,000 hours, then to 175,000 hours. In practice this equated to a lifespan of eight extra years of operation on top of the design period of 25. In that time, Arkitka covered more than 1 million nautical miles.

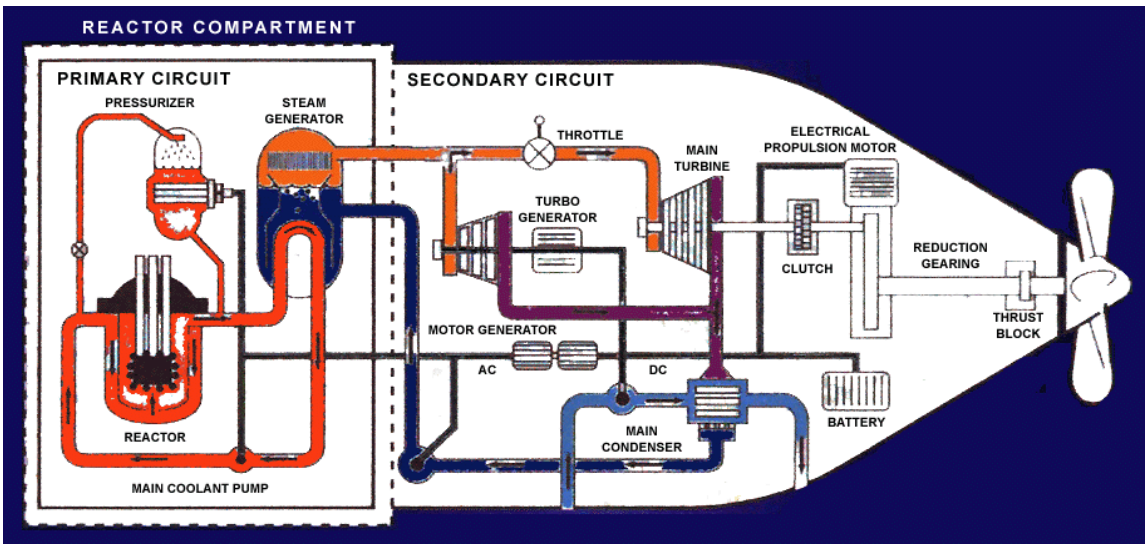
For the next generation of Russian icebreakers, integrated light water reactor designs are being investigated possibly to replace the conventional PWR. OKBM Afrikantov is developing a new icebreaker reactor – RITM-200 – to replace the current KLT reactors. This is an integral 210 MWt, 55 MWe PWR with inherent safety features. The first icebreaker to be equipped

[1] Rolls Royce claims that the Core H PWR2 has six times the (undisclosed) power of its original PWR1 and runs four times as long. The Core H is Rolls Royce's sixth-generation submarine reactor core.

with this is due to start construction in 2010. For floating nuclear power plants (see below) a single RITM-200 would replace twin KLT-40S (but yield less power).

India's *Arihant* (6000 dwt) has an 85 MWe PWR using 40% enriched uranium driving a 35 MW steam turbine.

Brazil's navy is proposing to build an 11 MW prototype reactor by 2014 to operate for about eight years, with a view to a full-sized version using low-enriched uranium being in a submarine to be launched in 2021.



UK nuclear submarine layout

Dismantling decommissioned nuclear-powered submarines has become a major task for US and Russian navies. After defuelling, normal practice is to cut the reactor section from the vessel for disposal in shallow land burial as low-level waste (the rest being recycled normally). In Russia the whole vessels, or the sealed reactor sections, sometimes remain stored afloat indefinitely, though western-funded programs are addressing this and all decommissioned submarines are due to be dismantled by 2012. In 2009 Rosatom said that by late 2010, 191 out of 198 decommissioned Russian submarines would be dismantled.

Marine reactors used for power supply, Floating Nuclear Power Plants

A marine reactor was used to supply power (1.5 MWe) to a US Antarctic base for ten years to 1972, testing the feasibility of such air-portable units for remote locations.

Between 1967 and 1976 an ex-army US Liberty ship of about 12,000 tonnes built in 1945, the *Sturgis* (but renamed *SS Green Port*) functioned as a Floating Nuclear Power Plant, designation MH-1A, moored on Gatun Lake, Panama Canal Zone. It had a 45 MWt/ 10 MWe (net) PWR which provided power to the Canal Zone.

Russia has under construction at St Petersburg the first of a series of floating power plants for their northern and far eastern territories. Two OKBM KLT-40S reactors derived from those in icebreakers, but with low-enriched fuel (less than 20% U-235), are mounted on a 21,500 tonne, 144 m long barge. Refuelling interval is 3-4 years on site, and at the end of a 12-year

operating cycle the whole plant is returned to a shipyard for a 2-year overhaul and storage of used fuel, before being returned to service.

Future prospects

With increasing attention being given to greenhouse gas emissions arising from burning fossil fuels for international air and marine transport and the excellent safety record of nuclear powered ships, it is quite conceivable that renewed attention will be given to marine nuclear powered ships, it is likely that there will be renewed interest in marine nuclear propulsion.

The head of the large Chinese shipping company Cosco suggested in December 2009 that container ships should be powered by nuclear reactors in order to reduce greenhouse gas emissions from shipping. He said that Cosco is in talks with China's nuclear authority to develop nuclear powered freight vessels.

In 2010 Babcock International's marine division completed a study on developing a nuclear-powered LNG tanker. The study indicated that particular routes and cargoes lent themselves well to the nuclear propulsion option, and that technological advances in reactor design and manufacture had made the option more appealing.

In November 2010 the British Maritime classification society Lloyd's Register embarked upon a two-year study with US-based Hyperion Power Generation, British vessel designer BMT Group, and Greek ship operator Enterprises Shipping and Trading SA "to investigate the practical maritime applications for small modular reactors. The research is intended to produce a concept tanker-ship design," based on a 70 MWt reactor such as Hyperion's. Hyperion has a three-year contract with the other parties in the consortium, which plans to have the tanker design certified in as many countries as possible. The project includes research on a comprehensive regulatory framework led by the International Maritime Organisation (IMO), and supported by the International Atomic Energy Agency (IAEA) and regulators in countries involved. In response to its members' interest in nuclear propulsion Lloyd's Register has recently rewritten its 'rules' for nuclear ships, which concern the integration of a reactor certified by a land-based regulator with the rest of the ship. Nuclear ships are currently the responsibility of their own countries, but none are involved in international trade. Lloyds expects to "see nuclear ships on specific trade routes sooner than many people currently anticipate."

Nuclear power seems most immediately promising for the following:

- Large bulk carriers that go back and forth constantly on few routes between dedicated ports – eg China to South America and NW Australia. They could be powered by a reactor delivering 100 MW thrust.
- Cruise liners, which have demand curves like a small town. A 70 MWe unit could give base-load and charge batteries, with a smaller diesel unit supplying the peaks.
- Nuclear tugs, to take conventional ships across oceans
- Some kinds of bulk shipping, where speed is essential.

Accidents in nuclear powers plants: readings online

There have been many accidents and incidents in nuclear power plants. Explore this subject on the Internet. You may begin with an overview of those plants:

htpp://www.world-nuclear.org/info/Inf.32.html

To have an idea of the different types of accidents and incidents consult:

The International Nuclear and Radiological Event Scale (INES) at:

http://www.iaea.org/Publications/Factsheets/English/ines.pdf

To compare the three principal accidents consult the Internet and find out how they occurred and the damages they caused:

1. Three-Mile Island, 1979,
2. Chernobyl, 1986, and
3. Fukushima I (Daiichi), Fukushima II (Daini) and Tokai, 2011.

Divide the work, compare notes and submit a summary (300 words):

Accident	Participants	Summary by:
Three-Mile Island, 1979	2, 5, 9, 12, 14	5 and 14
Chernobyl, 1986	3, 6, 8, 11, 13	8 and 13
Fukushima Daiichi y Daini, 2011	1, 4, 7, 10	4 and 10

Reagan-Gorbachov transcripts, Reykjiavik, Iceland, October 11-16, 1986

In November 1985 in Geneva, Switzerland, Mikhail Gorbachev and Ronald Reagan met for the first time to discuss issues such as SDI and the reduction of nuclear weapons. However, after meeting, tensions still remained due to fighting in Afghanistan and Central America.

After months of postponement a mini-summit was organized in Reykjavik, Iceland, to open communications further. Here, the two leaders again discussed SDI at length but also made progress toward agreements to reduce ballistic missiles by 50 percent and a "zero option" agreement in Europe -- meaning there would be no more intermediate-range missiles in Europe.

While no agreement was signed in Reykjavik, both leaders felt that the meeting was a success and opened the way for further progress.

Excerpts of Gorbachev-Reagan Reykjavik Talks

11 October 1986 — Afternoon

President Reagan: The apprehensions you voice fall into two categories.

First, you are concerned that defense could be used for offense. I can assure you that this is not the purpose of SDI. Yes, the concern was voiced that space-based weapons could be used to destroy targets on the ground. But there are no weapons that are more reliable, more effective and faster than ballistic missiles. We already have an agreement prohibiting deployment of mass destruction weapons in space. And if you have additional concerns in this connection, we can work together to ease them.

Second, you voiced the concern that the United States might obtain a possibility for carrying out a first strike, and then avoid retaliation owing to defense. I can say that we do not have the capability for carrying out a first strike, and that this is not our goal.

The concern you voiced encouraged me to suggest drawing up a treaty eliminating all offensive ballistic missiles. In this case the question as to the combinations of offensive and defensive systems that would allow one of the sides to make a first strike disappears automatically. I am convinced that owing to this the situation will become stabler, safer, and that all of this will cost us less. Armaments that reach their target in a few minutes and cannot be recalled would be eliminated, which would provide a guarantee against cheating and the actions of third countries. What we want most of all is to replace ballistic missiles by defense, transition to which would occur in stages, with stability ensured at each stage of the disarmament process.

We are ready to share our accomplishments in strategic defense, and we could include a provision in the treaty which would make the quantity of defensive weapons deployed dependent upon the number of ballistic missiles remaining. Such a situation would be distinguished by high stability, since bombers and cruise missiles are unsuited to a surprise attack, in view of their slow speed and the absence of limits upon air defense systems.

We naturally need to examine the times and stages of transition to strategic defense. The principles of equality and stability would be observed at each stage of this process in this case. My proposal is a serious step, and we need to conduct serious negotiations. I am certain that its implementation will make it possible to place security upon an stronger and stabler foundation. As far as the proposal you made today is concerned, I do not fully understand what topics

would be discussed in the negotiations you suggest. Will our proposals be discussed, including our idea of sharing the advantages of strategic defense, and the proposal to eliminate ballistic missiles?

Secretary General Gorbachev: I will answer this question later.

[...]

Secretary General Gorbachev: Before I respond, Mr. President, at least briefly to your statement, and the numerous issues you have touched upon, I would like to ask a few questions for the purposes of clarification. As I understand, you share our goal of reducing strategic offensive missiles by 50 percent.

President Reagan: Yes.

Secretary General Gorbachev: At the same time if I understood you correctly, the figures you cited reflect options that were discussed in Geneva and which foresee a 30 percent reduction.

President Reagan: We proposed 6,000 units.

Secretary of State Shultz: This level would include 4,500 ballistic missile warheads and 1,500 air-launched cruise missiles.

Secretary General Gorbachev: Much has already been said about these options, and you know that the matter reached a dead end. Our diplomats in Geneva can go on discussing all of these figures, levels, sublevels, and son on forever. I have data here on American and Soviet strategic arms. I can give this table to you. And what I propose is this: Inasmuch as we agree that strategic missiles should be reduced by 50 percent, let's reduce all forms of armaments in our strategic arsenals by half -- ground-launched missiles, submarine-launched missiles, and missiles carried by strategic bombers. Thus the strategic arsenals would be reduced by 50 percent across the entire spectrum. The structure of our strategic arms evolved historically, you see, and with such a reduction, not one form of armament would be wronged, and the level of strategic confrontation would be reduced by 50 percent. This is a simple, proportionate solution, one which everyone will understand. And then all of these debates, which have now been going on for so many years, about levels, sublevels, what counts or what doesn't count, and so on, will be resolved automatically, since a 50 percent reduction is a 50 percent reduction. And there will be nothing to debate. Do you agree with such an approach?

President Reagan: But my proposal also includes all strategic weapons except freefall bombs carried by bombers. But even these are limited indirectly, since a limit is set on the number of bombers.

[...]

Secretary General Gorbachev: The next issue. Do I understand correctly that the U.S. President no longer likes the zero option he proposed regarding medium-range missiles?

President Reagan: No, I like it very much, but only with a global resolution of the issue. If the zero is on a global scale, then this would be fabulous. But if intermediate-range missiles are eliminated only in Europe, while a significant number of missiles aimed, in your words, at Asia will remain on your side, I could not agree to that. Your missiles could reach Europe from there, after all, and in addition, they could be moved suddenly to other places.

Secretary General Gorbachev: But you have nuclear weapons in South Korea as well, at bases, aboard forward-based weapon systems, not to mention other nuclear arms. Because you

had earlier stated concerns regarding the nuclear arms situation in Europe, we also propose eliminating all medium-range missiles in Europe. As far as weapons systems with a range below 1,000 km are concerned, we propose freezing them and starting negotiations, and as for weapons in Asia, we also propose starting negotiations with the objective of finding a solution pertaining to these missiles in Asia, and consequently a solution pertaining to these missiles in Asia, and consequently a solution to the problem as a whole.

We have already opted to leave aside the strategic arsenals of Great Britain and France, and this is a concession on our side. Nor are we raising the issue of forward-based systems. Why has the United States not taken any steps in return? What we are now proposing, after all, is a simple solution: zero in Europe and negotiations in Asia.

[...]

Secretary General Gorbachev: But what I want to ask you, Mr. President, is this: If a solution is found for Asia, will you agree to the zero option?

President Reagan: Yes. We stationed them there at the request of our allies, which my predecessor accepted and which I implemented in response to your SS-20 missiles. As far as your missiles in Asia are concerned, I have seen maps from which it follows that while they can't hit England, they can hit France, West Germany, Central Europe, Greece and Turkey. Plus, the fact that they are mobile.

All of this emphasizes everything I discussed back in Geneva. Before we can work things out in regard to armaments, we need to try to clarify the causes of mistrust. If we are able to eliminate it, it will be easier to resolve the problem of armaments.

Secretary General Gorbachev: That's true. Which is why I am amazed that you dispute what I told you about our missiles in Asia. They cannot reach Europe. Specialists know this well, and therefore your position seems to be an obvious paradox. This is not to mention the fact that it could be stipulated precisely in an agreement that no missiles will be moved anywhere, and that everything will be subjected to the strictest inspection.

I think that we can instruct our experts to discuss your thoughts and my idea. But do I understand correctly? If a solution is found regarding Asia, will you agree to the zero option in Europe.

President Reagan: Yes.

[...]

Secretary General Gorbachev: As far as SDI is concerned, it is not evoking concern among us today in the military respect. We are not afraid of a three-echelon ABM system. If your laboratory research motivates you to create such a system, considering that obviously America has a great deal of money, our response will be different, asymmetrical. What actually troubles us is that it will be difficult for us to persuade our people and our allies as to the absence of the ABM treaty. There would be no logic in this, and nothing could be built on this basis.

President Reagan: We have absolutely no desire to eliminate the ABM treaty. This treaty is defensive, but you capitalized on its provisions to create a powerful defensive potential. We did not do this.

In this situation all we can say to the Americans is this: If the other side destroys us, we will destroy it. But people are not sleeping any easier for this. We propose supplementing the ABM

Treaty with provisions on specific defensive weapons being created not for a first strike or to obtain advantages. We want this to be available to all the world.

Secretary General Gorbachev: We will not deploy SDI. We have another concept.

President Reagan: We do not intend to eliminate the ABM Treaty.

[...]

President Reagan: A couple of words in conclusion. You said that you don't need SDI, but then we would be able to carry out our programs in parallel, and if you find that you have something a little better, than perhaps you could share it with us.

Secretary General Gorbachev: Excuse me, Mr. President, but I do not take your idea of sharing SDI seriously. You don't want to share even petroleum equipment, automatic machine tools or equipment for dairies, while sharing SDI would be a second American Revolution. And revolutions do not occur all that often. Let's be realistic and pragmatic. That's more reliable.

President Reagan: If I thought that SDI could not be shared, I would have rejected it myself.

16 October 1986 — Morning

[...]

Secretary General Gorbachev: We know that you plan to deploy SDI. But we do not have such plans. And we cannot assume an obligation relative to such a transition. We have a different conception.

Secretary of State Shultz: I would like to mention also the third question, which we included because you emphasize it so much. This is the situation which would exist until the time when the conditions indicated above were realized. The question is: what general understanding can the parties reach relative to the restrictions imposed by the ABM Treaty on activity related to creating a long-range strategic defense?

The President stated to you and the whole world that he will not renounce the SDI program. You do not agree with that. But as I understand it, you recognize his problem and that he is trying to meet your concern half-way.

Secretary General Gorbachev: But I think that I am even helping the president with SDI. After all, your people say that if Gorbachev attacks SDI and space weapons so much, it means the idea deserves more respect. They even say that if it were not for me, no one would listen to the idea at all. And some even claim that I want to drag the United States into unnecessary expenditures with this. But if the first ones are right, then I am on your side in this matter, but you have not appreciated it.

President Reagan: What the hell use will ABM's or anything else be if we eliminate nuclear weapons?

Secretary General Gorbachev: Absolutely right. I am for that. But the point is that under the ABM Treaty the parties do not have a large-scale antimissile defense, and you want to deploy such a defense.

President Reagan: But what difference does it make if it is not nuclear weapons? What difference whether it exists or not?

On the other hand, you know that even in this situation we will not be able to guarantee that someone will not begin to make nuclear weapons again at some point.

Secretary General Gorbachev: Mr. President, you just made a historic statement: What the hell use will SDI be if we eliminate nuclear weapons? But it is exactly because we are moving toward a reduction and elimination of nuclear weapons that I favor strengthening the ABM Treaty. In these conditions it becomes even more important. As for your arguments about the madman who decides to resort to nuclear weapons, I think that we will be able to solve that problem, it is not that serious.

President Reagan: It appears that the point is that I am the oldest man here. And I understand that after the war the nations decided that they would renounce poison gases. But thank God the gas mask continued to exist. Something similar can happen with nuclear weapons. And we will have to shield against them in any case.

Secretary General Gorbachev: I am increasingly convinced of something I knew previously only second-hand. The President of the United States does not like to retreat. I see now that you do not want to meet us half-way on the issue of the ABM Treaty, which is absolutely essential in conditions where we are undertaking large reductions in nuclear arms, and you do not want to begin negotiations on stopping nuclear testing. So I see that the possibilities of agreement are exhausted.

[...]

Secretary General Gorbachev: It is a shame, Mr. President, that you and I do not have enough time to discuss humanitarian issues. We have concrete ideas on this which we simply are not going to have time to discuss. I have to say that people in the Soviet Union are very concerned about the human rights situation in the United States. There is one other important subject. This is the importance of mutual information in our day. The situation now is this: the Voice of America broadcasts around the clock in many languages from stations you have in various countries in Europe and Asia, while we cannot present our point of view to the American people. Therefore, to achieve parity, we are forced to jam Voice of America broadcasts. I propose the following: we will stop jamming Voice of America and you will be able to broadcast what you consider necessary to us, but at the same time you will meet us half-way and help us lease, from you or in neighboring countries, radio stations that would allow us to reach the American people with our point of view.

President Reagan: The difference between us is that we recognize freedom of the press and the right of people to listen to any point of view. This does not exist in your press. Today in Washington there will be a press conference, and Americans will see it, and newspapers will publish the text of it. It is not that way in your country. Your system envisions only a government press.

Secretary General Gorbachev: But I asked a concrete question. I proposed that we can stop jamming Voice of America if you will meet us half-way and give us an opportunity to lease a radio station from you or lease or build a station in one of your neighboring countries.

President Reagan: I will consult about this when I return to the United States, and I will take a favorable position.

Secretary General Gorbachev: We are for parity in general. In the information field, for example, or in film. Almost half of the movies showing in our theaters are American. Soviet movies are hardly ever shown in the United States. That is not parity.

President Reagan: We do not have any ban on your movies. The film industry is a free business, and if someone wants to show your films he can do it.

Secretary General Gorbachev: I see that the President avoids this question and goes into talk about business.

President Reagan: Our government cannot control the film market. If you want to inundate us with your movies go right ahead. How our movies get to your country, I do not know.

Secretary General Gorbachev: It is an interesting situation, simply a paradox. In your country, the most democratic country, obstacles arise to showing our movies, while in our country, a totalitarian country, almost half the movies being shown are American. How can you reconcile this, that the Soviet Union is an undemocratic country but your films are being shown?

President Reagan: There is a difference between free enterprise and government ownership. You have no free enterprise, everything belongs to the government and the government puts everything on the market. In the United States we have private industry, and other countries have the right to sell their goods, movies and so on. You have the right to set up a rental organization in our country to distribute your movies, or to lease some theater. But we cannot order it.

Secretary General Gorbachev: One more question. There were two television bridges between the USSR and the United States recently. One involved the participation of the communities of Leningrad, Copenhagen, and Boston, and the other had Soviet and American doctors. In our country they were watched by 150 million people, but in the United States they were not shown.

President Reagan: The only thing I can answer is that the movie theaters and all belong to your government, and you show what you want in them. But our government cannot compete with private business.

But I want to tell you that your performing groups, such as the Leningrad Ballet, draw an enormous crowd in the United States, and they are shown on television too. But if you want to show other things too, please do. We have leasing companies, and theaters which show foreign films.

Secretary General Gorbachev: Mr. President, we have quite a few complaints about the United States. Here is the last question. For 30 years now you have refused to let our trade union figures enter the United States. Mr. Shultz simply does not give them visas. Where is the parity here? You know, your trade union figures come to the USSR and have interesting professional contacts and meetings with workers. But you do not let our people in. In your country, which is so self-confident, they are viewed as subversive elements.

President Reagan: I would like to look into this. Maybe I will have some proposals on the film problem that you mentioned.

Secretary General Gorbachev: Good.

The end of the Cold War changed the relations between East and West. The nuclear threat began to diminish. Here are various news items on this question.

1. CNN, 26 May 1997.

Yeltsin in Paris to sign NATO agreement

From Moscow Bureau Chief Jill Dougherty

PARIS (CNN) -- Russian President Boris Yeltsin arrived in Paris Monday to sign a pact between his country and NATO intended to pave the way for the alliance to expand into former Soviet bloc nations.

With his signature, Yeltsin will turn NATO's former enemy into an ally. Yeltsin will sign the security agreement, although he strongly opposes NATO's eastward expansion.

Some observers say the deal is the best Russia could get under the circumstances.

“Russia lost the Cold War and in my opinion this document is just fixing the victory of the West over Russia or over the Soviet Union,” said presidential council member Andranik Migranyan.

The agreement, called the “founding act,” gives Russia a seat on a NATO joint council in Brussels, Belgium. The alliance says Russia will have a “voice, but not a veto”.

NATO also pledges that it has no intention to build up its forces or station nuclear weapons in central Europe.

Yeltsin insists it's a legally binding agreement, something NATO denies. Yeltsin's press secretary, Sergei Yastrzhembsky, seems willing to fudge the issue.

“The key word is responsibilities,” he said. “Whether they have a political or legal character doesn't have any deciding strategic meaning.”

But a leading reformer says the apparent contradiction is dangerous.

“I have very serious concerns,” said parliament member Grigory Yavlinsky. “(Yeltsin's) vision of this agreement it seems to me (is) very different from that what the people in Washington are saying.”

Russia is threatening to pull out of the agreement if former republics of the Soviet Union are invited to join in the future. Russia is especially concerned about the status of Baltic states Lithuania, Estonia and Latvia.

“Russia won't repeat the 1968 invasion of Czechoslovakia,” said Foreign Minister Yevgeny Primakov. “However, Russia has the right to defend its own interests.”

Legally, Yeltsin doesn't need parliamentary approval to sign the agreement, but he'll let the Duma vote on it anyway -- saying he'll give that vote “serious consideration.”

Some Russian observers candidly admit the new security deal with NATO is a face-saving agreement for Russia. But how it will work out in practice is far from clear.

NATO, in the meantime, is expected to issue invitations to prospective members -- most likely Poland, Hungary and the Czech Republic -- at a summit in Madrid, Spain, in July.

2. *INTERNATIONAL HERALD TRIBUNE*, 13 January 1998.

New Nuclear Danger

The end of the Cold War has produced an alarming nuclear irony. Russia is now more dependent on its nuclear weapons than ever, and at the same time those weapons are more vulnerable. That increases the chances that in a severe crisis Moscow might consider using.them. lt is imperalve for Washington to help reverse that trend, and Bill Clinton has the tools to do so, if he is willing to use them.

When the Cold War ended, the Soviet Union had one of the largest land armies in the world, an abundance of conventional weapons and a nuclear strike force nearly equal to that of the United States. Since then, domestic politics, economic problems and general neglect of the military have left Russia with a hollow conventional force. As that force has deteriorated, Russian military planners have placed increased emphasis on nuclear weapons, which are less expensive to maintain.

But steeply declining defense budgets have left even some of those weapons dangerously exposed. Most Russian ballistic-missile submarines are kept in port because it costs less to keep them idle than to put them to sea. That makes it casier for another country to knock out Russia's submarine fleet. NATO's ill-advised expansion, if approved, will bring Westem forces closer to the Russian border. While a NATO strike against Russian nuclear weapons now seems unimaginable, the psychology of vulnerability on the Russian side is real.

The Clinton administration should act to defuse this growing nuclear risk. Progress in negotiating and ratifying new arms reduction treaties has slowed, held back in part by the opposition of Communists and nationalists in the Russian Parliament and Republicans in the U.S. Senate. But President Clinton and President Boris Yeltsin can rnove on their own to take off high alert some of the 3,000 nuclear warheads that each side now has ready to fire at the other on short notice. George Bush and Mikhail Gorbachev took a similar step with nuclear bombers and missiles in 1991. Such a decision would provide additional time for communication and diplomacy in a crisis.

About a third of American warheads could now be taken off alert without risking national security. Russia can be expected to reciprocate. Specifically, Mr. Clinton could order the launch keys for part of the MX missile force removed. MX guidance systems could be taken out of the missiles and stored in their silos. Silos could even be covered with heavy objects that would have to be removed before launching.

Several of these ideas have been proposed by Sam Nunn, the former senator from Georgia, and Bruce Blair of the Brookings Institution, and are viewed favorably by American military planners. All that is needed now is for Mr. Clinton to take political leadership on this issue. Reducing Russia's reliance on nuclear weapons ought to be a concern of the highest order for the Clinton administration.

- THE NEW YORK TIMES.

3. *FINANCIAL TIMES*, 5 February 1998

Plutonium supply to rise

The Royal society, the UK's most eminent scientific society, yesterday called on the government to develop a long-term plan for managing the nation's stockpile of plutonium. Sir Ron Mason — former chief scientific adviser to the Ministry of Defence and chairman of a Royal Society study of plutonium — said Britain's stock of the deadly nuclear waste was set almost to double to 100 tonnes by 2010. Sir Ron said his committee was "disturbed at the

present lack of strategic direction for dealing with plutonium". The Royal society said the government should promote a policy to stabilise and then reduce the stockpile. A growing stockpile increased the risks of environmental contamination and nuclear weapons proliferation. The society said an independent review should consider options ranging from burning plutonium with uranium as a "mixed oxide" fuel, to deep geological storage.

Michael Meacher, environment minister, said yesterday the government planned to produce a policy for nuclear waste management within 12 months. *Simon Holberton*

4. *INSTITUTE FOR ENERGY AND ENVIRONMENTAL RESEARCH*, February 1997

IEER RECOMMENDATIONS ON PLUTONIUM MANAGEMENT

by Arjun Makhijani

Some of the terms used in this article are defined in IEER's on-line glossary.

Disposition of world-wide plutonium stockpiles is an urgent problem. While many speak of reprocessing and using plutonium to fuel nuclear reactors as "recycling," IEER believes that vitrification, and not reprocessing, is the best method of plutonium disposition. Russia and the U.S. are now dismantling thousands of nuclear warheads, but have not yet implemented an effective strategy for the disposition of surplus military plutonium. Meanwhile, France, Britain, Japan, Russia, and India add to the stockpiles by continuing to produce new stocks of weapons-usable commercial plutonium by reprocessing commercial reactor spent fuel (extracting plutonium and uranium from fuel irradiated in nuclear reactors). While the U.S. is not reprocessing for military or commercial reasons, it has nonetheless succumbed to pressures to continue the flow of money into military nuclear installations. In February 1996, it restarted a military reprocessing plant at the Savannah River Site, citing the need for "environmental management," although reprocessing is the worst option for plutonium disposition from the point of view of protecting environmental, public, and worker health.[1]

The many economic, technical, environmental, and security arguments against plutonium use have not convinced those who fervently believe that plutonium is an energy treasure that will play a long-term role in the world's energy economy. Moreover, these plutonium advocates are in positions of considerable influence in key countries, including Russia, France, Japan, Britain, and, to a lesser extent, the United States.

Bridging the U.S.-Russian Gap on Plutonium

The U.S. and Russian leaders have fundamental disagreements on whether plutonium is an asset or a liability. The Russian government's view is that plutonium represents an important energy resource and an economic treasure, while many U.S. leaders like Energy Secretary Hazel O'Leary and Presidential Science Advisor Dr. John H. Gibbons see plutonium excess to military requirements as a liability. Studies by the U.S. National Academy of Sciences in 1994 and 1995 concluded that there would be net costs to using plutonium in reactors, even after the revenues from the sale of electricity were taken into account. These net costs would be of the same order of magnitude as the cost of plutonium vitrification. Of course, there are institutions in the United States, such as the American Nuclear Society, whose beliefs on plutonium are closer to the prevailing Russian view. Further, there is still a strong sentiment in the United States, including in the Department of Energy, to use plutonium as mixed uranium-plutonium

oxide fuel (MOX fuel) in existing power reactors. Similar sentiments have also been expressed by Russian leaders.

The issue of plutonium's long-term worth cannot be resolved today. But we can separate the short- and medium-term issues from the long-term energy issues. Most independent studies that have carefully taken the costs of reprocessing and fuel fabrication into account have concluded that because of the abundance of cheap uranium, plutonium is not now an economical fuel and will not be for the foreseeable future. IEER shares this conclusion. Taking into account the reality of cheap uranium and urgent security concerns, we believe that there can be a basic agreement to put plutonium into non-weapons-usable form today, while creating a mechanism to use it as an energy source in the long-term, should the economics and non-proliferation conditions change enough to warrant it.

We have two principal recommendations regarding plutonium in the short- and medium-term:

- Excess military plutonium and all commercial plutonium should be vitrified in a manner that would make it very difficult to steal and very hard for non-governmental parties to re-extract and make into nuclear weapons. “Vitrification” would dilute plutonium with large quantities of molten glass (and other materials) to make glass logs. The containers of the glass logs (or the logs themselves) should be made very radioactive so that they would be difficult to steal.
- All reprocessing plants that produce weapons-usable materials, including military and commercial reprocessing plants, should be closed in order to stop the increase in stocks of weapons-usable materials.

The U.S. and Russian governments can address the energy issues relating to fissile materials by creating mechanisms that would respond to the concerns of those who believe that plutonium could be a very valuable energy resource in the long-term. We recommend two complementary actions:

- The creation of an international reserve of uranium fuel for power reactors as a means of assuring its long-term, reasonably priced supply. This reserve would be created from surplus military highly enriched uranium.
- Financial guarantees for re-extraction of plutonium from a vitrified state, should an impartial panel ever decide that it is an economical fuel for power generation. This way, the Russian and other governments can preserve the option of using plutonium in the future, should it become economical.

These steps should assuage concerns regarding nuclear reactor fuel supply and allow vitrification to proceed in the short-term. The funds for these activities would come from the U.S. government, European Community countries, and Japan.

U.S.-Russian Collaboration

There are some encouraging signs for the pursuit of sound non-proliferation policies in Russia and the United States. The U.S. is not reprocessing commercial spent fuel (though it is operating a military reprocessing plant) and has begun hot tests on its high-level waste vitrification plants at the Savannah River Site in South Carolina and at West Valley in New York state. Russia has considerably more experience in high-level radioactive waste vitrification than the

United States, with an operating plant at Chelyabinsk-65. Russia is also conducting plutonium vitrification experiments on plutonium residues unsuitable for use as fuel at the Radium Institute in St. Petersburg. The advanced work in Russia along with ongoing research in the U.S. laboratories, such as facilities at the Savannah River Site and Oak Ridge National Laboratory, can provide the basis for active, mutually-rewarding cooperation on one of the most urgent issues of our time.

Presidents Clinton and Yeltsin should decide now to vitrify plutonium to prevent its diversion into the black market. As a first step, Russia and the United States should establish two joint vitrification pilot plants-one in each country-as part of technical collaboration program on fissile materials security. The U.S. and Russia should agree to shut down their reprocessing plants and not to use plutonium in reactors. They could then work together to persuade other countries to shut down their reprocessing plants.

Only a U.S.-Russian partnership in weapons-usable materials management will prompt other governments to pursue proliferation-resistant and environmentally sound management options, and to shift employment into these areas, away from problem technologies like reprocessing. The potential diversion of plutonium from either military or commercial stocks is a global problem requiring a global solution.

Vitrification of Plutonium

In order to assure that plutonium will not be used to make nuclear weapons, it is necessary to put it into a non-weapons-usable form. One way of accomplishing this is to mix it with a large quantity of molten glass and pour it into metal containers to form glass logs. This process is called vitrification. Plutonium concentration in the glass could range from a fraction of one percent to several percent. A low concentration makes it harder to steal or re-extract the plutonium, but increases the number of glass logs requiring storage. Re-extraction of plutonium from glass can be accomplished without very complex processing.

In order to make the plutonium more difficult to recover, and hence more proliferation-resistant, it can be mixed with highly radioactive fission products, such as cesium-137 or mixed fission products from previous reprocessing plant operations. Such gamma-emitting fission products would provide a lethal radiation dose to anyone trying to steal a glass log containing plutonium. However, this approach would also make it more expensive to re-extract the plutonium, should that be required in the future. A middle-ground solution would be to vitrify plutonium with other elements like thorium-232 and put the mixture in a container that has been made highly radioactive by the use of cesium-137 to make it esistant to theft.

5. *INTERNATIONAL HERALD TRIBUNE*, 6 February 1998.

Seoul Backpedals on Nuclear Pact

Funds Are Lacking for Reactors for the North, U.S. Is Told

By David E. Sanger

New York Times Service

WASHINGTON — South Korean officials have told members of President Bill Clinton's admínistration that Seoul's financial crisis has left it unable to pay its promised share for the construction of nuclear power plants in North Korea, the key element of the deal that halted the North's nuclear weapons program three years ago.

South Korea was expected to ask the United States and Japan, in a meeting on the nuelear accord in New York on Thursday, to provide more for the early stages of the project. The U.S. Congress, however, has refused to fund directly the reactor construction.

American officials are concerned that any signal from Seoul that it is slowing the $5 billion civilian nuclear project could embolden North Korea to break its commitment to halt its nuclear weapons program.

The South's effort to delay its payment is the most conspicuous example yet of how the Asian financial crisis is spilling over into American foreign-policy problems in the region.

The incoming South Korean president, Kim Dae Jung, has repeatedly said that Seoul is committed to carrying out the 1994 accord. But devoting tens of millions of dollars to the early stages of the project when the govemment is in the midst of an austerity campaign and workers are facing mass layoffs has becorne what one senior South Korean official called a "very delicate political problem."

After lengthy delays, the project is just getting under way. North Korean workers, in conjunction with engineers from the South, are clearing the site for the two nuclear plants.

Last week, the Nuclear Regulatory Commission in Washington published an unusual notice in the Federal Register: a request from Combustion Engineering, a nuclear equipment producer, for a license to export two reactors, for "commercial operation of electricity," to North Korea. Ordinarilyl exports of virtually any sensitive goods to the Communist country are barred.

The notice was something of a diplomatic gaffe, officials acknowledged. The 1994 accord calls for the reactors to be of "Korean style" to calm South Korean objections that Seoul was paymg for reactors made by American companies.

American officials familiar with the sensitive negotiations over the nuclear deal said Wednesday that they suspected Seoul may be using the financial crisis to test Washington and Tokyo's willingness to pay for a bígger part of the North Korean project.

The South wants the Americans to commit money to building the light-water reactor, something Congress has refused to do, though the United States has spent about $100 million send'mg fuel oil to North Korea to supplement its energy supplies.

"We have made it clear that we do not think Congress is prepared to fund the light-water reactor for the North under any conditions," a senior U.S. official said, speaking on condition of anonymity.

It is not clear how North Korea will respond to South Korea's talk about the financing.

"The reactors are the quid pro quo for freezing the nuclear program," said Gary Milhollin, director of the Wisconsin Project on Nuclear Arms Control. "If the reactors don't go forward, we will confront at some point North Korean reluctance to do their part of the deal."

The 1994 accord defused a diplomatic confrontation with North Korea that came close to triggering hostilities along the Demilitarized Zone between the two Koreas, according to two recent studies.

South Korea and Japan have been haggling over how to divide the cost of the reactors. Japan has díscussed an investment of more than $1 billion.

The meeting Thursday was scheduled to try to resolve that dispute. But one American official said it was now clear that "the financial crisis is going to keep us from solving this problem this year."

The end of the cold war

Reagan's rebellion

Feb 26th 2009

From *The Economist* print edition

JAMES MANN, whose speciality is the murky world of Republican policymaking, and whose 2004 book on George Bush's war cabinet, "Rise of the Vulcans", was a deserved hit, has produced a winner again. His subject is Ronald Reagan, his relationship with Mikhail Gorbachev and the ending of the cold war. Backed by a thorough trawl of American documents and people (though lacking corresponding access to Russian sources), it is a sound account, well worth reading.

He kicks off with a chapter on the relationship between Reagan and Richard Nixon, who may have kept a low public profile but bombarded the president with advice. And this advice appears with hindsight to have been fairly bad. Along with Henry Kissinger, who also periodically weighed in, Nixon seemed unable to grasp what Reagan instinctively understood, even if he was wary about articulating it: that Mr Gorbachev really was a different kind of Soviet leader from those that America had faced in the previous decades.

It is this, according to Mr Mann, that made Reagan a rebel, and his rebellion was rooted in a profound philosophical difference. One realist school of thought held that the cold war was something immutable, a fact of history that could at best be managed through the grinding diplomatic protocols known as detente. The other school, to which Reagan belonged, sensed that communism was weaker than it looked and that the cold war would die with it.

Unfortunately, it was not just Nixon and Mr Kissinger who belonged to the first realist school but also most of the State Department, the Pentagon and the rest of the national security apparatus, not to mention the whole chorus of the conservative commentariat. Here, for instance, is George Will, of the *Washington Post*, writing in 1987: "Reagan seems to accept the core of the catechism of the anti-nuclear left…the notion that the threat is the existence of nuclear weapons, not the nature of the Soviet regime." In extending a hand of friendship to Mr Gorbachev, Reagan terrified the great bulk of his own political base.

But how did Reagan, who had never been to the Soviet Union, and who first came to politics (in those days, Mr Mann reminds us, as a Democrat) battling against labour unions and alleged communist subversion in the film industry, come to feel this? Mr Mann's exploration of this puzzle revolves around the president's extraordinary (though entirely above-board) relationship with a semi-academic, Suzanne Massie, the author of a rather fanciful book about Russian culture called "Land of the Firebird". For an unofficial adviser, with no job or proper function, Ms Massie held a remarkable 20 or so meetings with the president, and they wrote frequently to one another. As Mr Mann shows, she carried back-channel messages between Reagan and the Kremlin. And she gave the president his favourite catch-phrase for dealing with Russians: "Trust, but verify."

Other parts of the book deal, in great detail, with the genesis of Reagan's 1987 appeal to Mr Gorbachev to "tear down this wall!", delivered at the Brandenburg Gate within sharp-shooter range of East Berlin's *Volkspolizei*. Even as Reagan was travelling to Germany, nervous detentist elements in his own government were trying to rewrite his speech. And there is an excel-

lent final section on the summit diplomacy that did so much to change Western perceptions of the Soviet Union.

The book, fascinating and recommended though it is, does leave some large questions unanswered. It says nothing beyond, literally, a sentence, about the importance of America's covert war in Afghanistan in pressuring the Soviet Union into defeat. And although it lays out Reagan's fundamentally optimistic view of Mr Gorbachev, and indeed of history, it does not come to any firm conclusion as to how consequential this actually was. After all, the concessions, on arms control and so much else, all came from the Russian side.

Ultimately, or so Mr Mann concludes, the Soviet Union collapsed because of Mr Gorbachev and the communist system's internal contradictions. Neither the arms race nor any concerted effort to strangle the Soviet economy pushed the empire over the edge. Nor, for that matter, did Reagan's sensible policy of conditional engagement. Which does rather raise the question: how much in the end did that rebellion of Ronald Reagan really matter?

Bush's Nuclear Revolution: A Regime Change in Nonproliferation[1]

By George Perkovich[2]

The Bush administration's new "National Strategy to Combat Weapons of Mass Destruction (WMD)," announced in December, is wise in some places, in need of small fixes in other places, and dangerously radical in still others. Most important, the strategy's approach to nuclear issues seems destined to reduce international cooperation in enforcing nonproliferation commitments rather than enhance it. America's willingness to use force against emergent WMD threats, as in Iraq, can stir the limbs of the international body politic to action. But a truly effective strategy to reduce nuclear dangers over the long term must bring along hearts and minds as well.

The WMD proliferation problem involves biological, chemical, and nuclear weapons, but the third raises the most telling issues. Chemical and biological weapons are legally prohibited by treaty, and so the challenge they pose is basically one of enforcement. Nuclear weapons, on the other hand, are temporarily legal in five countries, not illegal in three others, and forbidden essentially everywhere else -- a complex and inconsistent arrangement that presents a unique set of dilemmas.

This regime was established by the nuclear Nonproliferation Treaty, signed in 1968 and extended indefinitely in 1995. Shaped largely by the two superpowers, the NPT posited that the world would be more secure if proliferation did not extend beyond the five states (the United States, the Soviet Union, the United Kingdom, France, and China) that at the time possessed nuclear weapons. It reflected the widely held judgment that the more nuclear weapons holders there were, the greater the risks would be that some weapons would go off, either accidentally or on purpose.

The vast majority of countries, however, felt that "total elimination of nuclear weapons is the only absolute guarantee against [their] use," and enshrined this conviction in Article VI of the NPT. That is, nuclear weapons per se are a problem, even if they could serve as effective deterrents against certain threats. The United States and the other four nuclear powers accepted this proposition and in May 2000 reaffirmed their "unequivocal undertaking" to eliminate their nuclear arsenals.

To persuade the rest of the world to give up its right to future acquisition of nuclear weapons, in other words, the nuclear weapon possessors had to promise to give up their own eventually. They had to offer other incentives as well: a pledge not to use their weapons to threaten non-possessors, help in acquiring and using civilian nuclear technology for states that renounced nuclear weapons and accepted international monitoring, and the enhanced security of knowing that the treaty would also help keep one's neighbors from acquiring nuclear weapons. On this foundation, the United States and other countries have constructed over the years a nonproliferation regime of norms, laws, rules, institutions, sanctions, and, ultimately, un-backed coercion.

Since the NPT was agreed to in 1968, only five states have acquired nuclear weapons: Israel, India, Pakistan, South Africa, and perhaps North Korea. The first three never signed on to the

[1] March 11, 2003. From *Foreign Affairs* March/April 2003 issue.

[2] Vice President for Studies at the Carnegie Endowment for International Peace and author of *India's Nuclear Bomb*.

treaty, and so their ongoing possession is morally, politically, and strategically (although not juridically) akin to that of the original five nuclear powers. South Africa subsequently gave up its weapons and joined the regime as a nonpossessor. North Korea, which did sign the NPT in 1985, has been caught twice escaping its obligations and is now trying to cut a new deal.

Argentina, Brazil, South Korea, and Taiwan ceased their suspected nuclear weapons development programs over the years. Belarus, Kazakhstan, and Ukraine inherited nuclear weapons upon the Soviet Union's dissolution but opted to relinquish them in favor of joining the NPT. Iraq had a clandestine illegal nuclear weapons program that was detected and largely dismantled as a result of the last Persian Gulf War. Today, therefore, Iran is the only state known to be actively seeking nuclear weapons -- in violation of the spirit, if not the letter, of its nonproliferation commitments -- that is not also under some form of "arrest."

Most analysts would agree that the arms control regime has worked better and longer than expected but nevertheless needs to be strengthened to better handle new circumstances and challenges. The Bush administration thinks otherwise. It concludes from the few problem cases that "traditional nonproliferation has failed," as one White House official recently told The Washington Post.

To administration radicals such as Robert Joseph (the National Security Council's senior counterproliferation official), Douglas Feith (undersecretary of defense), John Bolton (undersecretary of state), and Stephen Cambone (principal deputy undersecretary of defense), nuclear weapons per se are not the problem -- "bad guys" with them are. Rejecting the fundamental premise of the NPT, these officials seek not to create an equitable global regime that actively devalues nuclear weapons and creates conditions for their eventual elimination, but rather to eradicate the bad guys or their weapons while leaving the "good guys" free of nuclear constraints. Ballistic missile defense, in this vision, will protect against the few weapons that get away, while Special Forces and the Department of Homeland Security will protect against non-missile-borne threats.

The administration has enunciated this position with admirable clarity in its new national security strategy. Commentators have fixated on the invocation of "preemptive" military action to counter enemies seeking "the world's most destructive technologies." Yet this is not the crazy idea it is often portrayed to be. To enforce a robust nonproliferation regime, preemption might actually make sense in certain cases. The real problem in the new strategy is not preemption but narrowness -- the focus on three wretched governments and terrorists, and the emphasis on force, coercion, and selective treaty enforcement as the main instruments of national policy.

FOR ME BUT NOT FOR THEE

Conservative defense intellectuals and officials deserve credit for highlighting the fact that effective nonproliferation requires changes in the policies or governments of states unwilling to abide by international laws and norms. Yet they then proceed to make the reverse mistake, looking only at the outlaws and ignoring the challenges posed by nuclear weapons in general. So long as some states are allowed to possess nuclear weapons legitimately and derive the benefits that flow from them, then other states in the system will want them too -- including, perhaps, the successors to the governments the Bush administration currently opposes. The proliferation threat thus stems from the existence and possession of nuclear weapons and theft-prone materials, not merely from the intentions of today's "axis of evil." Redressing this larger

threat requires cooperation from Russia, China, Japan, South Korea, and others, as the administration has discovered now in dealing with North Korea.

The nonproliferation radicals recognize that the good guys of today can become the bad guys of tomorrow. So they say the United States must retain and "upgrade" an enormous strategic arsenal forever to deter or defeat any adversary. At the same time, they argue that the new bad guys (rogue states and terrorists), unlike the old bad guys (the Soviet Union), cannot be deterred and contained and so must be eliminated quickly. The Bush administration thus essentially favors a strategy of repeated regime change plus a large, steadily modernizing nuclear arsenal.

This bleak vision makes sense only if the determination to retain deployed nuclear arsenals forever does not exacerbate proliferation risks, and if the weapons being retained provide a necessary, usable, and effective deterrent against threats that are greater than proliferation. Since neither of these assumptions is valid, the strategy is flawed.

On the "supply" side, the longer worldwide stockpiles of weapons, fissile materials, precursor technologies, and expertise remain and grow, the greater the risk of their being diverted to proliferation. (Think of Russia today and Pakistan over the next 30 years.) It is true that even without operable nuclear weapons, fissile materials would pose a proliferation threat and would have to be zealously accounted for and secured. But securing sensitive assets would be much easier in a zero-arsenal world than in one where multiple states maintain operational nuclear forces and large related infrastructures with little or no transparency and international monitoring.

On the "demand" side, the fact that several powerful countries continue to assign great value to their nuclear arsenals reinforces just how important these weapons can be as sources of power and prestige and raises their attractiveness for others. This role-model effect does not by itself cause other states or terrorists to seek nuclear weapons. But it does impede efforts to persuade India, Pakistan, Iran, North Korea, and Iraq to curtail their acquisitions. It could also cause Japan, Brazil, and others to rethink their abstinence. Moreover, the administration's "emphasis on tactical uses" of nuclear weapons "increases the motivation of" targeted states "to improve and extend their own nuclear force, or to get one if they don't have it," as notes Michael May, the former director of Lawrence Livermore National Laboratory. The behavior of North Korea and Iran seems to confirm May's warning.

Nonproliferation radicals counter by changing the subject. They say the massive U.S. nuclear arsenal and the doctrine of first use together avert proliferation on the part of American allies such as Japan, Taiwan, South Korea, and Germany. Each of these states could readily acquire nuclear weapons, but, according to this view, chooses not to because the American arsenal gives it a deterrent shield. Yet, South Korea, Germany, and Japan today seem more alarmed than reassured by U.S. strategy. Rather than the nuclear-heavy status quo, they would prefer at least a serious attempt to remove, in a verifiable and step-by-step manner, nuclear weapons from national arsenals, as called for by the NPT.

HOW MUCH IS ENOUGH?

The Bush administration justifies its maintenance of vast nuclear arsenals as a response to three types of threats: terrorists, rogue states, and great-power rivals such as Russia and China.

Yet it is hard to see how nuclear weapons could play any role whatsoever in either deterring or responding to terrorists, who are determined, mobile, small in number, and hard to target. It is

almost as hard to see how nuclear weapons are necessary and appropriate to confront the challenges posed by rogue states, something the current Iraq and Korea crises should demonstrate. Obliterating cities is not a credible U.S. option. And as for bunkers hiding rogue leaders or weapons, May points out that even if they can be located precisely, "small nuclear weapons have only marginally more effectiveness than U.S. conventional weapons against most targets ... [and] are more difficult to use." American use of nuclear weapons against Iraq (or Iran), meanwhile, would inflame Muslim hatred around the world, add fuel to the Israeli-Palestinian conflict, and mobilize massive European protests against U.S. hegemony -- all major strategic costs to the United States.

As for Russia, a full-scale war between it and the United States now seems inconceivable. Given the desires for larger cuts in nuclear forces that Russia displayed in negotiating the 2002 Moscow Treaty, Russia hardly seems enough of a threat to justify the size and forward-leaning posture of America's present arsenal.

China currently possesses roughly two dozen nuclear weapons that could reach the United States and a few hundred more that could hit targets in and around Taiwan. China is modernizing and expanding its arsenal, moreover. But whether this process will proceed indefinitely, either qualitatively or quantitatively, depends largely on the political and strategic environment the United States itself shapes.

Yet rather than seek a multilateral framework in which the United States, Russia, and China could set the lowest possible limits on their forces, Washington hawks seek to "impress" China with "greater, rather than fewer weapons," in the words of an influential 2001 think tank report signed by several people who went on to key positions in the Bush administration. "Authoritarian states and leaders seem to place special emphasis on large numbers," the report noted, "perhaps because ... dictators find in large numbers a promise or manifestation of the unlimited force they want to exercise." (This would be more insightful if China had several thousand nuclear weapons and the United States a few hundred, rather than the other way around.)

Instead of maintaining such an arsenal, many argue, the United States should lead the other nuclear powers in an effort to render nuclear weapons taboo -- the vision, that is, behind the international nonproliferation regime the administration appears to scorn. Bringing such a taboo into effect would obviously require decades and enormous changes in international relations. Yet promulgating it emphatically as a goal would help motivate states, customs officials, scientists, and others around the world to be more vigilant in combating the spread of nuclear weapons.

Nonproliferation revolutionaries scoff at the value of norms against nuclear weapons. They argue, somewhat correctly, that bad guys do not follow norms, but overlook the fact that many people whose cooperation we need do. Ironically, elsewhere the administration finds the concept of norms to be useful. Undersecretary of Defense Feith, for example, demands universal acceptance of the norm against terrorism. "Worldwide moral battles can be fought and won," he said recently; "no decent person any more ... supports or excuses slave trading, piracy, or genocide. No decent person should support or excuse terrorism either."

SELECTIVE SERVICE

Instead of trying to make nuclear weapons anathema, the hawks prefer to focus on "enforcement." In the new strategy's words, "We will hold countries responsible for complying with their commitments." This is welcome; enforcement of nonproliferation regimes should indeed

be strengthened. Yet the administration does not seem to recognize that it is easier to make others comply with their commitments if you comply with yours, both within treaties and across them. The United States does not, in fact, comply with important commitments it has made under the NPT, such as the promise to move toward giving up its weapons, and Washington clearly has no intention of doing so.

The Comprehensive Test Ban Treaty represents the single clearest and most immediate commitment the nuclear weapons states have made to fulfill their disarmament obligations under the NPT. "We're not for that," a Bush administration official says. How about the "unequivocal undertaking" to eliminate all nuclear arsenals? "We're not for that, either," the official says. Indeed, the White House's new counterproliferation strategy does not mention any nuclear weapons state obligations or commitments to reverse the salience, size, and modernization of nuclear arsenals, beyond urging negotiation of a ban on further fissile-material production "that advances U.S. security interests."

As evidence of compliance with NPT disarmament obligations, Bush administration officials cite the recent Moscow Treaty with Russia. Yet this treaty "requires" the United States and Russia only to reduce deployed strategic forces from 6,000 today to between 1,700 and 2,200 warheads. Because the treaty lacks a schedule of phased reductions, either party could defer cuts until December 31, 2012, at which point violations would be moot because the treaty expires on that day. The treaty also does not require the elimination of a single nuclear missile silo, submarine, missile, warhead, bomber, or bomb. The radicals' concern for enforcement, therefore, suffers from triple selectivity. It deems some states' nuclear weapons good, while others' are bad. It selects one treaty, the NPT, for enforcement while dismissing others. And it selects only some provisions of the NPT -- the constraints on others -- for enforcement. Such selectivity mocks the equitable rule of law and engenders apathy and resistance from other states that makes stopping WMD proliferation even harder than it would otherwise be.

WIN ONE FOR THE GIPPER

Real security against weapons of mass destruction requires all relevant states and individuals to enforce vigorously the treaties, rules, laws, and procedures that have been established to outlaw chemical and biological weapons and to contain, and ultimately eliminate, the threats posed by nuclear arsenals. Some argue that this is a fantasy because nuclear weapons, and chemical and biological weapons, cannot be disinvented. This ignores the fact that they do not have to be. The Reagan administration and Moscow did not disinvent intermediate-range nuclear missiles, but they eliminated them from their arsenals. South Africa did not disinvent its nuclear arsenal, but it did decommission it.

As Ronald Reagan, for one, envisioned, nuclear weapons can be verifiably withdrawn from the serviceable arsenals of states. This will take many decades to accomplish and will be finished only if and when the world in general has achieved the sort of integration and obedience to the rule of law that the Western hemisphere and Europe have developed in the past 50 years. This rule of law will have to be backed by internationally legitimate and robust instruments of coercion for the dangers to be kept at bay. Merely stating such a goal makes clear how far we are from it at present. But unless the United States and other leading countries vigorously proffer this vision the proliferation problem will get more dangerous rather than less.

United Nations
Security Council

S/RES/1540 (2004)
Distr. general
28 April 2004

Resolution 1540 (2004)

Adopted by the Security Council at its 4956th meeting on 28 April 2004

The Security Council,

Affirming that proliferation of nuclear, chemical and biological weapons, as well as their means of delivery,[1] constitutes a threat to international peace and security,

Reaffirming, in this context, the Statement of its President adopted at the Council?s meeting at the level of Heads of State and Government on 31 January 1992 (S/23500), including the need for all Member States to fulfil their obligations in relation to arms control and disarmament and to prevent proliferation in all its aspects of all weapons of mass destruction,

Recalling also that the Statement underlined the need for all Member States to resolve peacefully in accordance with the Charter any problems in that context threatening or disrupting the maintenance of regional and global stability,

Affirming its resolve to take appropriate and effective actions against any threat to international peace and security caused by the proliferation of nuclear, chemical and biological weapons and their means of delivery, in conformity with its primary responsibilities, as provided for in the United Nations Charter,

Affirming its support for the multilateral treaties whose aim is to eliminate or prevent the proliferation of nuclear, chemical or biological weapons and the importance for all States parties to these treaties to implement them fully in order to promote international stability,

Welcoming efforts in this context by multilateral arrangements which contribute to non-proliferation,

Affirming that prevention of proliferation of nuclear, chemical and biological weapons should not hamper international cooperation in materials, equipment and technology for peaceful purposes while goals of peaceful utilization should not be used as a cover for proliferation,

Gravely concerned by the threat of terrorism and the risk that non-State actors* such as those identified in the United Nations list established and maintained by the Committee established under Security Council resolution 1267 and those to whom resolution 1373 applies, may acquire, develop, traffic in or use nuclear, chemical and biological weapons and their means of delivery,

Gravely concerned by the threat of illicit trafficking in nuclear, chemical, or biological weapons and their means of delivery, and related materials,* which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security,

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[1] Definitions for the purpose of this resolution only:

Means of delivery: missiles, rockets and other unmanned systems capable of delivering nuclear, chemical, or biological weapons, that are specially designed for such use.

Non-State actor: individual or entity, not acting under the lawful authority of any State in conducting activities which come within the scope of this resolution.

Related materials: materials, equipment and technology covered by relevant multilateral treaties and arrangements, or included on national control lists, which could be used for the design, development, production or use of nuclear, chemical and biological weapons and their means of delivery.

Recognizing the need to enhance coordination of efforts on national, subregional, regional and international levels in order to strengthen a global response to this serious challenge and threat to international security,

Recognizing that most States have undertaken binding legal obligations under treaties to which they are parties, or have made other commitments aimed at preventing the proliferation of nuclear, chemical or biological weapons, and have taken effective measures to account for, secure and physically protect sensitive materials, such as those required by the Convention on the Physical Protection of Nuclear Materials and those recommended by the IAEA Code of Conduct on the Safety and Security of Radioactive Sources,

Recognizing further the urgent need for all States to take additional effective measures to prevent the proliferation of nuclear, chemical or biological weapons and their means of delivery,

Encouraging all Member States to implement fully the disarmament treaties and agreements to which they are party,

Reaffirming the need to combat by all means, in accordance with the Charter of the United Nations, threats to international peace and security caused by terrorist acts,

Determined to facilitate henceforth an effective response to global threats in the area of non-proliferation,

Acting under Chapter VII of the Charter of the United Nations,

1. *Decides that* all States shall refrain from providing any form of support to non-State actors that attempt to develop, acquire, manufacture, possess, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery;

2. *Decides also* that all States, in accordance with their national procedures, shall adopt and enforce appropriate effective laws which prohibit any non-State actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them;

3. *Decides also* that all States shall take and enforce effective measures to establish domestic controls to prevent the proliferation of nuclear, chemical, or biological weapons and their means of delivery, including by establishing appropriate controls over related materials and to this end shall:

(a) Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage or transport;

(b) Develop and maintain appropriate effective physical protection measures;

(c) Develop and maintain appropriate effective border controls and law enforcement efforts to detect, deter, prevent and combat, including through international cooperation when necessary, the illicit trafficking and brokering in such items in accordance with their national legal authorities and legislation and consistent with international law;

(d) Establish, develop, review and maintain appropriate effective national export and trans-shipment controls over such items, including appropriate laws and regulations to control export, transit, trans-shipment and re-export and controls on providing funds and services related to such export and trans-shipment such as financing, and transporting that would contribute to proliferation, as well as establishing end-user controls; and establishing and enforcing appropriate criminal or civil penalties for violations of such export control laws and regulations;

4. *Decides* to establish, in accordance with rule 28 of its provisional rules of procedure, for a period of no longer than two years, a Committee of the Security Council, consisting of all members of the Council, which will, calling as appropriate on other expertise, report to the Security Council for its examination, on the implementation of this resolution, and to this end calls upon States to present a first report no later than six months from the adoption of this resolution to the Committee on steps they have taken or intend to take to implement this resolution;

5. *Decides* that none of the obligations set forth in this resolution shall be interpreted so as to conflict with or alter the rights and obligations of State Parties to the Nuclear Non-Proliferation Treaty, the Chemical Weapons Convention and the Biological and Toxin Weapons Convention or alter the responsibilities of the International Atomic Energy Agency or the Organization for the Prohibition of Chemical Weapons;

6. *Recognizes* the utility in implementing this resolution of effective national control lists and calls upon all Member States, when necessary, to pursue at the earliest opportunity the development of such lists;

7. *Recognizes* that some States may require assistance in implementing the provisions of this resolution within their territories and invites States in a position to do so to offer assistance as appropriate in response to specific requests to the States lacking the legal and regulatory infrastructure, implementation experience and/or resources for fulfilling the above provisions;

8. *Calls upon* all States:

(a) To promote the universal adoption and full implementation, and, where necessary, strengthening of multilateral treaties to which they are parties, whose aim is to prevent the proliferation of nuclear, biological or chemical weapons;

(b) To adopt national rules and regulations, where it has not yet been done, to ensure compliance with their commitments under the key multilateral non-proliferation treaties;

(c) To renew and fulfil their commitment to multilateral cooperation, in particular within the framework of the International Atomic Energy Agency, the Organization for the Prohibition of Chemical Weapons and the Biological and Toxin Weapons Convention, as important means of pursuing and achieving their common objectives in the area of non-proliferation and of promoting international cooperation for peaceful purposes;

(d) To develop appropriate ways to work with and inform industry and the public regarding their obligations under such laws;

9. *Calls upon* all States to promote dialogue and cooperation on non-proliferation so as to address the threat posed by proliferation of nuclear, chemical, or biological weapons, and their means of delivery;

10. Further to counter that threat, *calls upon* all States, in accordance with their national legal authorities and legislation and consistent with international law, to take cooperative action to prevent illicit trafficking in nuclear, chemical or biological weapons, their means of delivery, and related materials;

11. *Expresses* its intention to monitor closely the implementation of this resolution and, at the appropriate level, to take further decisions which may be required to this end;

12. *Decides* to remain seized of the matter.

A Change of Heart?

Here are five articles on a change of opinion regarding nuclear weapons:

1. General Lee Butler's Speech and His Joint Statement with General Goodpaster (1996);
2. Two texts (published in 2007 and 2008, respectively) signed by George P. Shultz, William J. Perry, Henry A. Kissinger y Sam Nunn;
3. "Containing the fire of the gods" de Henry A. Kissinger (February 6, 2009);
4. Miguel Marín Bosch, "*Orwellian* metamorphosis?" (18 January 2007); and
5. Robert McNamara (two notes).

1. General Lee Butler's Speech and His Joint Statement with General Goodpaster

December 4, 1996

General Lee Butler, ex-commander of the Strategic Air Command, called for the elimination of all nuclear weapons at a National Press Club luncheon on December 4, 1996. He also issued a Joint Statement with General Goodpaster.

The next day a statement was released with the signatures of dozens of generals and admirals from seventeen countries, including Russia and the United States, that called for deep reductions in nuclear stockpiles.

NATIONAL PRESS CLUB REMARKS
General Lee Butler, USAF (Retired)
Wednesday, December 4, 1996
Washington, D.C.

Thank you, and good afternoon, ladies and gentlemen. Let me say first that I'm both professionally honored and intellectually comforted to share this rostrum with General Andrew Goodpaster. He has long set the standard among senior military officers for rigorous thinking and wise counsel on national security matters. He has been a role model for generations of younger officers, and most certainly was for me. His views of the risks inherent in nuclear weapons and the consequences of their use have long been a matter of public record. I found them very compelling as I made the long and arduous intellectual journey from staunch advocate of nuclear deterrence to public proponent of nuclear abolition.

This latter role is not one that I ever imagined nor one that I relish. Far from it. It have too much regard for the thousands of men and women who served under my command, and the hundreds of colleagues with whom I labored in the policy arena, to take lightly the risk that my views might in any way be construed as diminishing their service or sacrifice. Quite to the contrary, I continue to marvel and will always be immensely gratified by their intense devotion and commitment to the highest standards of professional discipline.

I would simply ask them to understand that I am compelled to speak, by concerns I cannot still, with respect to the abiding influence of nuclear weapons long after the Cold War has ended. I am here today because I feel the weight of a special obligation in these matters, a responsibility born of unique experience and responsibilities. Over the last 27 years of my military career, I was embroiled in every aspect of American nuclear policy making and force structuring, from the highest councils of government to nuclear command centers; from the arms control arena to cramped bomber cockpits and the confines of ballistic missile silos and submarines. I have

spent years studying nuclear weapons effects; inspected dozens of operational units; certified hundreds of crews for their nuclear mission; and approved thousands of targets for nuclear destruction. I have investigated a distressing array of accidents and incidents involving strategic weapons and forces. I have read a library books and intelligence reports on the Soviet Union and what were believed to be its capabilities and intentions...and seen an army of experts confounded. As an advisor to the President on the employment of nuclear weapons, I have anguished over the imponderable complexities, the profound moral dilemmas, and the mind-numbing compression of decisionmaking under threat of nuclear attack.

I came away from that experience deeply troubled by what I see as the burden of building and maintaining nuclear arsenals; the increasingly tangled web of policy and strategy as the number of weapons and delivery systems multiply; the staggering costs; the relentless pressure of advancing technology; the grotesquely destructive war plans; the daily operational risks; and the constant prospect of a crisis that would hold the fate of entire societies at risk.

Seen from this perspective, it should not be surprising that no one could have been more relieved than way I by the dramatic end of the Cold War and the promise of reprieve from its acute tensions and threats. The democratization of Russia, the reshaping of Central Europe....I never imagined that in my lifetime, much less during my military service, such extraordinary events might transpire. Even more gratifying was the opportunity, as the commander of US strategic nuclear forces, to be intimately involved in recasting our force posture, shrinking our arsenals, drawing down the target list, and scaling back hugh impending Cold War driven expenditures.

Most importantly, I could see for the first time the prospect of restoring a world free of the apocalyptic threat of nuclear weapons.

Over time, that shimmering hope gave way to a judgment which has now become a deeply held conviction; that a world free of the threat of nuclear weapons is necessarily a world devoid of nuclear weapons. Permit me, if you will, to elaborate briefly on the concerns which compel this conviction.

First, a growing alarm that despite all of the evidence, we have yet to fully grasp the monstrous effects of these weapons, that the consequences of their use defy reason, transcending time and space, poisoning the earth and deforming its inhabitants. Second, a deepening dismay at the prolongation of Cold War policies and practices in a world where our security interests have been utterly transformed. Third, that foremost among these policies, deterrence reigns unchallenged, with its embedded assumption of hostility and associated preference for forces on high states of alert. Fourth, an acute unease over renewed assertions of the utility of nuclear weapons, especially as regards response to chemical or biological attack. Fifth, grave doubt that the present highly discriminatory regime of nuclear and non-nuclear states can long endure absent an credible commitment by the nuclear powers to eliminate their arsenals. And finally, the horrific prospect of a world seething with enmities, armed to the teeth with nuclear weapons, and hostage to maniacal leaders strongly disposed toward their use.

That being said, let me hasten to add that I am keenly aware of the opposing arguments. Many strategists hold to the belief that the Cold War world was well served by nuclear weapons, and that the fractious world emerging in its aftermath dictates that they will be retained...either as fearsome weapons of last resort or simply because their elimination is still a Utopian dream. I

offer in reply that for me the Utopian dream was ending the Cold War. Standing down nuclear arsenals requires only a fraction of the ingenuity and resources as were devoted to their creation. As the those who believe nuclear weapons desirable or inevitable, I would say these devices exact a terrible price even if never used. Accepting nuclear weapons as the ultimate arbiter of conflict condemns the world to live under a dark cloud of perpetual anxiety. Worse, it codifies mankind's most murderous instincts as an acceptable resort when other options for resolving conflict fail.

Others argue that nuclear weapons are still the essential trappings of superpower status; that they are a vital hedge against a resurgence of virulent, Soviet-era communism; that they will deter attack by weapons of mass destruction; or that they are the most appropriate choice for response to such attack.

To them I reply that proliferation cannot be contained in a world where a handful of self-appointed nations both arrogate to themselves the privilege of owning nuclear weapons, and extol the ultimate security assurances they assert such weapons convey. That overt hedging against born-again, Soviet-style hardliners is as likely to endanger as to discourage their resurrection. That elegant theories of deterrence wilt in the crucible of impending nuclear war. And, finally, that the political and human consequences of the employment of a nuclear weapon by the United States in the United States in the post-Cold War world, no matter the provocation, would irretrievably diminish our stature. We simply cannot resort to the very type of act we rightly abhor.

Is it possible to forge a global consensus on the propositions that nuclear weapons have no defensible role; that the broader consequences of their employment transcend any asserted military utility; and that as true weapons of mass destruction, the case for their elimination is a thousand-fold stronger and more urgent than for deadly chemicals and viruses already widely declared immoral, illegitimate, subject to destruction and prohibited from any future productions?

I am persuaded that such a consensus is not only possible, it is imperative. Notwithstanding the uncertainties of transition in Russia, bitter enmities in the Middle East, or the delicate balance of power in South and East Asia, I believe that a swelling global refrain will eventually bring the broader interests of mankind to bear on the decisions of governments to retain nuclear weapons. The terror-induced anesthesia which suspended rational thought, made nuclear war thinkable and grossly excessive arsenals possible during the Cold War is gradually wearing off. A renewed appreciation for the obscene power of a single nuclear weapon is coming back into focus as we confront the dismal prospect of nuclear terror at the micro level.

Clearly the world has begun to recoil from the nuclear abyss. Bombers are off alert, missiles are being destroyed and warheads dismantled, former Soviet republics have renounced nuclear status. The Non-Proliferation Treaty has been indefinitely extended, the Comprehensive Test Ban Treaty is now a de facto prohibition, and START II may yet survive a deeply suspicious Duma. But, there is a much larger issue which now confronts the nuclear powers and engages the vital interest of every nation; whether the world is better served by a prolonged era of cautious nuclear weapons reductions toward some indeterminate endpoint; or by an unequivocal commitment on the part of the nuclear powers to move much greater urgency toward the goal of eliminating these arsenals in their entirety.

I chose this forum to make my most direct public case for elimination as the goal, to be pursued with all deliberate speed. I firmly believe that practical and realistic steps, such as those set forth by the Stimson Center study, or by the Canberra Commission on the Elimination of Nuclear Weapons, can readily be taken toward that end, But I would underscore that the real issue here is not the path — it is the willingness to undertake the journey. In my view, there are three crucial conditions which must first be satisfied for that journey to begin, conditions which go to the heart of strongly held beliefs and deep seated fears about nuclear weapons and the circumstances in which they might be used. First and foremost, is for the declared nuclear weapon states to accept that the Cold War is in fact over, to break free of the norms, attitudes and habits that perpetuate enormous inventories, forces standing alert and targeting plans encompassing thousands of aimpoints.

Second, for the undeclared states to embrace the harsh lessons of the Cold War; that nuclear weapons are inherently dangerous, hugely expensive, and militarily inefficient; that implacable hostility and alienation will almost certainly over time lead to a nuclear crisis; that the failure of nuclear deterrence would imperil not just the survival of the antagonists, but of every society; and that nuclear war is a raging, insatiable beast whose instincts and appetites we pretend to understand but cannot possibly control.

Third, given its crucial leadership role, it is essential for the United States to undertake as a first order of business a sweeping review of its nuclear policies and strategies. The Clinton administration's 1993 Nuclear Posture Review was an essential but far from sufficient step toward rethinking the role of nuclear weapons in the post-Cold War world. While clearing the agenda of some pressing force structure questions, the NPR purposefully avoided the larger policy issues.

Moreover, to the point of Cold War attitudes, the Review's justification for maintaining robust nuclear forces as a hedge against the resurgence of a hostile Russia should now be seen as regrettable from several aspects. It sends an overt message of distrust in an era when building a positive security relationship with Russia is arguably the United States' most important foreign policy interest. It confides force levels and postures completely out of keeping with the historic passage we have witnessed in world affairs. And, it perpetuates attitudes, which inhibit a willingness to proceed immediately toward negotiation of greatly reduced levels of arms, notwithstanding the state of ratification of the START II Agreement.

There you have, in very abbreviated form, the core of the concerns which led me to abandon the blessed anonymity of private life, to join my voice with respected colleagues such as General Goodpaster, to urge publicly that the United States make unequivocal its commitment to the elimination of nuclear arsenals, and take the lead in setting an agenda for moving forthrightly toward that objective.

I left active duty with great confidence that the imperative for this commitment, and the will to pursue it, were fully in place. I entered private life with a sense of profound satisfaction that the astonishing turn of events which brought a wondrous closure to my three and one-half decades of military service, and far more importantly to four decades of perilous ideological confrontation, presented historic opportunities to advance the human condition.

But now time, and human nature, are wearing away the sense of wonder and closing the window of opportunity. Options are being lost as urgent questions are unasked, or unanswered; as

outmoded routines perpetuate Cold War patterns and thinking; and as a new generation of nuclear actors and aspirants lurch backward toward a chilling world where the principal antagonists could find no better solution to their entangled security fears than Mutual Assured Destruction.

Such a world was and is intolerable. We are not condemned to repeat the lessons of forty years at the nuclear brink. We can do better than condone a world in which nuclear weapons are accepted as commonplace. The Price already paid is too dear, the risks too great. The task is daunting but we cannot shrink from it. The opportunity may not come again.

2. Two texts by George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn

1.

A World Free of Nuclear Weapons[1]

By George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn[2]

Nuclear weapons today present tremendous dangers, but also an historic opportunity. U.S. leadership will be required to take the world to the next stage -- to a solid consensus for reversing reliance on nuclear weapons globally as a vital contribution to preventing their proliferation into potentially dangerous hands, and ultimately ending them as a threat to the world.

Nuclear weapons were essential to maintaining international security during the Cold War because they were a means of deterrence. The end of the Cold War made the doctrine of mutual Soviet-American deterrence obsolete. Deterrence continues to be a relevant consideration for many states with regard to threats from other states. But reliance on nuclear weapons for this purpose is becoming increasingly hazardous and decreasingly effective.

North Korea's recent nuclear test and Iran's refusal to stop its program to enrich uranium -- potentially to weapons grade -- highlight the fact that the world is now on the precipice of a new and dangerous nuclear era. Most alarmingly, the likelihood that non-state terrorists will get their hands on nuclear weaponry is increasing. In today's war waged on world order by terrorists, nuclear weapons are the ultimate means of mass devastation. And non-state terrorist groups with nuclear weapons are conceptually outside the bounds of a deterrent strategy and present difficult new security challenges.

Apart from the terrorist threat, unless urgent new actions are taken, the U.S. soon will be compelled to enter a new nuclear era that will be more precarious, psychologically disorienting, and economically even more costil than was Cold War deterrence. It is far from certain that we

[1] *Wall Street Journal*, January 4, 2007; page A15.

[2] Mr. Shultz, a distinguished fellow at the Hoover Institution at Stanford, was secretary of state from 1982 to 1989. Mr. Perry was secretary of defense from 1994 to 1997. Mr. Kissinger, chairman of Kissinger Associates, was secretary of state from 1973 to 1977. Mr. Nunn is former chairman of the Senate Armed Services Committee.

A conference organized by Mr. Shultz and Sidney D. Drell was held at Hoover to reconsider the vision that Reagan and Mr. Gorbachev brought to Reykjavik. In addition to Messrs. Shultz and Drell, the following participants also endorse the view in this statement: Martin Anderson, Steve Andreasen, Michael Armacost, William Crowe, James Goodby, Thomas Graham Jr., Thomas Henriksen, David Holloway, Max Kampelman, Jack Matlock, John McLaughlin, Don Oberdorfer, Rozanne Ridgway, Henry Rowen, Roald Sagdeev and Abraham Sofaer.

can successfully replicate the old Soviet-American "mutually assured destruction" with an increasing number of potential nuclear enemies world-wide without dra-matically increasing the risk that nuclear weapons will be used. New nuclear states do not have the benefit of years of step-by-step safeguards put in effect during the Cold War to prevent nuclear accidents, misjudgments or unauthorized launches. The United States and the Soviet Union learned from mistakes that were less than fatal. Both countries were diligent to ensure that no nuclear weapon was used during the Cold War by design or by accident. Will new nuclear nations and the world be as fortunate in the next 50 years as we were during the Cold War?

* * *

Leaders addressed this issue in earlier times. In his "Atoms for Peace" address to the United Nations in 1953, Dwight D. Eisenhower pledged America's "determination to help solve the fearful atomic dilemma -- to devote its entire heart and mind to find the way by which the miraculous inventiveness of man shall not be dedicated to his death, but consecrated to his life." John F. Kennedy, seeking to break the logjam on nuclear disarmament, said, "The world was not meant to be a prison in which man awaits his execution."

Rajiv Gandhi, addressing the U.N. General Assembly on June 9, 1988, appealed, "Nuclear war will not mean the death of a hundred million people. Or even a thousand million. It will mean the extinction of four thousand million: the end of life as we know it on our planet earth. We come to the United Nations to seek your support. We seek your support to put a stop to this madness."

Ronald Reagan called for the abolishment of "all nuclear weapons," which he considered to be "totally irrational, totally inhumane, good for nothing but killing, possibly destructive of life on earth and civilization." Mikhail Gorbachev shared this vision, which had also been expressed by previous American presidents.

Although Reagan and Mr. Gorbachev failed at Reykjavik to achieve the goal of an agreement to get rid of all nuclear weapons, they did succeed in turning the arms race on its head. They initiated steps leading to significant reductions in deployed long- and intermediate-range nuclear forces, including the elimination of an entire class of threatening missiles.

What will it take to rekindle the vision shared by Reagan and Mr. Gorbachev? Can a worldwide consensus be forged that defines a series of practical steps leading to major reductions in the nuclear danger? There is an urgent need to address the challenge posed by these two questions.

The Non-Proliferation Treaty (NPT) envisioned the end of all nuclear weapons. It provides (a) that states that did not possess nuclear weapons as of 1967 agree not to obtain them, and (b) that states that do possess them agree to divest themselves of these weapons over time. Every president of both parties since Richard Nixon has reaffirmed these treaty obligations, but non-nuclear weapon states have grown increasingly skeptical of the sincerity of the nuclear powers.

Strong non-proliferation efforts are under way. The Cooperative Threat Reduction program, the Global Threat Reduction Initiative, the Proliferation Security Initiative and the Additional Protocols are innovative approaches that provide powerful new tools for detecting activities that violate the NPT and endanger world security. They deserve full implementation. The negotiations on proliferation of nuclear weapons by North Korea and Iran, involving all the per-

manent members of the Security Council plus Germany and Japan, are crucially important. They must be energetically pursued.

But by themselves, none of these steps are adequate to the danger. Reagan and General Secretary Gorbachev aspired to accomplish more at their meeting in Reykjavik 20 years ago -- the elimination of nuclear weapons altogether. Their vision shocked experts in the doctrine of nuclear deterrence, but galvanized the hopes of people around the world. The leaders of the two countries with the largest arsenals of nuclear weapons discussed the abolition of their most powerful weapons.

* * *

What should be done? Can the promise of the NPT and the possibilities envisioned at Reykjavik be brought to fruition? We believe that a major effort should be launched by the United States to produce a positive answer through concrete stages.

First and foremost is intensive work with leaders of the countries in possession of nuclear weapons to turn the goal of a world without nuclear weapons into a joint enterprise. Such a joint enterprise, by involving changes in the disposition of the states possessing nuclear weapons, would lend additional weight to efforts already under way to avoid the emergence of a nuclear-armed North Korea and Iran.

The program on which agreements should be sought would constitute a series of agreed and urgent steps that would lay the groundwork for a world free of the nuclear threat. Steps would include:

- Changing the Cold War posture of deployed nuclear weapons to increase warning time and thereby reduce the danger of an accidental or unauthorized use of a nuclear weapon.
- Continuing to reduce substantially the size of nuclear forces in all states that possess them.
- Eliminating short-range nuclear weapons designed to be forward-deployed.
- Initiating a bipartisan process with the Senate, including understandings to increase confidence and provide for periodic review, to achieve ratification of the Comprehensive Test Ban Treaty, taking advantage of recent technical advances, and working to secure ratification by other key states.
- Providing the highest possible standards of security for all stocks of weapons, weapons-usable plutonium, and highly enriched uranium everywhere in the world.
- Getting control of the uranium enrichment process, combined with the guarantee that uranium for nuclear power reactors could be obtained at a reasonable price, first from the Nuclear Suppliers Group and then from the International Atomic Energy Agency (IAEA) or other controlled international reserves. It will also be necessary to deal with proliferation issues presented by spent fuel from reactors producing electricity.
- Halting the production of fissile material for weapons globally; phasing out the use of highly enriched uranium in civil commerce and removing weapons-usable uranium from research facilities around the world and rendering the materials safe.

- Redoubling our efforts to resolve regional confrontations and conflicts that give rise to new nuclear powers.

Achieving the goal of a world free of nuclear weapons will also require effective measures to impede or counter any nuclear-related conduct that is potentially threatening to the security of any state or peoples. Reassertion of the vision of a world free of nuclear weapons and practical measures toward achieving that goal would be, and would be perceived as, a bold initiative consistent with America's moral heritage. The effort could have a profoundly positive impact on the security of future generations. Without the bold vision, the actions will not be perceived as fair or urgent. Without the actions, the vision will not be perceived as realistic or possible.

We endorse setting the goal of a world free of nuclear weapons and working energetically on the actions required to achieve that goal, beginning with the measures outlined above.

2.

Toward a Nuclear-Free World[1]

By George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn[2]

The accelerating spread of nuclear weapons, nuclear know-how and nuclear material has brought us to a nuclear tipping point. We face a very real possibility that the deadliest weapons ever invented could fall into dangerous hands.

The steps we are taking now to address these threats are not adequate to the danger. With nuclear weapons more widely available, deterrence is decreasingly effective and increasingly hazardous.

One year ago, in an essay in this paper, we called for a global effort to reduce reliance on nuclear weapons, to prevent their spread into potentially dangerous hands, and ultimately to end them as a threat to the world. The interest, momentum and growing political space that has been created to address these issues over the past year has been extraordinary, with strong positive responses from people all over the world.

Mikhail Gorbachev wrote in January 2007 that, as someone who signed the first treaties on real reductions in nuclear weapons, he thought it his duty to support our call for urgent action: "It is becoming clearer that nuclear weapons are no longer a means of achieving security; in fact, with every passing year they make our security more precarious."

[1] *Wall Street Journal*, January 15, 2008; page A13.

[2] Mr. Shultz was secretary of state from 1982 to 1989. Mr. Perry was secretary of defense from 1994 to 1997. Mr. Kissinger was secretary of state from 1973 to 1977. Mr. Nunn is former chairman of the Senate Armed Services Committee.

The following participants in the Hoover-NTI conference also endorse the view in this statement: General John Abizaid, Graham Allison, Brooke Anderson, Martin Anderson, Steve Andreasen, Mike Armacost, Bruce Blair, Matt Bunn, Ashton Carter, Sidney Drell, General Vladimir Dvorkin, Bob Einhorn, Mark Fitzpatrick, James Goodby, Rose Gottemoeller, Tom Graham, David Hamburg, Siegfried Hecker, Tom Henriksen, David Holloway, Raymond Jeanloz, Ray Juzaitis, Max Kampelman, Jack Matlock, Michael McFaul, John McLaughlin, Don Oberdorfer, Pavel Podvig, William Potter, Richard Rhodes, Joan Rohlfing, Scott Sagan, Roald Sagdeev, Abe Sofaer, Richard Solomon, and Philip Zelikow.

In June, the United Kingdom's foreign secretary, Margaret Beckett, signaled her government's support, stating: "What we need is both a vision -- a scenario for a world free of nuclear weapons -- and action -- progressive steps to reduce warhead numbers and to limit the role of nuclear weapons in security policy. These two strands are separate but they are mutually reinforcing. Both are necessary, but at the moment too weak."

We have also been encouraged by additional indications of general support for this project from other former U.S. officials with extensive experience as secretaries of state and defense and national security advisors. These include: Madeleine Albright, Richard V. Allen, James A. Baker III, Samuel R. Berger, Zbigniew Brzezinski, Frank Carlucci, Warren Christopher, William Cohen, Lawrence Eagleburger, Melvin Laird, Anthony Lake, Robert McFarlane, Robert McNamara and Colin Powell.

Inspired by this reaction, in October 2007, we convened veterans of the past six administrations, along with a number of other experts on nuclear issues, for a conference at Stanford University's Hoover Institution. There was general agreement about the importance of the vision of a world free of nuclear weapons as a guide to our thinking about nuclear policies, and about the importance of a series of steps that will pull us back from the nuclear precipice.

The U.S. and Russia, which possess close to 95% of the world's nuclear warheads, have a special responsibility, obligation and experience to demonstrate leadership, but other nations must join.

Some steps are already in progress, such as the ongoing reductions in the number of nuclear warheads deployed on long-range, or strategic, bombers and missiles. Other near-term steps that the U.S. and Russia could take, beginning in 2008, can in and of themselves dramatically reduce nuclear dangers. They include:

- *Extend key provisions of the Strategic Arms Reduction Treaty of 1991.* Much has been learned about the vital task of verification from the application of these provisions. The treaty is scheduled to expire on Dec. 5, 2009. The key provisions of this treaty, including their essential monitoring and verification requirements, should be extended, and the further reductions agreed upon in the 2002 Moscow Treaty on Strategic Offensive Reductions should be completed as soon as possible.

- *Take steps to increase the warning and decision times for the launch of all nuclear-armed ballistic missiles, thereby reducing risks of accidental or unauthorized attacks.* Reliance on launch procedures that deny command authorities sufficient time to make careful and prudent decisions is unnecessary and dangerous in today's environment. Furthermore, developments in cyber-warfare pose new threats that could have disastrous consequences if the command-and-control systems of any nuclear-weapons state were compromised by mischievous or hostile hackers. Further steps could be implemented in time, as trust grows in the U.S.-Russian relationship, by introducing mutually agreed and verified physical barriers in the command-and-control sequence.

- *Discard any existing operational plans for massive attacks that still remain from the Cold War days.* Interpreting deterrence as requiring mutual assured destruction (MAD) is an obsolete policy in today's world, with the U.S. and Russia formally having de-

cleared that they are allied against terrorism and no longer perceive each other as enemies.

- *Undertake negotiations toward developing cooperative multilateral ballistic-missile defense and early warning systems, as proposed by Presidents Bush and Putin at their 2002 Moscow summit meeting.* This should include agreement on plans for countering missile threats to Europe, Russia and the U.S. from the Middle East, along with completion of work to establish the Joint Data Exchange Center in Moscow. Reducing tensions over missile defense will enhance the possibility of progress on the broader range of nuclear issues so essential to our security. Failure to do so will make broader nuclear cooperation much more difficult.

- *Dramatically accelerate work to provide the highest possible standards of security for nuclear weapons, as well as for nuclear materials everywhere in the world, to prevent terrorists from acquiring a nuclear bomb.* There are nuclear weapons materials in more than 40 countries around the world, and there are recent reports of alleged attempts to smuggle nuclear material in Eastern Europe and the Caucasus. The U.S., Russia and other nations that have worked with the Nunn-Lugar programs, in cooperation with the International Atomic Energy Agency (IAEA), should play a key role in helping to implement United Nations Security Council Resolution 1540 relating to improving nuclear security -- by offering teams to assist jointly any nation in meeting its obligations under this resolution to provide for appropriate, effective security of these materials.

As Gov. Arnold Schwarzenegger put it in his address at our October conference, "Mistakes are made in every other human endeavor. Why should nuclear weapons be exempt?" To underline the governor's point, on Aug. 29-30, 2007, six cruise missiles armed with nuclear warheads were loaded on a U.S. Air Force plane, flown across the country and unloaded. For 36 hours, no one knew where the warheads were, or even that they were missing.

- Start a dialogue, including within NATO and with Russia, on consolidating the nuclear weapons designed for forward deployment to enhance their security, and as a first step toward careful accounting for them and their eventual elimination. These smaller and more portable nuclear weapons are, given their characteristics, inviting acquisition targets for terrorist groups.

- Strengthen the means of monitoring compliance with the nuclear Non-Proliferation Treaty (NPT) as a counter to the global spread of advanced technologies. More progress in this direction is urgent, and could be achieved through requiring the application of monitoring provisions (Additional Protocols) designed by the IAEA to all signatories of the NPT.

- Adopt a process for bringing the Comprehensive Test Ban Treaty (CTBT) into effect, which would strengthen the NPT and aid international monitoring of nuclear activities. This calls for a bipartisan review, first, to examine improvements over the past decade of the international monitoring system to identify and locate explosive underground nuclear tests in violation of the CTBT; and, second, to assess the technical progress made over the past decade in maintaining high confidence in the reliability, safety and effectiveness of the nation's nuclear arsenal under a test ban. The Comprehensive Test

Ban Treaty Organization is putting in place new monitoring stations to detect nuclear tests -- an effort the U.S should urgently support even prior to ratification.

In parallel with these steps by the U.S. and Russia, the dialogue must broaden on an international scale, including non-nuclear as well as nuclear nations.

Key subjects include turning the goal of a world without nuclear weapons into a practical enterprise among nations, by applying the necessary political will to build an international consensus on priorities. The government of Norway will sponsor a conference in February that will contribute to this process.

Another subject: Developing an international system to manage the risks of the nuclear fuel cycle. With the growing global interest in developing nuclear energy and the potential proliferation of nuclear enrichment capabilities, an international program should be created by advanced nuclear countries and a strengthened IAEA. The purpose should be to provide for reliable supplies of nuclear fuel, reserves of enriched uranium, infrastructure assistance, financing, and spent fuel management -- to ensure that the means to make nuclear weapons materials isn't spread around the globe.

There should also be an agreement to undertake further substantial reductions in U.S. and Russian nuclear forces beyond those recorded in the U.S.-Russia Strategic Offensive Reductions Treaty. As the reductions proceed, other nuclear nations would become involved.

President Reagan's maxim of "trust but verify" should be reaffirmed. Completing a verifiable treaty to prevent nations from producing nuclear materials for weapons would contribute to a more rigorous system of accounting and security for nuclear materials.

We should also build an international consensus on ways to deter or, when required, to respond to, secret attempts by countries to break out of agreements.

Progress must be facilitated by a clear statement of our ultimate goal. Indeed, this is the only way to build the kind of international trust and broad cooperation that will be required to effectively address today's threats. Without the vision of moving toward zero, we will not find the essential cooperation required to stop our downward spiral.

In some respects, the goal of a world free of nuclear weapons is like the top of a very tall mountain. From the vantage point of our troubled world today, we can't even see the top of the mountain, and it is tempting and easy to say we can't get there from here. But the risks from continuing to go down the mountain or standing pat are too real to ignore. We must chart a course to higher ground where the mountaintop becomes more visible.

3. "Containing the fire of the gods" by Henry A. Kissinger

NUCLEAR PROLIFERATION

Published: February 6, 2009

Munich, Germany: Over 200 years ago, the philosopher Immanuel Kant defined the ultimate choice before mankind: World history would ultimately culminate in universal peace either by moral insight or by catastrophe of a magnitude that left humanity no other choice. Our period is approaching having that choice imposed on it.

The basic dilemma of the nuclear age has been with us since Hiroshima: how to bring the destructiveness of modern weapons into some moral or political relationship with the objectives that are being pursued.

Any use of nuclear weapons is certain to involve a level of casualties and devastation out of proportion to foreseeable foreign policy objectives. Efforts to develop a more nuanced application have never succeeded, from the doctrine of a geographically limited nuclear war of the 1950s and 1960s to the mutual assured destruction theory of general nuclear war of the 1970s.

In office I recoiled before the options produced by the prevalent nuclear strategies, which raised the issue of the moral right to inflict a disaster of such magnitude on society and the world. But I was also persuaded that if the U.S. government adopted restraints, it would be turning over the world's security to the most ruthless and perhaps genocidal force.

In the two-power world of the Cold War, the adversaries managed to avoid this dilemma. But today, the sharpening of ideological dividing lines and the persistence of unresolved regional conflicts have magnified the incentives to acquire nuclear weapons, especially by rogue states or non-state actors.

Proliferation of nuclear weapons has become an overarching strategic problem for the contemporary period. Any further spread of nuclear weapons multiplies the possibilities of nuclear confrontation; it magnifies the danger of diversion, deliberate or unauthorized.

How will publics react if they suffer or even observe casualties in the tens of thousands in a nuclear attack? Will they not ask two questions: What could we have done to prevent this? What shall we do now so that it can never happen again?

Considerations as these induced former Senator Sam Nunn, former Secretary of Defense William Perry, former Secretary of State George Shultz and me — two Democrats and two Republicans — to publish recommendations for systematically reducing and eventually eliminating the danger from nuclear weapons.

We continue to affirm the importance of adequate deterrent forces, and we do not want our recommendations to diminish essentials for the defense of free peoples while a process of adaptation to new realities is going on. At the same time, we reaffirm the objective of a world without nuclear weapons that has been proclaimed by every American president since Dwight D. Eisenhower.

Such a world will prove increasingly remote unless the emerging nuclear weapons program in Iran and the existing one in North Korea are overcome. Both involve the near-certainty of further proliferation and of further incorporation of nuclear weapons into the strategies of nuclear weapons states.

I have long advocated negotiations with Iran on a broad front, including the geopolitical aspect. Too many treat this as a kind of psychological enterprise. In fact, it will be tested by concrete answers to four specific questions: a) How close is Iran to a nuclear weapons capability? b) At what pace is it moving? c) What balance of rewards and penalties will move Iran to abandon it? d) What do we do if, despite our best efforts, diplomacy fails?

A critical issue in nonproliferation strategy will be the ability of the international community to place the fuel cycle for the material produced by the peaceful uses of nuclear energy under

international control. Is the International Atomic Energy Agency (IAEA) capable of designing a system which places the enrichment and reprocessing under international control and in locations that do not threaten nuclear proliferation?

Arresting and then reversing the proliferation of nuclear weapons places a special responsibility on the established nuclear powers. They share no more urgent common interest than preventing the emergence of more nuclear-armed states.

Established nuclear powers should strive to make a nuclear capability less enticing by devoting their diplomacy to diffuse unresolved conflicts that today make a nuclear arsenal so attractive.

A new nuclear agenda requires coordinated efforts on several levels: first, the declaratory policy of the United States; second, the U.S.-Russian relationship; third, joint efforts with allies as well as other non-nuclear states relying on American deterrence; fourth, securing nuclear weapons and materials on a global basis; and, finally, reducing the role of nuclear weapons in the doctrines and operational planning of nuclear weapons states.

The Obama administration has already signaled that a global nuclear agenda will be a high priority in preparation for the Review Conference on the Nuclear Proliferation Treaty scheduled for the spring of 2010. A number of measures can be taken unilaterally or bilaterally with Russia to reduce the pre-emptive risk of certain alert measures and the deployment of tactical nuclear weapons.

Russian relations: Russia and the United States between them control around 90 percent of the world's nuclear weapons. They have it in their control to reduce the reliance on nuclear weapons in their bilateral relationship. They have already done so for 15 years on such issues as the Cooperative Threat Reduction Program.

The immediate need is to start negotiations to extend the START I agreement, the sole document for the verification and monitoring of established ceilings on strategic weapons, which expires at the end of 2009.

That should be the occasion to explore significant reductions from the 1,700 to 2,000 permitted under the Moscow Treaty of 2002. A general review of the strategic relationship should examine ways to enhance security at nuclear facilities in Russia and the United States.

A key issue has been missile defense — especially with respect to defenses deployed against threats from proliferating countries. The dialogue on this subject should be resumed at the point at which it was left by President George W. Bush and then-President Vladimir Putin in April 2008.

The Russian proposal for a joint missile defense toward the Middle East, including radar sites in southern Russia, has always seemed to me a creative political and strategic answer to a common problem.

-*Allies:* The effort to develop a new nuclear agenda must involve our allies from its inception. Key European allies are negotiating with Iran on the nuclear issue. America deploys tactical nuclear weapons in several NATO countries, and NATO's declaratory policy mirrors that of the United States. Britain and France — key NATO allies — have their own nuclear deterrent.

A common adaptation to the emerging realities is needed, especially with respect to tactical nuclear weapons. Parallel discussions are needed with Japan, South Korea and Australia. Par-

allel consultations are imperative with China, India and Pakistan. It must be understood that the incentives for nuclear weapons on the subcontinent are more regional then those of the established nuclear powers and their threshold for using them considerably lower.

The complexity of these issues explains why my colleagues and I have chosen an incremental, step-by-step approach. Affirming the desirability of the goal of a world free of nuclear weapons, we have concentrated on the steps that are achievable and verifiable.

Sam Nunn has described the effort akin to climbing a mountain shrouded in clouds. We cannot describe its top or be certain that there may not be unforeseen and perhaps insurmountable obstacles on the way. But we are prepared to undertake the journey in the belief that the summit will never come into view unless we begin the ascent and deal with the proliferation issues immediately before us, including the Iranian and North Korean nuclear programs.

The program sketched here is not a program for unilateral disarmament. So long as other countries build and improve their nuclear arsenals, deterrence of their use needs to be part of Western strategy. The efficiency of our weapons arsenals must be preserved. Both President Obama and Senator John McCain, while endorsing this approach, also made it clear, in Obama's words, that the United States cannot implement it alone.

The danger posed by nuclear weapons is unprecedented. They should not be integrated into strategy as simply another more efficient explosive. We thus return to our original challenge: Our age has stolen the fire from the gods; can we confine it to peaceful purposes before it consumes us?

Henry A. Kissinger served as national security adviser and as secretary of state in the administrations of Presidents Richard Nixon and Gerald Ford. Distributed by Tribune Media Services.

4. Miguel Marín Bosch, "*Orwellian* metamorphosis?" (18 January 2007) [1]

Very rarely do the enormous efforts of those seeking a nuclear-weapon-free world receive a boost from such an unusual quarter. Here's an example. Like *Magi*, a quartet (not a trio) of the most fervent defenders of the United States's nuclear doctrine during the Cold War gave us some fifteen days ago an unexpected gift. They turned out to be *Magi* rather than Wise Men.

On 4 January *The Wall Street Journal* published a most revealing article. It is no less than a text signed by four apostles of nuclear deterrence, four politicians (two Republicans and two Democrats) who advocated the accumulation of nuclear weapons and their possible use. That was then. George Shultz and Henry Kissinger were secretaries of state, Sam Nunn, a senator from Georgia, and William Perry was first deputy secretary and later secretary of defense. Now they, who were important political players in Washington during the last quarter of the last century, tell us that it is time to do away with nuclear weapons. Eliminate the weapons that at one time they themselves described as vital for the survival of the United States. That's right, my dear Ripley, believe or not.

Our four apocalyptic horsemen in matters nuclear now tell us that we must ride towards a more peaceful destiny. How do we achieve this? We know that good intentions are not enough. One

[1] This article appeared in Spanish in the Mexico City newspaper, *LA JORNADA* on 18 January 2007.

must act. That was our recent advice to Tony Blair regarding the United Kingdom´s *Trident* nuclear arsenal.

The reasoning of the four authors goes something like this. First, the doctrine regarding the deterrent value of nuclear weapons is increasingly dangerous and less effective. Second, terrorist groups are outside of any deterrence strategy. Third, we are entering a new nuclear age which will be more precarious, disoriented and more expensive than deterrence during the Cold War. Fourth, the new nuclear-weapon States lack the experience to safeguard and control their weapons, an experience which the United States and the Soviet Union acquired during the Cold War. Fifth, the final goal of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) is the complete elimination of such weapons. Sixth, non-nuclear-weapon States harbor doubts concerning the sincerity of the nuclear-weapon States to fulfill their obligations under the NPT regarding the elimination of their nuclear arsenals. Seventh, there is an historical opportunity for a worldwide elimination of nuclear weapons. Eighth, to achieve this one will need a bold visión and actions. Ninth, the United States must set the example and convince the leaders of the other nuclear Powers to turn the goal of nuclear-weapons abolition into a joint effort. The four authors then list the steps that must be taken to ensure a nuclear-weapon-free world.

The foregoing is something that many governments and non-governmental organizations have been advocating for decades. Some American politicians and military officers have propsed something similar. What is new about the text of these four individuals is that it is signed by two Republicans and two Democrats. The document also has the support of an impressive list of Americans.

The big shots in power are prone to stick to their declared intentions, no matter how wrong these may be. The trick is “to stay the course” until they leave office. The issue of nuclear weapons provides one case after another of persons who have changed their mind after leaving public office. Some cynics might say that some of those who signed the text are nearing the end of their life and, just as Blaise Pascal did 350 years ago regarding the existence of God, they have opted to hedge their bets and appear now as believers in nuclear disarmament. Just in case …

Pascal argued the following: on the one hand, one can believe in God and if there is one he will go to heaven, but if there is no God he will gain nothing; on the other hand, one can not believe in God and if God does exist he will also gain nothing, but if God does exist then one will be punished.

Other pundits will perhaps find other explanations for the text that appeared fifteen days ago. They may refer to the German philosopher Arthur Schopenhauer, who wrote something very appropriate to the case in hand. He said that all truth passes through three stages. First, it is ridiculed, Second, it is violently opposed. And third, it is accepted as being self-evident. It seems that the erstwhile proponents of nuclear weapons have reached the third stage. They think it is obvious that the solution to the proliferation of nuclear weapons is their elimination.

What is the point of having politicians tell us, once they have left office, what they really think or share with us certain chapters of their private lives which they had kept secret? Towards the end of his rather long presidency, François Mitterrand confessed that in his youth he had col-

laborated with the Vichy government. He also introduced into French society a daughter he had had out of wedlock.

In the nuclear field there are many examples of sudden changes. Robert McNamara fervently supported the nuclear policy of mutually-assured destruction when he was Secretary of Defense to presidents Kennedy and Johnson. However, for some years now he has been preaching the urgent necessity to abolish nuclear weapons. Another who also changed his song after leaving government service is retired general George Lee Butler, once in charge of the strategic air command of nuclear weapons of the United States. Upon retiring in 1994, he converted and became an apostle of the elimination of those weapons. What happened? Take your pick between Pascal and Schopenhauer.

5. Robert McNamara, 1916-2009 (two clippings)

1. Robert S. McNamara (1916-2009)

By John F. Burns
From *The New York Times* February 16th 2009.

Robert S. McNamara, Architect of a Futile War, Dies at 93

By TIM WEINER
Published: July 6, 2009

Robert S. McNamara, the forceful and cerebral defense secretary who helped lead the nation into the maelstrom of Vietnam and spent the rest of his life wrestling with the war's moral consequences, died Monday at his home in Washington. He was 93.

His wife, Diana, said Mr. McNamara died in his sleep at 5:30 a.m., adding that he had been in failing health for some time.

Mr. McNamara was the most influential defense secretary of the 20th century. Serving Presidents John F. Kennedy and Lyndon B. Johnson from 1961 to 1968, he oversaw hundreds of military missions, thousands of nuclear weapons and billions of dollars in military spending and foreign arms sales. He also enlarged the defense secretary's role, handling foreign diplomacy and the dispatch of troops to enforce civil rights in the South.

"He's like a jackhammer," Johnson said. "No human being can take what he takes. He drives too hard. He is too perfect."

As early as April 1964, Senator Wayne Morse, Democrat of Oregon, called Vietnam "McNamara's War." Mr. McNamara did not object. "I am pleased to be identified with it," he said, "and do whatever I can to win it."

Half a million American soldiers went to war on his watch. More than 16,000 died; 42,000 more would fall in the seven years to come.

The war became his personal nightmare. Nothing he did, none of the tools at his command — the power of American weapons, the forces of technology and logic, or the strength of American soldiers — could stop the armies of North Vietnam and their South Vietnamese allies, the Vietcong. He concluded well before leaving the Pentagon that the war was futile, but he did not share that insight with the public until late in life.

In 1995, he took a stand against his own conduct of the war, confessing in a memoir that it was "wrong, terribly wrong." In return, he faced a firestorm of scorn.

"Mr. McNamara must not escape the lasting moral condemnation of his countrymen," The New York Times said in a widely discussed editorial, written by the page's editor at the time, Howell Raines. "Surely he must in every quiet and prosperous moment hear the ceaseless whispers of those poor boys in the infantry, dying in the tall grass, platoon by platoon, for no purpose. What he took from them cannot be repaid by prime-time apology and stale tears, three decades late."

By then he wore the expression of a haunted man. He could be seen in the streets of Washington — stooped, his shirttail flapping in the wind — walking to and from his office a few blocks from the White House, wearing frayed running shoes and a thousand-yard stare.

He had spent decades thinking through the lessons of the war. The greatest of these was to know one's enemy — and to "empathize with him," as Mr. McNamara explained in Errol Morris's 2003 documentary, "The Fog of War: Eleven Lessons from the Life of Robert S. McNamara."

"We must try to put ourselves inside their skin and look at us through their eyes," he said. The American failure in Vietnam, he said, was seeing the enemy through the prism of the cold war, as a domino that would topple the nations of Asia if it fell.

In the film, Mr. McNamara described the American firebombing of Japan's cities in World War II. He had played a supporting role in those attacks, running statistical analysis for Gen. Curtis E. LeMay of the Army's Air Forces.

"We burned to death 100,000 Japanese civilians in Tokyo — men, women and children," Mr. McNamara recalled; some 900,000 Japanese civilians died in all. "LeMay said, 'If we'd lost the war, we'd all have been prosecuted as war criminals.' And I think he's right. He — and I'd say I — were behaving as war criminals."

"What makes it immoral if you lose and not immoral if you win?" he asked. He found the question impossible to answer.

From Detroit to Washington

The idea of the United States' losing a war seemed impossible when Mr. McNamara came to the Pentagon in January 1961 as the nation's eighth defense secretary. He was 44 and had been named president of the Ford Motor Company only 10 weeks before. He later said, half-seriously, that he could barely tell a nuclear warhead from a station wagon when he arrived in Washington.

"Mr. President, it's absurd; I'm not qualified," he remembered protesting when asked to serve. He said that Kennedy had replied, "Look, Bob, I don't think there's any school for presidents, either."

Kennedy called him the smartest man he had ever met. Mr. McNamara looked steely-eyed and supremely rational behind his wire-rimmed glasses, his brown hair slicked back precisely and crisply parted on top. Mr. McNamara had risen by his mastery of systems analysis, the business of making sense of large organizations — taking on a big problem, studying every facet, finding simplicity in the complexity.

His first mission was to defuse the myth of the missile gap. Kennedy had argued in his 1960 presidential campaign that the strategic nuclear arsenal of the United States was less powerful than the Soviet Union's, and that the gap was growing. His predecessor as president, Dwight

D. Eisenhower, called the missile gap a fiction in his final State of the Union address, on Jan. 12, 1961.

Mr. McNamara took office nine days later. He recalled that "my first responsibility as secretary of defense was to determine the degree of the gap and initiate action to close it."

"It took us about three weeks to determine, yes, there was a gap," he told an oral historian at his alma mater, the University of California, Berkeley. "But the gap was in our favor. It was a totally erroneous charge that Eisenhower had allowed the Soviets to develop a superior missile force."

The problem was a lack of accurate intelligence; the estimate of Soviet forces had been a product of politics and guesswork.

By year's end, new American spy satellites had determined that the Soviets had as few as 10 launchers from which missiles could be fired at the United States, while the United States could strike with more than 3,200 nuclear weapons.

At the same time, Mr. McNamara was enmeshed in plans for the Bay of Pigs invasion, in which some 1,500 Cubans, trained and equipped by the Central Intelligence Agency, were badly defeated by Fidel Castro's forces in a bloody battle in April 1961. Mr. McNamara doubted that the C.I.A.'s Cubans could overthrow Mr. Castro, who had taken power in 1959, but he asked few questions beforehand and gave his go-ahead to the plan, which had been conceived under the Eisenhower administration.

Kennedy's first order to Mr. McNamara after the invasion of Cuba collapsed was to develop a proposal for overthrowing the Castro government with American military force. Ten days later, he submitted a plan of attack that included 60,000 American troops, excluding naval and air forces. The plan proved impossible to fulfill.

One lesson of the Bay of Pigs, Mr. McNamara told the Joint Chiefs of Staff, was that "the government should never start anything unless it could be finished, or the government was willing to face the consequences of failure," according to the State Department's official record of American foreign policy, "The Foreign Relations of the United States."

At a White House meeting on Nov. 3, 1961, Kennedy authorized a program designed to undermine the Castro government, code-named Operation Mongoose. Attorney General Robert F. Kennedy's handwritten notes on the meeting say Mr. McNamara was assigned to survey the situation and help him devise ways "to stir things up on island with espionage, sabotage, general disorder." This operation also failed.

By 1962, the White House and the Pentagon had devised a new strategy of counterinsurgency to combat what Mr. McNamara called the tactics of "terror, extortion and assassination" by communist guerrillas. The call led to the creation of American special forces like the Green Berets and secret paramilitary operations throughout Asia and Latin America.

"Counterinsurgency became an almost ridiculous battle cry," said Robert Amory, who in 1962 stepped down after nine years as the C.I.A.'s deputy director of intelligence to become the White House budget officer for classified programs.

While the United States flailed at Cuba, the Soviet Union decided, in the words of its leader, Nikita S. Khrushchev, "to throw a hedgehog at Uncle Sam's pants." It began sending nuclear missiles to Cuba, establishing a direct threat that evened up the balance of power with the United States, which had placed its own missiles near the Soviet border in Turkey.

At the height of the missile crisis, on Oct. 27, 1962, the Joint Chiefs of Staff recommended that Cuba be invaded within 36 hours. As the secret White House taping system installed by Kennedy recorded his words, Mr. McNamara laid out the prospects for war.

"The military plan is basically invasion," he said. "When we attack Cuba, we are going to have to attack with an all-out attack."

He continued, "The Soviet Union may, and, I think, probably will, attack the Turkish missiles." The United States would then have to attack Soviet ships or bases in the Black Sea, he said. The chances of an uncontrolled escalation were high.

"And I would say that it is damn dangerous," he said. "Now, I'm not sure we can avoid anything like that if we attack Cuba. But I think we should make every effort to avoid it. And one way to avoid it is to defuse the Turkish missiles before we attack Cuba."

That idea — a secret deal in which Kennedy offered to withdraw his missiles in Turkey if Khrushchev removed his warheads from Cuba — resolved the crisis. "In the end, we lucked out — it was luck that prevented nuclear war," Mr. McNamara said in "The Fog of War," 40 years after the fact.

Mr. McNamara spent countless hours as secretary of defense trying to fine-tune American plans for nuclear war, turning what had been a hair-trigger, all-or-nothing strategy into a series of more limited options. The underlying principle of nuclear deterrence became known as "mutual assured destruction" — meaning that Washington and Moscow each knew it could destroy the other even if the other struck first.

In retirement, Mr. McNamara argued that planning for nuclear war was futile. "Nuclear weapons serve no military purposes whatsoever," he wrote. "They are totally useless — except only to deter one's opponent from using them."

He had come close to that conclusion after the Cuban missile crisis. "In wars prior to the advent of nuclear weapons, damage was reparable and victory attainable," Mr. McNamara said on Dec. 14, 1962, in a speech to NATO foreign ministers in Paris. "But after a full nuclear exchange such as the Soviet bloc and the NATO alliance are now able to carry out, the fatalities might well exceed 150 million."

"The devastation would be complete and victory a meaningless term," he said.

Remaking the Pentagon

"This place is a jungle, a jungle," Mr. McNamara said after a few weeks at his desk at the Pentagon. He sent teams of bright young civilians — the whiz kids, as they were known — out across the Pentagon to tame it.

They set out to make sense of a cacophony of war strategies, weapons systems and budgets among the Army, the Navy and the Air Force. The office of the secretary of defense had been established in 1947 for precisely that purpose, but the task had defeated everyone who held the job before Mr. McNamara. He applied the tools of systems analysis and succeeded in clearing some swaths through the jungle. But he alienated key members of Congress and military commanders in battles over choosing weapons and closing bases.

The Pentagon consumed nearly half the national budget when he took office. He had 3.5 million employees — including 2.5 million in uniform, a number that increased by a million during his tenure. He said his goal was "to bring efficiency to a $40 billion enterprise beset by jealousies and political pressures."

Under Mr. McNamara, the Pentagon's budget increased to $74.9 billion in fiscal 1968, from $48.4 billion in 1962. The 1968 figure is equal to $457 billion in today's dollars.

That was largely the cost of the war that erupted in Southeast Asia.

"Every quantitative measurement we have shows we are winning this war," Mr. McNamara said after returning from his first trip to South Vietnam in April 1962. His statistical analysis showed that the military mission could be wrapped up in three or four years.

After Kennedy was assassinated on Nov. 22, 1963, Mr. McNamara found that Johnson depended on him to win the war, which became a full-fledged conflict for the United States the following year. The new president thought so highly of Mr. McNamara that he asked him to be his running mate in 1964.

"I said no," Mr. McNamara recounted in his Berkeley oral history. "You shouldn't start your elective career running for the vice presidency." (Johnson chose Senator Hubert H. Humphrey of Minnesota.)

Johnson relied on Mr. McNamara in other sensitive matters, including negotiations over weapons sales to Israel and the full racial integration of the armed services, the reserves and the National Guard after the passage of the Civil Rights Act of 1964. When Johnson, early in his presidency, announced he wanted to keep the federal budget below $100 billion, Mr. McNamara ordered weapons programs canceled and military bases closed in a matter of days.

But by the fall of 1964, Vietnam was the all-consuming obsession.

Congress authorized the war after Johnson contended that American warships had been attacked by North Vietnamese patrol boats in the Gulf of Tonkin on Aug. 4, 1964. The attack never happened, as a report declassified by the National Security Agency in 2005 made clear. The American ships had been firing at radar shadows on a dark night.

At the time, however, the agency's experts in signals intelligence, or sigint, told Mr. McNamara that the evidence of an attack was iron-clad. "McNamara had taken over raw sigint and shown the president what they thought was evidence," said Ray Cline, then the C.I.A.'s deputy director of intelligence. He added, "It was just what Johnson was looking for."

Nor was this the only case of faulty intelligence underlying American military action under Mr. McNamara. In April 1965, Johnson ordered 24,000 American troops to the Dominican Republic after a revolt against the government; it was the first large-scale American landing in Latin America since 1928.

In public, Mr. McNamara said the deployment had showed the "readiness and capabilities of the U.S. defense establishment to support our foreign policy." In private, he voiced dismay. The C.I.A. had told the White House and the Pentagon that the rebels were controlled by Cuban revolutionaries. But Mr. McNamara had deep doubts.

"You don't think C.I.A. can document it?" Johnson asked him, according to tapes of White House telephone conversations recorded on April 30, 1965.

"I don't think so, Mr. President," McNamara replied. "I just don't believe the story."

Johnson nonetheless insisted in a speech to the American people that he would not allow "Communist conspirators" to establish "another Communist government in the Western Hemisphere." This led some newspapers to assert that the president and the Pentagon had a "credibility gap." The phrase stuck when applied to Vietnam.

Turning on Vietnam

In 1965, tens of thousands of American combat troops were arriving in Vietnam and American warplanes were pounding the enemy in a bombing campaign code-named Rolling Thunder, which sent 55,000 flights with 33,000 tons of bombs over North Vietnam; the next year, it was 148,000 flights with 128,000 tons. The number of aircraft lost went from 171 in 1965 to 318 the next year; the costs soared to $1.2 billion, from $460 million.

Rolling Thunder never stopped the flow of enemy arms and soldiers into South Vietnam.

When Mr. McNamara held a rare private briefing for reporters in Honolulu in February 1966, he no longer possessed the radiant confidence he had always displayed in public. Mr. McNamara said with conviction, “No amount of bombing can end the war.”

By 1966, Mr. McNamara was planning to build an electronic barrier across the demilitarized zone that separated North and South Vietnam. Soldiers called it the McNamara Line, after the Maginot Line, a futile French defense against Germany built before World War II. The barrier proved to be worthless.

On Aug. 26, 1966, Mr. McNamara read a book-length C.I.A. study called “The Vietnamese Communists’ Will to Persist,” which concluded that nothing the United States was doing could defeat the enemy. He called in a C.I.A. analyst, George Allen, who had spent 17 years working on the question of Vietnam.

“He wanted to know what I would do if I were sitting in his place,” Mr. Allen wrote in his 2001 memoir of Vietnam, “None So Blind.” “I decided to respond candidly.”

“Stop the buildup of American forces,” he said he told Mr. McNamara. “Halt the bombing of the North, and negotiate a cease-fire with Hanoi.”

After that moment of truth, Mr. McNamara told his aides to begin compiling a top-secret history of the war — later known as the Pentagon Papers — and he began asking himself what the United States was doing in Vietnam. Many Americans were asking the same, giving rise to a growing antiwar movement that even Mr. McNamara’s own son participated in as a student protester at Stanford.

On Sept. 19, 1966, Mr. McNamara telephoned Johnson.

“I myself am more and more convinced that we ought definitely to plan on termination of bombing in the North,” Mr. McNamara said, according to White House tapes.

He also suggested establishing a ceiling on the number of troops to be sent to Vietnam. “I don’t think we ought to just look ahead to the future and say we’re going to go higher and higher and higher and higher — 600,000; 700,000; whatever it takes.”

The president’s only response was an unintelligible grunt.

Departure and Guilt

The turning point came on May 19, 1967, when Mr. McNamara sent a long and carefully argued paper to Johnson, urging him to negotiate a peace rather than escalate the war.

The war, the paper began, “is becoming increasingly unpopular as it escalates — causing more American casualties, more fear of its growing into a wider war, more privation of the domestic sector, and more distress at the amount of suffering being visited on the noncombatants in Vietnam, South and North.”

"Most Americans," Mr. McNamara continued, "are convinced that somehow we should not have gotten this deeply in. All want the war ended and expect their president to end it. Successfully. Or else."

That was the last straw for Johnson, who came to believe that Mr. McNamara was secretly plotting to help Robert Kennedy, then a Democratic senator from New York, run on a peace ticket in the 1968 election. The president announced on Nov. 29, 1967, that Mr. McNamara would give up his defense post to run the World Bank. Mr. McNamara left the Pentagon two months later, never comprehending, in his words, "whether I quit or was fired." It was clearly the latter.

Mr. McNamara had sought to transform the armed services. But his often aloof and occasionally arrogant conduct left him with few allies inside the Pentagon when the war began to go wrong. At a going-away luncheon given by Secretary of State Dean Rusk, Mr. McNamara wept as he spoke of the futility of the air war in Vietnam. Many of his colleagues were appalled as he condemned the bombing, aghast at the weight of his guilt.

He had thought for a long time that the United States could not win the war. In retirement, he listed reasons: a failure to understand the enemy, a failure to see the limits of high-tech weapons, a failure to tell the truth to the American people and a failure to grasp the nature of the threat of communism.

"What went wrong was a basic misunderstanding or misevaluation of the threat to our security represented by the North Vietnamese," he said in his Berkeley oral history. "It led President Eisenhower in 1954 to say that if Vietnam were lost, or if Laos and Vietnam were lost, the dominoes would fall."

He continued, "I am certain we exaggerated the threat."

"We didn't know our opposition," he said. "We didn't understand the Chinese; we didn't understand the Vietnamese, particularly the North Vietnamese. So the first lesson is know your opponents. I want to suggest to you that we don't know our potential opponents today."

An Analytical Mind

Robert Strange McNamara — Strange was his mother's maiden name — was born June 9, 1916, in San Francisco to Robert and Clara Nell McNamara. His father, the son of Irish immigrants, managed a wholesale shoe company.

"My earliest memory is of a city exploding with joy," he said in "The Fog of War." It was Nov. 11, 1918 — the end of World War I. He remembered the tops of the streetcars crowded with people cheering and kissing.

In 1937, Mr. McNamara graduated with honors in economics from the University of California, Berkeley, where he also studied philosophy. After two years at Harvard Business School, he spent a year with Price, Waterhouse & Company, the accounting firm. He returned to Harvard in 1940 as an assistant professor of business administration.

That year, he married his college sweetheart, Margaret Craig. She created Reading Is Fundamental, a literacy program for poor children, while he was at the Pentagon. By the time she died in 1981, the program served three million children.

Mr. McNamara and his second wife, the former Diana Masieri Byfield, were married in 2004 in San Francisco.

Besides his wife, Mr. McNamara is survived by his son, Robert Craig, of Winters, Calif.; two daughters, Margaret Elizabeth Pastor and Kathleen McNamara, both of Washington, and six grandchildren.

When World War II came, Mr. McNamara taught young air officers the statistical methods he had learned at Harvard, with the aim of orchestrating the air war in Europe by determining how many planes could fly each day in every theater. He served in England, then India, and held the rank of lieutenant colonel at war's end in 1945.

"After the war, my wife and I both came down with polio, if you can imagine, infantile paralysis," Mr. McNamara remembered in his memoir. "My case was relatively light; I was out of the hospital in a couple of months. But she was in the hospital for nine months, and they thought she'd never lift an arm or a leg off the bed again."

Unable to pay the hospital bills on a Harvard salary, he accepted a job offer from the Ford Motor Company.

He and nine other air-war statisticians, none older than 30, were hired by Henry Ford II to reorganize a mismanaged company.

"He wanted some individuals who he could feel were his men, if you will, because the company was staffed with old-line executives who had been associated with his father and grandfather," Mr. McNamara recalled.

The company lost $85 million in the first eight months after Mr. McNamara's arrival, the equivalent of about $925 million adjusted for inflation today. But Mr. McNamara and his young team turned Ford around. He rose swiftly — comptroller, general manager of the Ford division, vice president for all car and truck divisions.

In November 1960, one day after Kennedy's election, Mr. McNamara was named president of the company, the No. 2 position under Mr. Ford, who was chairman and chief executive. Five weeks later, Kennedy asked him to run the Pentagon.

The World Bank Years

Mr. McNamara's time at the Pentagon came close to breaking his spirit. But he immediately followed that ordeal with 13 years as president of the World Bank. He set out to expand the bank's power and to attack global poverty. He succeeded in part, but with unintended consequences.

The industrialized nations created the bank at the end of World War II to help rebuild Western Europe, but it later expanded its membership and shifted its focus to lending in the third world to increase economic growth and forestall war. In 1973 Mr. McNamara dedicated himself to the reduction of what he called "absolute poverty — utter degradation" in Africa, Asia, and Latin America.

As he had done at the Pentagon and Ford, Mr. McNamara sought to remake the bank. When he arrived on April 1, 1968, the bank was lending about $1 billion a year. That figure grew until it stood at $12 billion when he left in 1981. By that time the bank oversaw some 1,600 projects valued at $100 billion in 100 nations, including hydroelectric dams, superhighways and steel factories.

The ecological effects of these developments, however, had not been taken into account. In some cases, corruption in the governments that the bank sought to help undid its good inten-

tions. Many poor nations, overwhelmed by their debts to the bank, were not able to repay loans.

The costs of Mr. McNamara's work thus sometimes outweighed the benefits, and that led to a concerted political attack on the bank itself during the 1980s.

Mr. McNamara saw some of these problems as they developed and shifted the emphasis of the bank's lending toward smaller projects — irrigation, seeds and fertilizer, paving farm-to-market roads. But progress was often hard to measure. At the end of his tenure, the bank estimated that the world's poorest numbered 800 million, an increase of 200 million over the decade.

Public Contrition

Mr. McNamara left the bank when he turned 65, after his wife died, and for a time he tried to unwind and get away, taking a 140-mile hike up to the 18,000-foot level of Mount Everest. But within two years, he began to speak out against the nuclear arms race. In 1995, 14 years after leaving public life, he published his denunciation of the Vietnam War and his role in it, "In Retrospect: The Tragedy and Lessons of Vietnam" (Times Books/Random House), for which he was denounced in turn.

Unlike any other secretary of defense, Mr. McNamara struggled in public with the morality of war and the uses of American power.

"We are the strongest nation in the world today," Mr. McNamara said in "The Fog of War," released at the time of the 2003 invasion of Iraq. "I do not believe that we should ever apply that economic, political, and military power unilaterally. If we had followed that rule in Vietnam, we wouldn't have been there. None of our allies supported us. Not Japan, not Germany, not Britain or France. If we can't persuade nations with comparable values of the merit of our cause, we'd better re-examine our reasoning."

"War is so complex it's beyond the ability of the human mind to comprehend," he concluded. "Our judgment, our understanding, are not adequate. And we kill people unnecessarily."

2. Robert McNamara

From *The Economist* print edition, July 9th 2009

ROBERT MCNAMARA, SYSTEMS ANALYST AND DEFENCE SECRETARY, DIED ON JULY 6TH, AGED 93

QUANTIFICATION was a word Robert McNamara loved. Numbers could express almost any human activity. Well, perhaps not beauty, honour, love. But certainly the rigours of a youthful trip to sea (19 bed-bug bites on one leg), and the pleasure of climbing Mount Whitney, all 14,495 feet. Five or six bullet points, reinforced when you saw him with vigorous hand-chops, summed up any argument. There were four McNamara steps to changing the thinking of any organisation, including the Pentagon: state an objective, work out how to get there, cost out everything, systematically monitor progress against the plan. There were 11 lessons to be learned from the war in Vietnam, but most of them occurred to him too late.

Things you could count, he said, you ought to count. At the Ford Motor Company, where he was one of the ten "Whiz Kids" brought in in 1946 to shake things up, all the components of each new Chevy (made by GM) would be laid out on a table to inspect. This was not cheating, but competitive evaluation. At the Air Force Office of Statistical Control, where he worked in

1943-45, he counted the firebombing sorties made by the B-29s, at what height, with what percentage hits on target (58% of Yokohama, 51% of Tokyo). System and data together helped win that war. In the Pentagon in 1965, again by applying metrics—targets hit, captives taken, weapons seized, the enemy's body-count—he could tell with equal certainty that America was losing.

The South Vietnamese, America's allies, were cavalier with numbers. Hence his frustration with them. The enemy Vietcong made each person count. After saturation American bombing in 1965, Mr McNamara found they were still getting 200 tons of supplies a day along the Ho Chi Minh trail, and had scattered the country with a secret stash of oil in hundreds of 55-gallon drums. The importance of tiny peasant efforts to the health of a nation struck him again when, from 1968-81, he headed the World Bank, shifting its focus and its money to rural development.

LBJ Library and Museum

He saw himself as an "enlightened rationalist", and looked the part, with his oiled hair and boffin's glasses and strict attention to time. If business had not called, in the shape of Henry Ford, and if public service had not called later, with John Kennedy asking him to take first Treasury and then Defence, he might have stayed at Harvard teaching economics. Not long after joining Kennedy's White House, he drew the president a little graph of his authority: power on the vertical axis, his putative two terms on the horizontal, with effectiveness a declining line between them. Sadly, his horizontal axis proved too long.

It was often his fate to be saddled with bad numbers. At Ford it was the Edsel, a clunker-car with contrasting tail-fins and unlovely squarish styling, which sold only 68,045 in 1958, its first year, and 47,496 in its second, until he killed it in favour of the smaller, cheaper Falcon. At the Pentagon, where he arrived in 1961 with 99 topics for evaluation, he found a budget of

$55 billion that had to be trimmed by bringing in systems analysis and five-year plans. He forced cuts in bases and procurement on the outraged joint chiefs, only to find some money mysteriously restored again.

But the worst numbers appeared from the mid-1960s, in a series of ever-increasing demands from General William Westmoreland in Vietnam: a force of 210,000 by the end of 1965, 325,000 by July 1966, 410,000 by that December. Vietcong numbers smoothly kept pace, despite losses estimated at 60,000 a year. Figures for Americans killed in action ran at 400-500 a month, ever upwards. Mr McNamara, ordered to win the war and clinging to his statistical strategy of attrition, approved the troop increases. But his company-man efficiency was often rattled. At cabinet meetings, especially with the "rough", Lyndon Johnson (far left), he would nervously hitch up his trousers, sigh, bury his head in his hands. It was all unravelling. When in 1968 "Westy" asked for 200,000 more men, he left. He had once been happy to take responsibility for "McNamara's war". But as he admitted later, in penitent memoirs and interviews, he had not understood the variables of war itself.

THE LIMITS OF REASON

At the height of the conflict, he was called a baby-burner. His son marched against him. Jackie Kennedy once pummelled his chest with her fists, crying at him to "stop the slaughter". All this was difficult. He was an instinctive liberal, driving a battered Ford, living in university suburbs, where his recommended book for the reading group was Camus's "L'Etranger". Warmongering was not in his nature.

He was haunted by the thought that amid all the objective-setting and evaluating, the careful counting and the cost-benefit analysis, stood ordinary human beings. They behaved unpredictably. During the Cuban missile crisis of 1962, which he had lived through at cabinet level, "Kennedy was rational. Khrushchev was rational. Castro was rational." Yet between them they had pushed the world to the brink. Rationality, he concluded, "will not save us." Perhaps what would were the little quirks that had made him love John Kennedy: the president's sudden capacity to be empathetic, surprised, intuitive, and ready to jettison his most confident calculations.

Deterrence Revisited

Here are three texts published in 2011 on nuclear deterrence:

1. "Ten Serious Flaws in Nuclear Deterrence Theory," by David Krieger;
2. "Deterrence in the Age of Nuclear Proliferation," signed by George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn; y
3. "Nuclear Deterrence: impeding nuclear disarmament," by David Krieger.

1. Ten Serious Flaws in Nuclear Deterrence Theory

By David Krieger

February 7, 2011

Nuclear deterrence is the threat of nuclear retaliation for a proscribed behavior, generally an attack upon the threatening state. The theory of nuclear deterrence posits that such threat, if perceived as real and likely to cause sufficient devastation, will prevent an attack or other proscribed behavior from occurring.

The desire for a nuclear deterrent existed even before nuclear weapons were created. Refugee scientists from Europe, concerned about the possible development of German nuclear weapons during World War II, encouraged the United States to explore the use of uranium for building nuclear weapons. Albert Einstein was among the scientists who urged President Roosevelt to initiate a program to explore the feasibility of creating such weapons as a deterrent to the use of a German nuclear weapon, should the Germans succeed in their quest. After the atomic bombings of Hiroshima and Nagasaki, he would consider this to be one of the great mistakes of his life.

By the time the United States succeeded in developing nuclear weapons in July 1945, Germany was already defeated. The US used its powerful new bombs on the Japanese cities of Hiroshima and Nagasaki. In doing so, it sent a nuclear deterrent message to other states, particularly the Soviet Union, that the US possessed nuclear weapons and was willing to use them. This would spur on the secret Soviet nuclear weapons program to deter future use of the US nuclear arsenal. Other states would follow suit. Britain and France developed nuclear arsenals to deter the Soviets. China developed nuclear arms to deter the US and the Soviets. Israel did so to assure its independence and deter potential interventions from the other nuclear weapon states. India developed nuclear weapons to deter China and Pakistan, and Pakistan to deter India. North Korea did so to deter the US.

One steady factor in the Nuclear Age has been the adherence of the nuclear weapon states to the theory of nuclear deterrence. Each country that has developed nuclear weapons has justified doing so by the pursuit of nuclear deterrence. The security of not only the nuclear weapon states but of civilization has rested upon the reliability of the theory of nuclear deterrence. Vast numbers of people throughout the world believe that nuclear deterrence contributes to the security of the planet and perhaps to their personal security and that of their family. But does it? What if nuclear deterrence is a badly flawed theory? What if nuclear deterrence fails? What if political and military leaders in all nuclear weapon states who have treated nuclear deterrence theory as sacrosanct and imbued it with godlike, but unrealistic, powers of protection are wrong? The future itself would stand in grave danger, for the failure of nuclear deterrence could pose an existential threat to humanity.

As a former commander of the US Strategic Command, General George Lee Butler was in charge of all US nuclear weapons. After retiring from the US Air Force, General Butler critiqued nuclear deterrence, stating that it "suspended rational thinking in the Nuclear Age about the ultimate aim of national security: to ensure the survival of the nation." He concluded that nuclear deterrence is "a slippery intellectual construct that translates very poorly into the real world of spontaneous crises, inexplicable motivations, incomplete intelligence and fragile human relationships."

As volcanoes often give off strong warning signals that they may erupt, so we have witnessed such signals regarding nuclear arsenals and the failure of nuclear deterrence theory over the course of the Nuclear Age. Nuclear arsenals could erupt with volcano-like force, totally overwhelming the relatively flimsy veneer of "protection" provided by nuclear deterrence theory. In the face of such dangers, we must not be complacent. Nor should we continue to be soothed by the "experts" who assure us not to worry because the weapons will keep us safe. There is, in fact, much to worry about, much more than the nuclear policy makers and theorists in each of the nuclear weapon states have led us to believe. I will examine below what I believe are ten serious flaws in nuclear deterrence theory, flaws that lead to the conclusion that the theory is unstable, unreliable and invalid.

1. **It is only a theory**. It is not proven and cannot be proven. A theory may posit a causal relationship, for example, if one party does something, certain results will follow. In the case of nuclear deterrence theory, it is posited that if one party threatens to retaliate with nuclear weapons, the other side will not attack. That an attack has not occurred, however, does not prove that it was prevented by nuclear deterrence. That is, in logic, a false assumption of causality. In logic, one cannot prove a negative, that is, that doing something causes something else not to happen. That a nuclear attack has not happened may be a result of any number of other factors, or simply of exceptional good fortune. To attribute the absence of nuclear war to nuclear deterrence is to register a false positive, which imbues nuclear deterrence with a false sense of efficacy.

2. **It requires a commitment to mass murder**. Nuclear deterrence leads to policy debates about how many threatened deaths with nuclear weapons are enough to deter an adversary? Are one million deaths sufficient to deter adversary A? Is it a different number for adversary B? How many deaths are sufficient? One million? Ten million? One hundred million? More? There will always be a tendency to err on the side of more deaths, and thus the creation of more elaborate nuclear killing systems. Such calculations, in turn, drive arms races, requiring huge allocations of resources to weapons systems that must never be used. Leaders must convince their own populations that the threat of mass murder and the expenditure of resources to support this threat make them secure and is preferable to other allocations of scientific and financial resources. The result is not only a misallocation of resources, but also a diversion of effort away from cooperative solutions to global problems.

3. **It requires effective communications**. In effect, nuclear deterrence is a communications theory. Side A must communicate its capability and willingness to use its nuclear arsenal in retaliation for an attack by adversary B, thereby preventing adversary B from attacking. The threat to retaliate and commit mass murder must be believable to a potential attacker. Communications take place verbally in speeches by leaders and parliamentary statements, as well as news reports and even by rumors. Communications also take place non-verbally in the form of alliance formations and nuclear weapons and missile tests. In relation to nuclear deterrence,

virtually everything that each side does is a deliberate or inadvertent form of communication to a potential adversary. There is much room for error and misunderstanding.

4. **It requires rational decision makers**. Nuclear deterrence will not be effective against a decision maker who is irrational. For example, side A may threaten nuclear retaliation for an attack by adversary B, but the leader of side B may irrationally conclude that the leader of side A will not do what he says. Or, the leader of side B may irrationally attack side A because he does not care if one million or ten million of his countrymen die as a result of side A's nuclear retaliation. I believe two very important questions to consider are these: Do all leaders of all states behave rationally at all times, particularly under conditions of extreme stress when tensions are very high? Can we be assured that all leaders of all states will behave rationally at all times in the future? Most people believe the answer to these questions is an unqualified No.

5. **It instills a false sense of confidence**. Nuclear deterrence is frequently confused with nuclear "defense," leading to the conclusion that nuclear weapons provide some form of physical protection against attack. This conclusion is simply wrong. The weapons and the threat of their use provide no physical protection. The only protection provided is psychological and once the weapons start flying it will become clear that psychological protection is not physical protection. One can believe the weapons make him safer, but this is not the same as actually being safer. Because nuclear deterrence theory provides a false sense of confidence, it could lead a possessor of the weapons to take risks that would be avoided without nuclear threats in place. Such risks could be counterproductive and actually lead to nuclear war.

6. **It does not work against an accidental use**. Nuclear deterrence is useful, if at all, only against the possibility of an intentional, premeditated nuclear attack. Its purpose is to make the leader who contemplates the intentional use of a nuclear weapon decide against doing so. But nuclear deterrence cannot prevent an accidental use of a nuclear weapon, such as an accidental launch. This point was made in the movie Dr. Strangelove, in which a US nuclear attack was accidentally set in motion against the Soviet Union. In the movie, bomber crews passed their "failsafe" point in a training exercise and couldn't be recalled. The president of the United States had to get on the phone with his Soviet counterpart and try to explain that the attack on Moscow that had been set in motion was just an accident. The Americans were helpless to stop the accident from occurring, and so were the Soviets. Accidents happen! There is no such thing as a "foolproof" system, and when nuclear weapons are involved it is extremely dangerous to think there is.

7. **It doesn't work against terrorist organizations**. Nuclear deterrence is based upon the threat of retaliation. Since it is not possible to retaliate against a foe that you cannot locate, the threat of retaliation is not credible under these circumstances. Further, terrorists are often suicidal (e.g., "suicide bombers"), and are willing to die to inflict death and suffering on an adversary. For these reasons, nuclear deterrence will be ineffective in preventing nuclear terrorism. The only way to prevent nuclear terrorism is to prevent the weapons themselves from falling into the hands of terrorist organizations. This will become increasingly difficult if nuclear weapons and the nuclear materials to build them proliferate to more and more countries.

8. **It encourages nuclear proliferation**. To the extent that the theory of nuclear deterrence is accepted as valid and its flaws overlooked or ignored, it will make nuclear weapons seem to be valuable instruments for the protection of a country. Thus, the uncritical acceptance of nuclear deterrence theory provides an incentive for nuclear proliferation. If it is believed that nuclear

weapons can keep a country safe, there will be commensurate pressure to develop such weapons.

9. **It is not believable**. In the final analysis, it is likely that even the policy makers who promote nuclear deterrence do not truly believe in it. If policy makers did truly believe that nuclear deterrence works as they claim, they would not need to develop missile defenses. The United States alone has spent over $100 billion on developing missile defenses over the past three decades, and is continuing to spend some $10 billion annually on missile defense systems. Such attempts at physical protection against nuclear attacks are unlikely to ever be fully successful, but they demonstrate the underlying understanding of policy makers that nuclear deterrence alone is insufficient to provide protection to a country. If policy makers understand that nuclear deterrence is far from foolproof, then who is being fooled by nuclear deterrence theory? In all likelihood, the only people being fooled by the promised effectiveness of nuclear deterrence theory are the ordinary people who place their faith in their leaders, the same people who are the targets of nuclear weapons and will suffer the consequences should nuclear deterrence fail. Their political and military leaders have made them the "fools" in what is far from a "foolproof" system.

10. **Its failure would be catastrophic**. Nuclear deterrence theory requires the development and deployment of nuclear weapons for the threat of retaliation. These weapons can, of course, be used for initiating attacks as well as for seeking to prevent attacks by means of threatened retaliation. Should deterrence theory fail, such failure could result in consequences beyond our greatest fears. For example, scientists have found in simulations of the use of 100 Hiroshima-size nuclear weapons in an exchange between India and Pakistan, the deaths could reach one billion individuals due to blast, fire, radiation, climate change, crop failures and resulting starvation. A larger nuclear war between the US and Russia could destroy civilization as we know it.

The flaws in nuclear deterrence theory that I have discussed cannot be waved aside. They show that the theory has inherent weaknesses that cannot be overcome. Over time, the theory will suffer more and more stress fractures and, like a poorly constructed bridge, it will fail. Rather than staying docilely on the sidelines, citizens of the nuclear weapon states must enter the arena of debate. In fact, they must create the debate by challenging the efficacy and validity of nuclear deterrence theory.

After these many years of accepting nuclear deterrence theory as valid and unimpeachable, it is time to awaken to the reality that it could fail and fail catastrophically. The answer to the risks posed by nuclear deterrence theory is not to shore up an inherently flawed theory, but to take a new path, a path leading to the elimination of all nuclear weapons from the planet. This is not an impossible dream and, in fact, the risks of taking this path are far less than maintaining nuclear arsenals justified by an unstable and unproven theory. But for this dream to be realized, citizens will have to raise their voices, challenge their leaders, and refuse to be docile in the face of the overwhelming threat that nuclear weapons pose to humanity.

David Krieger is President of the Nuclear Age Peace Foundation.

2. "Deterrence in the Age of Nuclear Proliferation,"

By George P. Shultz (Thomas W. and Susan B. Ford Distinguished Fellow; Chair, Energy Policy Task Force; and member of the Working Group on Economic Policy); William J. Perry (Senior Fellow and member of the Task Force on Energy Policy); Henry A. Kissinger; and Sam Nunn.[1]

March 7, 2011 | *Wall Street Journal*

As long as there has been war, there have been efforts to deter actions a nation considers threatening. Until fairly recently, this meant building a military establishment capable of intimidating the adversary, defeating him or making his victory more costly than the projected gains. This, with conventional weapons, took time. Deterrence and war strategy were identical.

The advent of the nuclear weapon introduced entirely new factors. It was possible, for the first time, to inflict at the beginning of a war the maximum casualties. The doctrine of mutual assured destruction represented this reality. Deterrence based on nuclear weapons, therefore, has three elements:

* It is importantly psychological, depending on calculations for which there is no historical experience. It is therefore precarious.

* It is devastating. An unrestrained nuclear exchange between superpowers could destroy civilized life as we know it in days.

* Mutual assured destruction raises enormous inhibitions against employing the weapons.

Since the first use of nuclear weapons against Japan, neither of the superpowers, nor any other country, has used nuclear weapons in a war. A gap opened between the psychological element of deterrence and the risks most leaders were willing to incur. U.S. defense leaders made serious efforts to give the president more flexible options for nuclear use short of global annihilation. They never solved the problem, and it was always recognized that Washington and Moscow both held the keys to unpredictable and potentially catastrophic escalations.

As a result, nuclear deterrence was useful in preventing only the most catastrophic scenarios that would have threatened our survival. But even with the deployment of thousands of nuclear weapons on both sides of the Iron Curtain, the Soviet moves into Hungary in 1956 and Czechoslovakia in 1968 were not deterred. Nor were the numerous crises involving Berlin, including the building of the Wall in 1961, or major wars in Korea and Vietnam, or the Soviet invasion of Afghanistan in 1979. In the case of the Soviet Union, nuclear weapons did not prevent collapse or regime change.

Today, the Cold War is almost 20 years behind us, but many leaders and publics cannot conceive of deterrence without a strategy of mutual assured destruction. We have written previously that reliance on this strategy is becoming increasingly hazardous. With the spread of nuclear weapons, technology, materials and know-how, there is an increasing risk that nuclear weapons will be used.

It is not possible to replicate the high-risk stability that prevailed between the two nuclear superpowers during the Cold War in such an environment. The growing number of nations with

[1] Mr. Shultz was secretary of state from 1982 to 1989. Mr. Perry was secretary of defense from 1994 to 1997. Mr. Kissinger was secretary of state from 1973 to 1977. Mr. Nunn is former chairman of the Senate Armed Services Committee.

nuclear arms and differing motives, aims and ambitions poses very high and unpredictable risks and increased instability.

From 1945 to 1991, America and the Soviet Union were diligent, professional, but also lucky that nuclear weapons were never used. Does the world want to continue to bet its survival on continued good fortune with a growing number of nuclear nations and adversaries globally? Can we devise and successfully implement with other nations, including other nuclear powers, careful, cooperative concepts to safely dismount the nuclear tiger while strengthening the capacity to assure our security and that of allies and other countries considered essential to our national security?

Recently, the four of us met at the Hoover Institution with a group of policy experts to discuss the possibilities for establishing a safer and more comprehensive form of deterrence and prevention in a world where the roles and risks of nuclear weapons are reduced and ultimately eliminated. Our broad conclusion is that nations should move forward together with a series of conceptual and practical steps toward deterrence that do not rely primarily on nuclear weapons or nuclear threats to maintain international peace and security.

The first step is to recognize that there is a daunting new spectrum of global security threats. These threats include chemical, biological and radiological weapons, catastrophic terrorism and cyber warfare, as well as natural disasters resulting from climate change or other environmental problems, and health-related crises. For the United States and many other nations, existential threats relating to the very survival of the state have diminished, largely because of the end of the Cold War and the increasing realization that our common interests greatly exceed our differences. However, an accident or mistake involving nuclear weapons, or nuclear terrorism fueled by the spread of nuclear weapons, nuclear materials, and nuclear know-how, is still a very real risk. An effective strategy to deal with these dangers must be developed.

The second step is the realization that continued reliance on nuclear weapons as the principal element for deterrence is encouraging, or at least excusing, the spread of these weapons, and will inevitably erode the essential cooperation necessary to avoid proliferation, protect nuclear materials and deal effectively with new threats.

Third, the U.S. and Russia have no basis for maintaining a structure of deterrence involving nuclear weapons deployed in ways that increase the danger of an accidental or unauthorized use of a nuclear weapon, or even a deliberate nuclear exchange based on a false warning. Reducing the number of operationally deployed strategic nuclear warheads and delivery vehicles with verification to the levels set by the New Start Treaty is an important step in reducing nuclear risks. Deeper nuclear reductions and changes in nuclear force posture involving the two nations should remain a priority. Further steps must include short-range tactical nuclear weapons.

Fourth, as long as nuclear weapons exist, America must retain a safe, secure and reliable nuclear stockpile primarily to deter a nuclear attack and to reassure our allies through extended deterrence. There is an inherent limit to U.S. and Russian nuclear reductions if other nuclear weapon states build up their inventories or if new nuclear powers emerge.

It is clear, however, that the U.S. and Russia-having led the nuclear buildup for decades-must continue to lead the build-down. The U.S. and its NATO allies, together with Russia, must begin moving away from threatening force postures and deployments including the retention of thousands of short-range battlefield nuclear weapons. All conventional deployments should be

reviewed from the aspect of provocation. This will make America, Russia and Europe more secure. It will also set an example for the world.

Fifth, we recognize that for some nations, nuclear weapons may continue to appear relevant to their immediate security. There are certain undeniable dynamics in play-for example, the emergence of a nuclear-armed neighbor, or the perception of inferiority in conventional forces-that if not addressed could lead to the further proliferation of nuclear weapons and an increased risk they will be used. Thus, while the four of us believe that reliance on nuclear weapons for deterrence is becoming increasingly hazardous and decreasingly effective, some nations will hesitate to draw or act on the same conclusion unless regional confrontations and conflicts are addressed. We must therefore redouble our efforts to resolve these issues.

Achieving deterrence with assured security will require work by leaders and citizens on a range of issues, beginning with a clearer understanding of existing and emerging security threats. The role of non- nuclear means of deterrence to effectively prevent conflict and increase stability in troubled regions is a vital issue. Changes to extended deterrence must be developed over time by the U.S. and allies working closely together. Reconciling national perspectives on nuclear deterrence is a challenging problem, and comprehensive solutions must be developed. A world without nuclear weapons will not simply be today's world minus nuclear weapons.

Nations can, however, begin moving now together toward a safer and more stable form of deterrence. Progress must be made through a joint enterprise among nations, recognizing the need for greater cooperation, transparency and verification to create the global political environment for stability and enhanced mutual security. Ensuring that nuclear materials are protected globally in order to limit any country's ability to reconstitute nuclear weapons, and to prevent terrorists from acquiring the material to build a crude nuclear bomb, is a top priority.

Moving from mutual assured destruction toward a new and more stable form of deterrence with decreasing nuclear risks and an increasing measure of assured security for all nations could prevent our worst nightmare from becoming a reality, and it could have a profoundly positive impact on the security of future generations.

3. Nuclear Deterrence: Impeding Nuclear Disarmament

March 10, 2011

By David Krieger

In an opinion piece in the *Wall Street Journal*, published on March 7, 2011, four former high-level US policy makers – George Shultz, William Perry, Henry Kissinger and Sam Nunn – focused their attention on nuclear deterrence. They concurred that deterrence based on nuclear weapons is precarious, could destroy civilized life and raises enormous inhibitions against employing nuclear weapons. They concluded that the US and Russia were "lucky" that nuclear weapons were not used during the Cold War, and asked: "Does the world want to continue to bet its survival on continued good fortune with a growing number of nuclear nations and adversaries globally?"

The four former policy makers argued that "nations should move forward together with a series of conceptual and practical steps toward deterrence that do not rely primarily on nuclear weapons or nuclear threats to maintain international peace and security." Their first step is to recognize that "there is a daunting new spectrum of global security threats" and that an "ef-

fective strategy to deal with these dangers must be developed." Their second step is to realize that reliance on nuclear weapons encourages or excuses nuclear proliferation. Their third step is to cease the deployment of US and Russian nuclear arsenals in ways that "increase the danger of an accidental or unauthorized use of a nuclear weapon, or even a deliberate exchange based on a false warning."

So far, so good. Their fourth step, however, seems to be a non sequitur: "[A]s long as nuclear weapons exist, America must retain a safe, secure and reliable nuclear stockpile primarily to deter a nuclear attack and to reassure our allies through extended deterrence." The former policy makers had just reviewed the great dangers of relying upon nuclear deterrence, and then followed this by indicating the need for America to rely upon nuclear weapons for deterrence, including nuclear deterrence "extended" to US allies. They also left unstated what uses the US nuclear stockpile might have other than deterring a nuclear attack. It appears the former policy makers have chosen a "safe, secure and reliable" nuclear arsenal over a safe and secure citizenry. Nuclear weapons undermine the possibility of a safe and secure citizenry. As conceived, the modernization of US nuclear forces would also be expensive and provocative and would limit the possibilities for nuclear disarmament. I've often wondered what is meant by a reliable nuclear arsenal: One with sufficient capacity to annihilate a potential enemy down to the last child?

The four former policy makers do say that the US and Russia "must continue to lead the "build-down" and "must begin moving away from threatening force postures and deployments." But such leadership is needed not only for the "build-down," but also to envision a world with zero nuclear weapons and to commit to doing what is necessary to achieve that vision.

In their fifth step, the group of four recognizes that "nuclear weapons may continue to appear relevant" to some nations. They thus see the need to "redouble efforts" to resolve regional confrontations and conflicts. Insightfully, they find, "A world without nuclear weapons will not simply be today's world minus nuclear weapons." They demonstrate a lack of urgency, though, in suggesting that "over time" the US and its allies can work together to make changes to extended deterrence.

The group of four concludes, "Moving from mutual assured destruction toward a new and more stable form of deterrence with decreasing nuclear risks and an increasing measure of assured security for all nations could prevent our worst nightmare from becoming a reality, and it could have a profoundly positive impact on the security of future generations."

Just a few weeks before the publication of this *Wall Street Journal* article on nuclear deterrence by George Shultz and his colleagues, the Nuclear Age Peace Foundation convened a conference in Santa Barbara on "The Dangers of Nuclear Deterrence." The conference concluded with a Santa Barbara Declaration: "Reject Nuclear Deterrence: An Urgent Call to Action." The Declaration states, "Nuclear deterrence is discriminatory, anti-democratic and unsustainable. This doctrine must be discredited and replaced with an urgent commitment to achieve global nuclear disarmament. We must change the discourse by speaking truth to power and speaking truth to each other." In other words, we cannot find nuclear deterrence "precarious" on the one hand, and seek to modernize America's nuclear forces under the guise of keeping them "safe, secure and reliable" on the other hand.

The Santa Barbara Declaration concluded, “Before another nuclear weapon is used, nuclear deterrence must be replaced by humane, legal and moral security strategies. We call upon people everywhere to join us in demanding that the nuclear weapon states and their allies reject nuclear deterrence and negotiate without delay a Nuclear Weapons Convention for the phased, verifiable, irreversible and transparent elimination of all nuclear weapons.” The goal must be a world without nuclear weapons, and reliance on nuclear weapons for deterrence remains a major impediment to achieving that goal.

The following text is taken from *Security Dialogue* (Vol. 25, Num. 4, December 1994, pp. 405-408).

What Future for Nuclear Weapons?

Thérèse Delpech (*Paris, France*)

With the end of the Cold War, the purpose and role of nuclear weapons need to be stated in new terms. For the past half century, these weapons have affected relations between the two superpowers to such an extent that the end of the East/West confrontation and the disappearance of the Warsaw Pact justify a reappraisal of their place in the new strategic context. Such a reappraisal could take into account the following considerations:

First, there was never unanimous agreement on the usefulness of nuclear weapons, even during the Cold War period. For France, the national position has always been that those weapons would help maintain stability in Europe. Nevertheless, a part of the European public was never convinced that nuclear weapons served a meaningful purpose — whether because Russia was felt to have no aggressive designs, or because the nuclear deterrent was perceived as lacking credibility, or because the danger of nuclear weapons was felt to outweigh usefulness in view of their destructive power and the fact that a failure of control systems could never be ruled out. Naturally, these views also find support in recent developments, although reservations toward nuclear weapons are older. Nuclear opponents now find it much easier to argue in favour of a nuclear-free world, even if no deadline has been set for reaching that objective.

World security will certainly depend much less on nuclear weapons than it did in the past. While nuclear deterrence, in its various forms, has been the mainstay of security for the past 50 years, the conditions which led to this situation have changed so drastically that no one today sees nuclear weapons retaining such an important role. As a result, the nuclear powers are ending their arms race (this is the meaning of the disarmament agreements concluded in the past few years) and can now abide by the principle of sufficiency — maintaining the minimum number of arms necessary for deterrence and response — which has always been a major element in the policies of European nuclear-weapons states. That view is now accepted by all nuclear powers. A most interesting point is finding a satisfactory definition for such 'sufficiency'. The United States and Russia now seem to agree that a new stage can be considered after START II.

The antagonism between nuclear and non-nuclear powers, a Cold War legacy, will gradually lose its significance. One of the symbols of the part played by nuclear weapons in the world we are now leaving was the presence of the five nuclear-weapon states in the UN Security Council as permanent members. In the future, the possession of nuclear weapons will not necessarily mean power or influence over world affairs. Status will have to be sought in other areas. An early indication of this change in the relative status bestowed by nuclear weapons is to be found in the expected admission, hopefully soon, of Japan and Germany to Security Council permanent membership, as two non-nuclear countries which have both adhered to the Non-Proliferation Treaty while firmly asserting their renunciation of the bomb.

However, there will be from 3,000 to 6,000 strategic nuclear warheads in Russia during the next ten or twenty years. This is a fact which no country, particularly in Europe, can view with indifference. In the most favourable case, we should witness a gradual implementation of the US/Soviet START I and START II disarmament agreements, which should lead to a ceiling of

approximately 3,500 strategic warheads in both countries. This consideration is all the more significant since the former USSR (including Russia) appears to be undergoing a period of prolonged instability. That would appear to justify the maintenance of an adequate nuclear force, as a balancing factor, on the Western side — especially since a hardening of Russian policy cannot be ruled out. This means that disarmament, if it is to serve the cause of security, should proceed in a certain order, give due consideration to dismantling capabilities and be subject to effective verification. In the best interests of all concerned, we should abide by those principles.

With the demise of the Soviet threat and ballistic nuclear and chemical weapons proliferation, new problems have arisen. Public opinion world-wide became aware of this through the Gulf War. The necessity of preventing the proliferation of mass destruction weapons, especially nuclear weapons, is one point on which the international community is in agreement, as shown by the January 1992 Security Council statement. Potential proliferation initiators give no consideration to existing disarmament agreements or to the levels of the arsenals of nuclear-weapon states when they decide to embark on underground programmes. In other words, disarmament efforts, necessary as they may be, will not by themselves terminate or slow down the activities of countries such as Iraq, Iran or North Korea. Nor is it by any means so that world security would improve if the end of the East/West confrontation coincided with the emergence of nuclear capabilities in those countries. The opposite is true.

The most appropriate response to those developments is, in the first place, an active prevention policy. The countries in question are mostly at a stage of limited activities, and do not yet have nuclear arsenals. Even in Iraq, where underground activities had risen to an impressive level, no evidence was found of a significant production of those fissile materials indispensable to a nuclear weapons programme. If strictly implemented, prevention could succeed in curbing or even ending the inclinations of some countries to acquire nuclear weapons for reasons linked to regional power politics. Such a policy would involve all the resources provided by international safeguards and export controls, while taking full advantage of the monitoring facilities available in nuclear technology. This is why a situation such as the one prevailing in North Korea is highly dangerous. Pyongyang can prove that the response of the international community to NPT violations is too weak to be dissuasive.

However, even the strictest prevention and non-proliferation policies may have their limitations. The number of countries with ballistic capabilities has more than doubled in the past fifteen years. The ability to equip those missiles with chemical, bacteriological or nuclear warheads is a potential threat, not only to regional power balances, but also to Europe, both East and West. The very nature of ballistic and airborne vectors leads to a process of ever-increasing speed and range. Although this type of menace should not be over-emphasized, it cannot be brushed aside altogether. The most appropriate response at this stage seems to be to improve intelligence and early-warning capabilities. In the event of action by expeditionary forces, Gulf War experience and the possibility of being confronted with a foe possessing weapons of mass destruction suggest that the development of improved theatre anti-missile defences, costly as they may be, could be a worthwhile proposition.

The relations between conventional and nuclear weapons are another subject for reflection. This issue stems from the expected reduction in the relative importance of nuclear weapons. It is also a consequence of technological advances and continued improvements in the perfor-

mance of sophisticated weaponry. Such weapons, however, are extremely costly. Today's trend, at least in the Western world, is to cut defence budgets. Few nations can afford the expenses required to modernize conventional capabilities. This is why the relation between conventional and nuclear weapons will not necessarily be viewed in the same way by the United States, which has a considerable conventional capability, and by Europe, where these capabilities are less extensive. However, the restoration of a more balanced relation has been mentioned in UK and French White Papers, and is undoubtedly a step in the right direction.

The future of nuclear weapons will also depend largely on the mutual relations between the five nuclear powers. This applies to relations between the three Western nuclear powers and Russia as well as China, and to future developments in Sino-Russian relations. In the first case, current observations show unquestionable signs of rapprochement, as well as uncertainties. Western countries are now making a maximum effort to support a gradual stabilization in Russia and in the former Soviet republics. Even if successful, this process will take several decades. The greatest unknown, however, is probably the strategic situation of Asia in the next century. China is the only country now proceeding with nuclear testing and the modernizing of its arsenal. There is no indication that China shares the views of the Western world on the relative reduction in importance of the bomb. Meanwhile, the external threat has weakened considerable for China: Russia can in no case be viewed as a threat for a rather long time, and the United States has never been more eager to avoid any confrontation in the Far East. Subject to confirmation, a most intriguing news item about the Chinese arsenal relates to the development of tactical nuclear weapons. Besides being contrary to the 'no first use' pledge to which China claims to be greatly attached, the development of such weapons is difficult to relate to any military doctrine, at a time when a Russian attack seems to have become so unlikely.

Here is a summary and the full text of the speech by the United Nations Secretary-General, Ban Ki-moon, on a nuclear-weapon-free world.

The United Nations and security in a nuclear-weapon-free world[1]

Summary of Secretary-General five point proposal on nuclear disarmament (full text below)

***First*,** I urge all NPT parties, in particular the nuclear-weapon-states, to fulfil their obligation under the treaty to undertake negotiations on effective measures leading to nuclear disarmament.

They could pursue this goal by agreement on a framework of separate, mutually reinforcing instruments. Or they could consider negotiating a nuclear-weapons convention, backed by a strong system of verification, as has long been proposed at the United Nations. Upon the request of Costa Rica and Malaysia, I have circulated to all UN member states a draft of such a convention, which offers a good point of departure.

The nuclear powers should actively engage with other states on this issue at the Conference on Disarmament in Geneva, the world's single multilateral disarmament negotiating forum. The world would also welcome a resumption of bilateral negotiations between the United States and Russian Federation aimed at deep and verifiable reductions of their respective arsenals.

Governments should also invest more in verification research and development. The United Kingdom's proposal to host a conference of nuclear-weapon states on verification is a concrete step in the right direction.

Second, the Security Council's permanent members should commence discussions, perhaps within its Military Staff Committee, on security issues in the nuclear disarmament process. They could unambiguously assure non-nuclear-weapon states that they will not be the subject of the use or threat of use of nuclear weapons. The Council could also convene a summit on nuclear disarmament. Non-NPT states should freeze their own nuclear-weapon capabilities and make their own disarmament commitments.

My third initiative relates to the "rule of law." Unilateral moratoria on nuclear tests and the production of fissile materials can go only so far. We need new efforts to bring the CTBT into force, and for the Conference on Disarmament to begin negotiations on a fissile material treaty immediately, without preconditions. I support the entry into force of the Central Asian and African nuclear-weapon-free zone treaties. I encourage the nuclear-weapon states to ratify all the protocols to the nuclear-weapon-free zone treaties. I strongly support efforts to establish such a zone in the Middle East. And I urge all NPT parties to conclude their safeguards agreements with the IAEA, and to voluntarily adopt the strengthened safeguards under the Additional Protocol. We should never forget that the nuclear fuel cycle is more than an issue involving energy or non-proliferation; its fate will also shape prospects for disarmament.

My fourth proposal concerns accountability and transparency. The nuclear-weapon states often circulate descriptions of what they are doing to pursue these goals, yet these accounts seldom reach the public. I invite the nuclear-weapon states to send such material to the UN Secretariat, and to encourage its wider dissemination. The nuclear powers could also expand the amount of information they publish about the size of their arsenals, stocks of fissile material

[1] New York, 24 October 2008 — Secretary-General's address to the East-West Institute.

and specific disarmament achievements. The lack of an authoritative estimate of the total number of nuclear weapons testifies to the need for greater transparency.

***Fifth and finally*,** a number of complementary measures are needed. These include the elimination of other types of WMD; new efforts against WMD terrorism; limits on the production and trade in conventional arms; and new weapons bans, including of missiles and space weapons. The General Assembly could also take up the recommendation of the Blix Commission for a "World Summit on disarmament, non-proliferation and terrorist use of weapons of mass destruction".

Some doubt that the problem of WMD terrorism can ever be solved. But if there is real, verified progress in disarmament, the ability to eliminate this threat will grow exponentially. It will be much easier to encourage governments to tighten relevant controls if a basic, global taboo exists on the very possession of certain types of weapons. As we progressively eliminate the world's deadliest weapons and their components, we will make it harder to execute WMD terrorist attacks. And if our efforts also manage to address the social, economic, cultural, and political conditions that aggravate terrorist threats, so much the better.

Text of Secretary-General's speech

Mr. John Edwin Mroz, President and CEO of the East-West Institute,
Mr. George Russell, Chairman of the Board of Directors of the East-West Institute.
Dr. Kissinger,
Dr. ElBaradei,
Mr. Duarte,

It is a great pleasure to welcome you all to the United Nations. I salute the East-West Institute and its partner non-governmental groups for organizing this event on weapons of mass destruction and disarmament.

This is one of the gravest challenges facing international peace and security. So I thank the East-West Institute for its timely and important new global initiative to build consensus. Under the leadership of George Russell and Martti Ahtisaari, the East-West Institute is challenging each of us to rethink our international security priorities in order to get things moving again. You know, as we do, that we need specific actions, not just words. As your slogan so aptly puts it, you are a "think and do tank".

One of my priorities as Secretary-General is to promote global goods and remedies to challenges that do not respect borders. A world free of nuclear weapons would be a global public good of the highest order, and will be the focus of my remarks today. I will speak mainly about nuclear weapons because of their unique dangers and the lack of any treaty outlawing them. But we must also work for a world free of all weapons of mass destruction.

Some of my interest in this subject stems from my own personal experience. As I come from [the Republic of] Korea, my country has suffered the ravages of conventional war and faced threats from nuclear weapons and other WMD. But of course, such threats are not unique to my country.

Today, there is support throughout the world for the view that nuclear weapons should never again be used because of their indiscriminate effects, their impact on the environment and their profound implications for regional and global security. Some call this the nuclear "taboo".

Yet nuclear disarmament has remained only an aspiration, rather than a reality. This forces us to ask whether a taboo merely on the use of such weapons is sufficient.

States make the key decisions in this field. But the United Nations has important roles to play. We provide a central forum where states can agree on norms to serve their common interests. We analyze, educate and advocate in the pursuit of agreed goals.

Moreover, we have pursued general and complete disarmament for so long that it has become part of the Organization's very identity. Disarmament and the regulation of armaments are found in the Charter. The very first resolution adopted by the General Assembly, in London in 1946, called for eliminating "weapons adaptable to mass destruction". These goals have been supported by every Secretary-General. They have been the subject of hundreds of General Assembly resolutions, and have been endorsed repeatedly by all our Member States.

And for good reason. Nuclear weapons produce horrific, indiscriminate effects. Even when not used, they pose great risks. Accidents could happen any time. The manufacture of nuclear weapons can harm public health and the environment. And of course, terrorists could acquire nuclear weapons or nuclear material.

Most states have chosen to forgo the nuclear option, and have complied with their commitments under the Nuclear Non-Proliferation Treaty. Yet some states view possession of such weapons as a status symbol. And some states view nuclear weapons as offering the ultimate deterrent of nuclear attack, which largely accounts for the estimated 26,000 that still exist.

Unfortunately, the doctrine of nuclear deterrence has proven to be contagious. This has made non-proliferation more difficult, which in turn raises new risks that nuclear weapons will be used.

The world remains concerned about nuclear activities in the Democratic People's Republic of Korea and in Iran. There is widespread support for efforts to address these concerns by peaceful means through dialogue.

There are also concerns that a "nuclear renaissance" could soon take place, with nuclear energy being seen as a clean, emission-free alternative at a time of intensifying efforts to combat climate change. The main worry is that this will lead to the production and use of more nuclear materials that must be protected against proliferation and terrorist threats.

Ladies and Gentlemen,

The obstacles to disarmament are formidable. But the costs and risks of its alternatives never get the attention they deserve. But consider the tremendous opportunity cost of huge military budgets. Consider the vast resources that are consumed by the endless pursuit of military superiority.

According to the Stockholm International Peace Research Institute, global military expenditures last year exceeded $1.3 trillion. Ten years ago, the Brookings Institution published a study that estimated the total costs of nuclear weapons in just one country? the United States? to be over $5.8 trillion, including future cleanup costs. By any definition, this has been a huge

investment of financial and technical resources that could have had many other productive uses.

Concerns over such costs and the inherent dangers of nuclear weapons have led to a global outpouring of ideas to breathe new life into the cause of nuclear disarmament. We have seen the WMD Commission led by Hans Blix, the New Agenda Coalition and Norway's seven-nation initiative. Australia and Japan have just launched the International Commission on Nuclear Non-Proliferation and Disarmament. Civil society groups and nuclear-weapon states have also made proposals.

There is also the Hoover plan. I am pleased to note the presence here today of some of that effort's authors. Dr. Kissinger, Mr. Kampelman: allow me to thank you for your commitment and for the great wisdom you have brought to this effort.

Such initiatives deserve greater support. As the world faces crises in the economic and environmental arenas, there is growing awareness of the fragility of our planet and the need for global solutions to global challenges. This changing consciousness can also help us revitalize the international disarmament agenda.

In that spirit, I hereby offer a five-point proposal.

First, I urge all NPT parties, in particular the nuclear-weapon-states, to fulfil their obligation under the treaty to undertake negotiations on effective measures leading to nuclear disarmament.

They could pursue this goal by agreement on a framework of separate, mutually reinforcing instruments. Or they could consider negotiating a nuclear-weapons convention, backed by a strong system of verification, as has long been proposed at the United Nations. Upon the request of Costa Rica and Malaysia, I have circulated to all UN member states a draft of such a convention, which offers a good point of departure.

The nuclear powers should actively engage with other states on this issue at the Conference on Disarmament in Geneva, the world's single multilateral disarmament negotiating forum. The world would also welcome a resumption of bilateral negotiations between the United States and Russian Federation aimed at deep and verifiable reductions of their respective arsenals.

Governments should also invest more in verification research and development. The United Kingdom's proposal to host a conference of nuclear-weapon states on verification is a concrete step in the right direction.

Second, the Security Council's permanent members should commence discussions, perhaps within its Military Staff Committee, on security issues in the nuclear disarmament process. They could unambiguously assure non-nuclear-weapon states that they will not be the subject of the use or threat of use of nuclear weapons. The Council could also convene a summit on nuclear disarmament. Non-NPT states should freeze their own nuclear-weapon capabilities and make their own disarmament commitments.

My third initiative relates to the "rule of law." Unilateral moratoria on nuclear tests and the production of fissile materials can go only so far. We need new efforts to bring the CTBT into force, and for the Conference on Disarmament to begin negotiations on a fissile material treaty immediately, without preconditions. I support the entry into force of the Central Asian and Af-

rican nuclear-weapon-free zone treaties. I encourage the nuclear-weapon states to ratify all the protocols to the nuclear-weapon-free zone treaties. I strongly support efforts to establish such a zone in the Middle East. And I urge all NPT parties to conclude their safeguards agreements with the IAEA, and to voluntarily adopt the strengthened safeguards under the Additional Protocol. We should never forget that the nuclear fuel cycle is more than an issue involving energy or non-proliferation; its fate will also shape prospects for disarmament.

My fourth proposal concerns accountability and transparency. The nuclear-weapon states often circulate descriptions of what they are doing to pursue these goals, yet these accounts seldom reach the public. I invite the nuclear-weapon states to send such material to the UN Secretariat, and to encourage its wider dissemination. The nuclear powers could also expand the amount of information they publish about the size of their arsenals, stocks of fissile material and specific disarmament achievements. The lack of an authoritative estimate of the total number of nuclear weapons testifies to the need for greater transparency.

Fifth and finally, a number of complementary measures are needed. These include the elimination of other types of WMD; new efforts against WMD terrorism; limits on the production and trade in conventional arms; and new weapons bans, including of missiles and space weapons. The General Assembly could also take up the recommendation of the Blix Commission for a "World Summit on disarmament, non-proliferation and terrorist use of weapons of mass destruction".

Some doubt that the problem of WMD terrorism can ever be solved. But if there is real, verified progress in disarmament, the ability to eliminate this threat will grow exponentially. It will be much easier to encourage governments to tighten relevant controls if a basic, global taboo exists on the very possession of certain types of weapons. As we progressively eliminate the world's deadliest weapons and their components, we will make it harder to execute WMD terrorist attacks. And if our efforts also manage to address the social, economic, cultural, and political conditions that aggravate terrorist threats, so much the better.

Ladies and Gentlemen,

At the United Nations in 1961, President Kennedy said, "Let us call a truce to terror?. Let us invoke the blessings of peace. And as we build an international capacity to keep peace, let us join in dismantling the national capacity to wage war."

The keys to world peace have been in our collective hands all along. They are found in the UN Charter and in our own endless capacity for political will. The proposals I have offered today seek a fresh start not just on disarmament, but to strengthen our system of international peace and security.

We must all be grateful for the contributions that many of the participants at this meeting have already made in this great cause. When disarmament advances, the world advances. That is why it has such strong support at the United Nations. And that is why you can count on my full support in the vital work that lies ahead.

Thank you very much for your support.

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EDITORIAL

Nuclear Weapons Treaty: An Idea whose Time Has Come

Rebecca Johnson

Speaking in the UK House of Commons just after participating in the launch of Global Zero in Paris on December 8, 2008, Sir Malcolm Rifkind, who held the posts of both Defence Secretary and Foreign Secretary in Conservative governments of the 1980s and 1990s, quoted Victor Hugo, that: "More powerful than the march of mighty armies is an idea whose time has come."

The idea whose time has come is that the abolition of nuclear weapons is not only desirable, but possible, achievable and *necessary*.

If we want a world free of nuclear weapons, we now have to become serious about laying the groundwork for a Nuclear Weapons Convention (NWC). In other words, we have to think about how to start negotiating an appropriate form of framework or comprehensive treaty to codify in law the obligations, responsibilities and controls that will be needed. Among countries with nuclear weapons or 'extended deterrence' nuclear umbrellas, the standard fear is that we would become vulnerable to nuclear attack or blackmail if we gave ours up and another country or terrorist kept a few. We need to develop the norms, safeguards, verification and enforcement tools to make sure that the world becomes a safer place without nuclear weapons.

Since George Shultz, Sam Nunn, William Perry and Henry Kissinger broke traditional ranks to call for a world free of nuclear weapons in January 2007 and 2008, many senior British, French, German and further US political and military figures have found the courage to do likewise. Recently, the UK Foreign Office launched "Lifting the Nuclear Shadow", with a major speech from Foreign Secretary David Miliband on creating the conditions for abolishing nuclear weapons. But there is a major credibility gap where governments are lauding this vision while simultaneously replacing, renewing or modernizing their nuclear weapons or — in the case of NATO countries — still clinging to a cold war strategic doctrine that relies on nuclear sharing and the threat to use nuclear weapons.

One of the most important contributions in recent months was made by UN Secretary-General Ban Ki-Moon on 24 October 2008. Proposing a five-point plan for nuclear disarmament and nonproliferation, the Secretary-General urged "all NPT parties, in particular the nuclear-weapon states, to fulfil their obligation under the treaty to undertake negotiations on effective measures leading to nuclear disarmament. They could agree on a framework of separate, mutually reinforcing instruments. Or they could consider negotiating a nuclear-weapons convention, backed by a strong verification system, as has long been proposed at the UN. I have circulated to all UN members a draft of such a convention, which offers a good point of departure."

Like many of the others, the Secretary-General also spoke of the need for entry into force of the Comprehensive Test Ban Treaty, more credible security assurances, negotiations on a fissile materials production ban, deeper cuts in arsenals, progress in verification, and so on. Such measures are part of the familiar "to do list" put forward nowadays by almost everyone. Nec-

essary though they are, such measures need to have an internationally-agreed purpose if they are to increase our security in the long run.

The Secretary-General's proposals are put into a context that is both more visionary and more practical than some of the others. Unlike many of the British, French and US contributions, he does not attempt to square the circle by underscoring the continued importance of nuclear-weapons-based deterrence while seeking arms limitation and non-proliferation. On the contrary, the Secretary-General's identification of negotiations on a nuclear weapons convention as a way to fulfil the NPT obligations puts forward a coherent approach to achieving the obligations and prohibitions, checks and balances, carrots and sticks of a sustainable nuclear 'grand bargain' for the 21st century to shore up the eroding 1960s deal between nuclear and non-nuclear weapon states enshrined in the NPT.

The Secretary-General also suggested that the UN Security Council's permanent members "should begin discussions on security issues in the nuclear disarmament process" and raised the possibility of a high level summit on nuclear disarmament.

After years of being dismissed as impossibly idealistic, the NWC is coming in from the cold. As progressive governments and civil society had to do in order to get other treaties on negotiating agendas in the past, we now have to make the practical objective of a comprehensive nuclear weapons treaty something that governments cannot argue against without looking out of touch and desperate to cling to out-dated, inhumane weapons of terror. With the widening recognition of nuclear dangers and security imperatives we have won the 'why' argument, and must now shift the debate to 'when and how'. With requisite resources and commitment, a nuclear weapon convention could become a reality sooner than most people think. Governments now investing billions to renew nuclear arsenals would then look as foolish and profligate as today's bankers.

The United Kingdom and Nuclear Weapons

Here are two documents on the nuclear weapons of the United Kingdom:

1. UK does not need a Nuclear Deterrent; y
2. Lifting the Nuclear Shadow.

1. UK does not need a Nuclear Deterrent

Nuclear weapons must not be seen to be vital to the secure defence of self-respecting nations

Letter from Field Marshal Lord Bramall, General Lord Ramsbotham and General Sir Hugh Beach to the Times, 16 January 2009.

Sir, Recent speeches made by the Prime Minister, Foreign Secretary and the previous Defence Secretary, and the letter from Douglas Hurd, Malcolm Rifkind, David Owen and George Robertson in The Times on June 30, 2008, have placed the issue of a world free of nuclear weapons firmly on the public agenda. But it is difficult to see how the United Kingdom can exert any leadership and influence on this issue if we insist on a costly successor to Trident that would not only preserve our own nuclear-power status well into the second half of this century but might actively encourage others to believe that nuclear weapons were still, somehow, vital to the secure defence of self-respecting nations.

This is a fallacy which can best be illustrated by analysis of the British so-called independent deterrent. This force cannot be seen as independent of the United States in any meaningful sense. It relies on the United States for the provision and regular servicing of the D5 missiles. While this country has, in theory, freedom of action over giving the order to fire, it is unthinkable that, because of the catastrophic consequences for guilty and innocent alike, these weapons would ever be launched, or seriously threatened, without the backing and support of the United States.

Should this country ever become subject to some sort of nuclear blackmail — from a terrorist group for example — it must be asked in what way, and against whom, our nuclear weapons could be used, or even threatened, to deter or punish. Nuclear weapons have shown themselves to be completely useless as a deterrent to the threats and scale of violence we currently, or are likely to, face — particularly international terrorism; and the more you analyse them the more unusable they appear.

The much cited "seat at the top table" no longer has the resonance it once did. Political clout derives much more from economic strength. Even major-player status in the international military scene is more likely to find expression through effective, strategically mobile conventional forces, capable of taking out pinpoint targets, than through the possession of unusable nuclear weapons. Our independent deterrent has become virtually irrelevant except in the context of domestic politics. Rather than perpetuating Trident, the case is much stronger for funding our Armed Forces with what they need to meet the commitments actually laid upon them. In the present economic climate it may well prove impossible to afford both.

Source: *The Times*, 16 January 2009, www.timesonline.co.uk/tol/comment/letters/-article5525682.ece

2. LIFTING THE NUCLEAR SHADOW, LAUNCH OF UK FOREIGN & COMMONWEALTH OFFICE POLICY INFORMATION PAPER, 4 FEBRUARY 2009

Secretary of State for Foreign & Commonwealth Affairs David Miliband will launch 'Lifting the Nuclear Shadow: Creating the Conditions for Abolishing Nuclear Weapons', a Policy Information Paper by the Foreign and Commonwealth Office, on Wednesday 4 February 2009.

Full text of the Policy Paper is available here.

See also: A world without nuclear weapons, UK Foreign Secretary David Miliband Guardian blog article, 8 December 2008

Executive Summary

Lifting the Nuclear Shadow: Creating the conditions for abolishing nuclear weapons, FCO Policy Information Paper, Executive Summary, January 2009.

Nuclear weapons remain potentially the most destructive threat to global security. Since the end of the Cold War there has been significant progress in reducing the dangers of nuclear weapons. The UK has reduced the total explosive power of its nuclear arsenal by some 75%. The US, Russia and France have also made very significant reductions.

But new nuclear threats are emerging. There is increasing concern over the risks of nuclear weapons spreading to states like Iran and North Korea or to terrorists. And we need to be careful that the renaissance of nuclear power for good reasons concerning climate change and energy security does not lead to the much wider spread of the more proliferation-sensitive nuclear technologies.

The Prime Minister, Gordon Brown, has sought to re-energise international efforts to combat these threats, issuing a call "to accelerate disarmament amongst possessor states, to prevent proliferation to new states and to ultimately achieve a world that is free from nuclear weapons."

Achieving a global ban on all nuclear weapons requires the creation of conditions which will give confidence to all those who are covered by a nuclear deterrent (over half of the world's population) that their security will be greater in a world without nuclear weapons than with them.

There are three main sets of such conditions and six specific steps to help create them which are potentially attainable within the next few years.

Condition 1: watertight means to prevent nuclear weapons from spreading to more states or to terrorists at the same time as nuclear energy is expanding;

Step 1: stopping further proliferation and securing agreement among all the Non-Proliferation Treaty states that the way forward must include tougher measures to prevent proliferation and tighten security, and the vigorous implementation of such measures, including practical help to states which need it.

Step 2: working with the International Atomic Energy Agency to help states which want to develop a civil nuclear energy industry to do so in ways which are safe and secure and which minimise the risks of nuclear weapons spreading. The Prime Minister has called a conference in London in March 2009 to further co-operation on these issues.

Condition 2: minimal arsenals and an international legal framework which puts tight, verified constraints on nuclear weapons.

Step 3: US-Russia negotiations and agreement on substantial further reductions in their total nuclear arsenals. This needs to be complemented by efforts by other states with nuclear weapons to reduce and keep their own forces to an absolute minimum. The UK and France have made significant reductions. But China, India and Pakistan are believed to be expanding their nuclear weapons capabilities.

Step 4: bringing the Comprehensive Test Ban Treaty into force, banning all nuclear weapons test explosions and thereby constraining the qualitative development of nuclear weapons. Nine states still need to ratify the Treaty to enable it to be brought into force.

Step 5: starting negotiations, without preconditions, and making progress on a Fissile Material Cut-Off Treaty. This is vital to help make reductions in nuclear weapons irreversible and to establish many of the mechanisms that would constitute the core of an eventual regime to oversee a global ban. The UK is urging those countries still blocking the start of negotiations to reassess their position.

Condition 3: finding solutions to the challenges of moving from small numbers of nuclear weapons to zero in ways which enhance security.

Step 6: exploring the many complex political, military, technical and institutional issues which will need to be resolved if the states which possess nuclear weapons are to reduce and ultimately to eliminate their arsenals securely and to prevent nuclear weapons from ever re-emerging. A strategic dialogue among the five Nuclear Weapon States (and, in due course, others) needs to lay the groundwork. The UK is doing ground-breaking work on how to verify nuclear disarmament and has proposed a conference of the Nuclear Weapon States in 2009 to discuss confidence building.

Over the longer-term, there will need to be:

- improved political relationships between key states, building trust and understanding between these countries to the point that a nuclear exchange between them becomes unthinkable. Long-standing disputes need to be resolved to remove key causes of conflict and terrorism;
- consideration given to ways to ensure that limiting or banning nuclear weapons does not provoke arms races in other forms of weapons — chemical, biological or conventional; and
- collective security arrangements to enforce a global ban on nuclear weapons and to maintain international security in a world without them. This is likely to require the reform and strengthening of international institutions and the international rules-based system as a whole.

Although the challenges are considerable, progress on these six steps would mark a decisive break from the deadlock of the past decade. Making progress will require the active engagement of the entire international community. The UK is working to build a broad coalition of governments, international organisations, non-governmental organisations and businesses which share the vision of a world free of nuclear weapons and to forge agreement on how we will work together to make it happen.

Source: UK Foreign & Commonwealth Office, www.fco.gov.uk.

Reset Nuclear Arms Negotiations Now[1]

By Daryl G. Kimball[2]

The Cold War ended nearly two decades ago, yet U.S. and Russian nuclear doctrines and capabilities remain largely unchanged. Washington and Moscow are no longer enemies, yet today each country still deploys at least 2,200 strategic nuclear weapons, many of which are primed for a quick launch to deter a surprise attack by the other.

To be sure, arms control agreements have reduced excess nuclear stockpiles and provided greater predictability and stability. The landmark 1991 Strategic Arms Reduction Treaty, or START, slashed each nation's strategic warhead deployments from about 10,000 to less than 6,000, and it limited each country to no more than 1,600 strategic delivery systems.

Since then, however, U.S. and Russian leaders have missed opportunities to achieve deeper, irreversible cuts in warhead, missile and bomber stockpiles. The 2002 Strategic Offensive Reductions Treaty, or SORT, calls for no more than 1,700 to 2,200 deployed strategic warheads by 2012. But the agreement expires the same day that the warhead limit takes effect. Unlike START, SORT does not require the elimination of excess missiles and bombers. Worse still, it failed to establish new verification mechanisms, relying instead on those contained in START, which is due to expire on Dec. 5.

Without START's far-reaching verification system, neither side would be able to confidently predict the size and location of the other's nuclear forces, adding another dangerous irritant to strained U.S.-Russian relations.

Renewed progress on U.S.-Russian nuclear disarmament is long overdue. As President Barack Obama said in his news conference on Monday, "It is important for us to restart the conversation about how we can start reducing our nuclear arsenals in an effective way so that we then have the standing to go to other countries and start stitching back together the nonproliferation treaties that frankly have been weakened over the last several years." On the Russian side, Foreign Minister Sergei Lavrov said on Saturday that Russia is "ready to go further on the path of reductions and limitations."

Both sides are clearly interested in doing more than merely extending the 18-year-old START. Russia has shown interest in deeper reductions, perhaps 1,500 strategic warheads or fewer on each side, along with lower ceilings on the number of strategic delivery systems. This would help maintain the numerical parity and save Russia the expense of extending the service life of some aging missile systems.

The Obama administration has said it "will seek deep, verifiable reductions in all U.S. and Russian nuclear weapons -- whether deployed or nondeployed, strategic or nonstrategic. As a first step, we will seek a legally binding agreement to replace START." Obama officials have also said that "ending the Cold War practice of keeping nuclear weapons ready for launch on a moment's notice should also be a priority."

According to some recent media reports, Obama has already decided seek cuts to 1,000 warheads. In reality, with the new president in office less than a month and a new nuclear policy

[1] *The Moscow Times*, 11 February 2009. Updated at 27 February 2009.

[2] Executive director of the independent Arms Control Association in Washington and publisher of the monthly journal *Arms Control Today*.

review just beginning, decisions about how low to go, whether to limit warheads or delivery systems and how to verify the pact have not been made.

Public statements suggest that Obama's team will at the very least likely pursue reductions in deployed strategic warheads beyond the lower end of the SORT limit (1,700) by 2012. That would be a step forward. But deeper reductions -- to 1,000 total warheads or less in the coming years -- are possible and prudent if each side is bold and visionary.

Massive arsenals that are capable of annihilating entire nations within an hour are more of a liability than an asset because they breed mistrust and worst-case assumptions among other states. They also perpetuate the risk of an accidental or unauthorized launch. It is estimated that no other country possesses more than 300 nuclear warheads.

In the coming weeks, Russian and U.S. negotiators will likely pursue further cuts through a combination of approaches, including lower limits on the number of their strategic delivery systems and verifiably reducing the number of warheads allowed on each missile or bomber. A streamlined system of START-style data exchanges and on-site inspections, plus new deployed warhead monitoring techniques, could give each side sufficient confidence that neither could quickly build up its forces.

For the talks to succeed, each side must adjust their earlier positions. Russia should be more willing to support more intrusive warhead monitoring and verification approaches, and it should agree to data exchanges on nonstrategic nuclear weapons, which remain unregulated by any treaty.

The United States will need to consider retiring some of its modern submarine and missile forces and undertake an expensive retrofitting of re-entry vehicles to limit the number of warheads they can deliver.

If an agreement cannot be reached by December, Secretary of State Hillary Clinton has suggested that "a mutually acceptable means should be found to give the negotiators more time without allowing key measures, including essential monitoring and verification provisions, to lapse."

Restarting the U.S.-Russian nuclear arms control process could dramatically reduce the number of nuclear weapons, improve global cooperation to help meet other nuclear threats and help repair U.S.-Russian relations. The time to begin is now.

Reactions to President Obama's Position on Nuclear Weapons

Here are three newspaper articles on the subject:
1. Top U.S. General Spurns Obama Pledge to Reduce Nuclear Alert Posture;
2. Arms control's dangerous allure; and
3. France rejects White House nuclear disarmament proposals.

1. Top U.S. General Spurns Obama Pledge to Reduce Nuclear Alert Posture

Friday, Feb. 27, 2009
By Elaine M. Grossman, *Global Security Newswire*

ORLANDO, Fla. -- The nation's most senior nuclear combat commander yesterday took issue with U.S. President Barack Obama's characterization of U.S. atomic weapons as being on "hair-trigger alert" and warned against reducing the arsenal's launch readiness.

"The alert postures that we are in today are appropriate, given our strategy and guidance and policy," Air Force Gen. Kevin Chilton, who heads U.S. Strategic Command, said at a press conference here.

The White House says Obama intends to make good on a campaign promise to "work with Russia to take U.S. and Russian ballistic missiles off hair-trigger alert."

There are growing international calls to do just that. Six nations, including China, New Zealand and Switzerland, recently pressed the U.N. General Assembly to pass a resolution demanding that the world's nuclear weapons be removed from a status that would allow them to be launched in minutes.

The United States keeps roughly 1,000 nuclear warheads on alert atop ICBMs and submarine-launched ballistic missiles, according to Hans Kristensen, who directs the Federation of American Scientists' Nuclear Information Project in Washington. The land-based missiles can be fired three to four minutes after a presidential order, while the submarine weapons require roughly 12 minutes' notice prior to launch, he said.

U.S. President George H.W. Bush unilaterally took the nation's bomber aircraft off of alert in 1991.

Russia, which has long opposed de-alerting measures for its own force, retains approximately 1,200 warheads at top readiness, nearly all of them on ICBMs, Kristensen said. The British and French together account for roughly 112 nuclear warheads on alert, though he said their weapons might require days' notice to launch.

Chilton said it is misleading to use the term "hair-trigger" when describing the U.S. arsenal, which he said remains safe from accidental or unauthorized launch.

"It conjures a drawn weapon in the hands of somebody," said the general, speaking at a two-day conference on air warfare. "And their finger's on the trigger. And you're worried they might sneeze, because it is so sensitive."

However, the "reality of our alert posture today," he said, is that "the weapon is in the holster."

Continuing the analogy, Chilton said the holster for nuclear weapons "has two combination locks on it," it "takes two people to open those locks," and "they can't do it without authenticated orders from the president of the United States."

At a separate press conference a few minutes earlier, Air Force Chief of Staff Gen. Norton Schwartz also sought to "push back a little" on the notion that "these things are very close to launching."

"That's anything but the case," Schwartz said. "There is a rigorous discipline [and] process involved, should that ever be required, and it is anything but hair trigger."

The Air Force is responsible for managing the ICBM and strategic bomber legs of the U.S. nuclear triad, while the Navy handles submarine-based missiles.

Schwartz became his service's chief of staff last August after Defense Secretary Robert Gates fired Gen. Michael Moseley and Air Force Secretary Michael Wynne, citing dissatisfaction with their management of nuclear weapons.

The Air Force discovered last year that mislabeled ICBM fuses had been mistakenly shipped to Taiwan in 2006. In 2007, a bomber aircraft crew transported six cruise missiles across several U.S. states, unaware that the weapons were armed with nuclear warheads.

Schwartz yesterday appeared to suggest that the U.S. military has not yet been asked to review the issue or to determine how Obama's de-alerting pledge might be implemented. He said a description of the policy posted on the White House Web site falls short of "formal direction to study something or do something."

"This matter has been evaluated over the years on numerous occasions," said the Air Force chief. "I have no doubt that we've thought about it. We certainly can and will look at it again, if that's what the new defense team wishes. ... But we'll wait for an appropriate assignment from the White House or from the Office of the Secretary [of Defense] to do that."

For his part, Chilton described a process of "de-alerting" as a fairly radical step.

Returning to the analogy of a holstered weapon, Chilton said a lower level of readiness for the nuclear stockpile would be like "taking the gun apart and mailing pieces of it to various parts of the country. And then when you're in crisis, deciding to reassemble it.

"And we have to ask ourselves: Can we afford that time period for the delivery of the pieces to put it back together?" he continued. "Is that the posture we want to be in as we [review] policy, strategy, force structure and posturing of forces?"

That broad analysis is to take place during the Nuclear Posture Review, a congressionally mandated Defense Department study that is set to begin this year. It is expected to take a fresh look at the nation's deterrence posture and potentially recommend changes in the nuclear weapons approach, given current and anticipated threats.

Kristensen said Chilton appeared to depict only the most extreme scenario for de-alerting the nuclear force, while Obama might opt instead for more incremental measures.

"There is a wide range of measures you could take, from taking the entire force off of alert, to biting off the edges of the alert force in terms of gradually reducing the alert force or ... [adding] delays in the launch sequence," he told *Global Security Newswire* today.

One underlying objective of building more time into the nuclear-weapons launch process could be to offer a longer window for a president to weigh and potentially reverse a momentous strike order, Kristensen said. He added that Bush's decision to reduce bomber aircraft readiness has not weakened the U.S. deterrence posture.

"We have already taken the bombers off of alert ... and no one has attacked us in almost two decades," Kristensen said. "[Obama] is the one to make the decision ... because if you leave it to the warfighters and the strategists, then it's always going to be impossible to do anything that will change the status quo."

On a related issue, Schwartz raised the prospect that a new nuclear and conventional long-range bomber might not be fielded by 2018 to replace B-2 and B-52 aircraft, as his predecessor had assured (See *GSN*, Oct. 25, 2007).

"One of the things in a period of austerity is having acquisition programs that deliver on time and on cost," Schwartz told reporters. "And so whether it's 2018 or not, I think, is less important to me than having a viable, manageable program which will actually deliver at end-game."

Air Force Secretary Michael Donley -- a Bush administration appointee the White House announced yesterday it would retain -- said the bomber's prospects are under closed-door discussion as the Pentagon debates the 2010 defense spending plan and embarks on longer-term reviews.

"We don't have any determined outcomes yet on systems of that nature," said Donley, sitting alongside Schwartz at the afternoon press conference. Both noted their view that a new bomber continues to be needed in the coming years.

2. "Arms control's dangerous allure" by John Bolton

The Washington Times, February 27, 2009

The Ringwraiths of arms control are again with us, returned from well-deserved obscurity, and back in the saddle in Washington. Through public statements and private preparations the Obama administration is signaling clearly that its approach to Russia will center on Cold War-era arms control precepts and objectives.

Although the Washington-Moscow relationship has, at Moscow's behest, become increasingly contentious and unpleasant, arms control is an odd and backward-looking way to try to improve relations and ameliorate Russia's objectionable international conduct. A long Cold War history demonstrates that arms control tends to make the relationship even more adversarial than it needs to be, concentrates attention on peripheral issues, and fails to deliver the security that supposedly is its central objective.

The Obama arms control agenda reflects the longstanding, attractive and woefully simplistic notion that ever-lower numbers of Russian and American nuclear weapons will create a more stable strategic relationship, diminishing the threat of nuclear war. Arms controllers, relying on this superficial analysis for decades, argued that reducing weapons levels would not harm U.S. security because nuclear war was so destructive it was simply unthinkable, a concept known as "automatic deterrence." Later, they adopted a slightly more nuanced position, acknowledging the need for a small nuclear force that could survive a first strike, thus providing a "second strike" capability. These flawed theories are back from the dead.

Accordingly, we now see suggestions for U.S. weapons levels that have more to do with numerology than national security. Moreover, the Obama approach appears to ignore the 2002 Treaty of Moscow, which represented a substantial change in managing strategic relations between America and Russia, a change also reflected in U.S. development of strategic missile

defense capabilities. Ironically, the treaty actually reflected the reduced role of nuclear weapons in American strategy and enhanced roles for long-range, precision-guided conventional weapons that the Obama administration now risks reversing by returning to the arms-control approach of the SALT (strategic arms limitations) and START (strategic arms reduction) models.

What should we do instead, and on what should Congress insist before the negotiations proceed beyond the point of no return?

First, we must understand that agreed-upon levels of nuclear weapons address only the most visible areas of military competition, not others that actually may be more important. This has been a central fallacy of arms control since the post-World War I naval arms negotiations, ignoring as it does wide and important variances between the United States and Russia, such as weapons production capabilities, levels of tactical nuclear weapons, intelligence assets, and total national economic strength.

Moreover, U.S. nuclear capabilities provide a deterrence umbrella for its allied countries, whereas Russia plays no such positive role.

Thus, the two countries are simply not "symmetrical," but treaties with specific warhead limits gave the illusion they are.

Second, the United States should decide what levels of nuclear forces we actually need, and make that our objective, not pursuing an arbitrary number and then trying to find national security justification for it. The latter approach is not only dangerous but opens us to manipulation by our negotiating adversaries, since under this approach one number has no greater intrinsic security value than another. This is especially true when we understand that no current or prior arms control treaty has ever actually required destruction of existing warheads, nor do we have any known verification methodology that could actually demonstrate compliance even if we could reach agreement on warhead destruction as an objective.

Third, how we "count" nuclear capabilities is important. This is not a merely technical issue, but carries profound implications for both our nuclear and conventional capabilities. Under START counting rules, weapons levels were imputed based on the capabilities of delivery systems, rather than actual warhead levels. Thus, for example, each Soviet SS-18, capable of carrying 10 nuclear warheads was imputed to do so no matter how many were actually under the nosecones.

Counting actual numbers is far more accurate. In the Treaty of Moscow, we did so by counting only operationally deployed strategic warheads rather than using imputed levels derived from artificial counting rules. Not only was this more accurate, it freed up large numbers of delivery systems for conventional warheads, making them more useful against the nonnuclear threats we increasingly face.

Abandoning Treaty of Moscow concepts and retreating to the START approach would severely impede U.S. conventional capabilities well into the future without in any way improving the U.S. strategic nuclear posture.

Arms control is one area where there will be substantial "change" between the Bush and Obama administrations, one fraught with considerable risks, especially if future negotiations embrace, as Russia wants, missile defense and space-based capabilities.

The real arms control debate is not between those relaxed about nuclear war and those seeking to avoid it, but between those who approach the problem realistically and empirically, and those who approach it as a matter of dogma. Unfortunately, the Ringwraiths now have the upper hand.

John Bolton is the former permanent U.S. representative to the United Nations.

3. France rejects White House nuclear disarmament proposals

Barack Obama and Nicolas Sarkozy to bury the hatchet

The Daily Telegraph
By Henry Samuel in Paris
29 March 2010

He was the only Western leader who refused to join the scramble to ingratiate himself with Barack Obama

Irritated by hysteria surrounding the newcomer, Nicolas Sarkozy spent the year after his election issuing veiled insults and patronising digs.

Elysée officials briefed behind the scenes that the US president was a "cold fish", telling Le Figaro that "relations were easier with Bush".

He went on to deride Mr Obama's calls for a nuclear weapons-free world as "naive" and bragged that while he had enacted a cascade of reforms, his US counterpart had placed "all his bets on one" by concentrating on health care. As he rode high in the polls, the French president even crowed that Mr Obama had "lost three elections" since taking office.

The insults were so regular that Mr Obama responded by turning down an invitation to the Elysée after the commemoration of the Normandy landings last June.

But after suffering wipeout in local elections this month and facing speculation that his marriage is on the rocks, Mr Sarkozy has suddenly found the tables have turned.

It is the French president who is struggling with the lowest approval ratings since taking office, as Mr Obama rides high on the back of finally getting his health reform passed and negotiating a nuclear disarmament deal with Russia. Mr Sarkozy now desperately needs the US trip to be a success to help restore his image as the man who would return France to former glory.

So when he arrived in Washington yesterday, Mr Sarkozy was ecstatic to learn the magnanimous Mr Obama had decided to invite him round for dinner.

The two leaders will attempt to finally bury the hatchet when they meet for a private meal with the two leaders' wives at the White House.

The meal and a bilateral meeting will, said one Sarkozy aide, end "once and for all" the reports that all is not rosy between the frenetic Mr Sarkozy and his unflappable American counterpart.

The Elysée even claimed tonight's (Tuesday) intimate soirée in the East Wing with first wives Carla and Michelle was "without precedent" and "testimony to a special friendship" between the American and French leaders.

While not rushing to welcome Mr Sarkozy – the 9th European leader to have been invited to the White House since he took office – commentators say the US president has decided it would be better to bite his tongue for the greater good of improved relations.

Professor Michael Cox, a transatlantic relations specialist at the London School of Economics, said: “First, for all his faults, Sarkozy is a French president who for once is not anti-American and took France back into Nato's military command structure.

“Second, Obama will be well-advised that Sarkozy is in a tight spot after his regional election defeat and needs a pat on the head. He is seen as a good guy compared to French Socialists who are traditionally Gaullist and anti-American.

“Third, there is a European dimension: Obama thinks that the French and Germans still run Europe, not Herman Van Rompuy and Catherine Ashton, so he needs to speak to them.”

Mr Sarkozy began his US trip on Sunday with a private visit to New York where he was seen snuggling up to his wife in a restaurant, belying recent rumours that their marriage was in trouble.

Besides the first couple's East Wing dinner, the visit is scheduled to include a joint press conference in the White House rose garden tomorrow.

The two leaders are expected to find common ground on the Middle East and on pushing for tougher sanctions against Iran. But President Obama is expected to reiterate US concern over France's announcement that it will sell four warships to Russia.

The Case of the Democratic Peoples Republic of Korea

Here are three texts:

1. "United in Defiance" (artículo de *The Economist*, 2009);
2. Miguel Marín Bosch, "Testing … one, two, three … testing" (2009)
3. Resolution 1874 of the UN Security Council, 12 June 2009

1. "United in Defiance" (article in *The Economist*, 2009)
Proliferation
United in defiance
Feb 26th 2009
From *The Economist* print edition

THE PROLIFERATION CHAIN THAT LINKS NORTH KOREA AND IRAN

THE final frontier is being assaulted by a couple of troubling pioneers. North Korean officials are boasting that they will soon launch a rocket that will lift a communications satellite into space. With this defiant spectacular, they seem to be cocking a snook at America, South Korea, Japan, China and Russia, who have been trying through six-party talks to curb North Korea's equally vaunted nuclear-weapons efforts. Meanwhile, earlier in February, Iran—suspected of harbouring similar nuclear ambitions to North Korea's, though it denies this—lifted its own small, supposedly home-made satellite into orbit too.

Both regimes trumpet their space prowess, and indeed such technological feats are not easy to achieve. But how do these "civilian" space efforts complement their terrestrial nuclear work? That is the question that deeply worries outsiders.

India showed the way: its supposedly civilian space programme sometimes won generous outside assistance, even as nuclear help was denied for fear of advancing its suspected weapons-building. As a result of the parallel effort, India now has missiles capable of delivering nuclear warheads on targets not just throughout Pakistan, but deep inside China too. Quite simply, the technology needed to lift a satellite off the launch pad and shield it from damage on its way into space is indistinguishable from that needed to launch a far-flying nuclear-tipped ballistic missile.

North Korea and Iran appear to be following suit. Kim Jong Il's regime claims to have first embarked on its space adventures in 1998, when it launched a Taepodong-1 rocket over an alarmed Japan, across the Pacific towards a startled America. Mr Kim even issued a stamp to celebrate what was said to have been the successful launch of a satellite that had since been warbling patriotic tunes back from space. Oddly, no one else ever picked up its signal. A failed missile test, concluded America, after watching the rocket plop down in the Pacific.

Whether the satellite was a figment of Mr Kim's imagination hardly matters. The latest promised test-launch will violate resolution 1718, which bans North Korea from all such activity. This was passed by the United Nations Security Council in 2006, unusually with China's backing, after North Korea first tried (but failed) to launch a still more capable missile and then conducted what is thought to have been its first nuclear test. Its determination now to carry on launching regardless has led to speculation in some quarters that the missile, assuming it

launches successfully, could even be shot down by the new ballistic-missile defences that Japan and America have been frantically cobbling together to protect Japan from North Korea's missile threats.

Mr Kim seems to be using his missile preparations to grab the attention of the new Obama administration in America, and to raise the ante in the six-party nuclear talks. These have been stalled for months because of North Korea's refusal to accept proper verification of its nuclear programmes; that will remain the case—or so the other five parties suspect—until the regime in Pyongyang squeezes extra goodies out of the Americans.

The test, if it goes ahead, will also roughly coincide with an annual joint military exercise between America and South Korea, at a time when relations between South and North have deteriorated badly. The North Korean media claim, not for the first time, that the two Koreas are at "the brink of war", and that America is preparing a pre-emptive strike against the North.

Certainly Mr Kim is determined to look as threatening as possible. Writing in the *Washington Post* on February 19th, Selig Harrison, who is a frequent visitor to North Korea, said that the foreign-ministry and defence officials he talked to recently had left him with the impression that North Korea's stash of plutonium (which is exhibit-A in the six-party talks, though there are lingering concerns that Mr Kim has also dabbled in enriched uranium, another possible bomb ingredient) had already been "weaponised"—that is, converted into missile warheads.

If that is the case, then North Korea's "satellite" test will be doubly alarming. Although the 2006 nuclear test was thought to have fizzled, it may nonetheless have helped North Korea master a design for the sort of smaller warhead that a missile could carry.

But there is a further, bigger, worry even than Mr Kim's theatricals. North Korea and Iran have long been collaborating on building missiles; the two are thought to have worked together in Iran to improve on basic North Korean missile designs at times when it has been impolitic for the North to test for itself. Iran has learned a great deal from this work; recently it has been making strides in its own missile technology. No one knows whether this collaboration has included warhead or other nuclear work too (though North Korea appears to have helped Syria to build a suspected and almost completed plutonium-producing reactor, which Israel destroyed in an air raid in 2007).

STRUTTING ITS STUFF

North Korea is evidently quite happy to brandish its bombs. It flounced out of the Nuclear Non-Proliferation Treaty back in 2003 after evidence emerged that it had been cheating on an earlier denuclearisation deal with America. Iran, by contrast, claims to be an NPT member in good standing. It insists that it has no use for nuclear weapons, and that all its nuclear activities, including a uranium-enrichment effort that continues to expand in defiance of UN Security Council resolutions and sanctions, are entirely peaceful in intent; the uranium, it says, is simply intended to fuel a future fleet of power stations.

Nothing if not brazen, it claims backhanded vindication in a controversial National Intelligence Estimate by America's spooks, which concluded a little over a year ago that Iran had indeed had a bomb programme, but that it had stopped in 2003 when its formerly secret uranium activities came to light. But what that report failed to explain clearly was that Iran was continuing work quite openly on the two other necessary components of a weapons programme:

first, uranium enrichment (with a bit of time and redirection of piping, low-enriched uranium can easily be turned into the highly enriched sort needed for a bomb) and efforts to produce plutonium; and second, the efforts under way for the development of a missile that could carry a nuclear warhead.

Iran is the only country so far to have built a uranium-enrichment plant before having even a single working reactor that would need its uranium as fuel for the reactor core. Even a Russian-built reactor at Bushehr that is now being put through its technical paces before coming on-stream later this year will operate on Russian-supplied fuel. Nor does it have sufficient uranium ore of its own to sustain a large-scale enrichment effort. Since uranium exports to Iran are prohibited by UN sanctions, its only option eventually will be to import more of the stuff illegally, using the nuclear black market that enabled it to get secretly started in the uranium business.

Nonetheless, Iran has just passed another nuclear milestone. According to figures contained in a new report circulated to the 35-nation board of the International Atomic Energy Agency (IAEA), the UN's nuclear guardian, ahead of a meeting that opens on March 2nd, Iran has accumulated an unexpectedly large amount of low-enriched uranium—enough, says the Washington-based Institute for Science and International Security, for Iran to be confident that, should it proceed with further enrichment, it will have sufficient material for a single nuclear weapon.

What is more, the agency reported a big discrepancy (about 30%) between the amount of uranium Iran had earlier said it was producing and the amount now stockpiled. It is often hard to guess the real output of enrichment centrifuge machines, like Iran's, in their first stages of operation. However, in the view of other experts, even rough calculations based on earlier figures should have told inspectors that the Iranian estimate was far too low. The IAEA is confident that all the enriched uranium is properly safeguarded. But safeguards are something Iran disregards when it suits.

There have long been suspicions that Iran may be engaged in a parallel, possibly military, enrichment effort: in April 2006 without notice to inspectors, it removed and then put back a cylinder of the gas from which enriched uranium of either sort is spun, so that inspectors briefly lost track of the material it contained. When they were subsequently measured, the cylinder's contents were deemed to be correct within an acceptable margin of error. But that does not rule out the possibility that a small quantity of the gas, calculated to fall within that error margin, was diverted to test some hidden centrifuges.

As the IAEA's latest report makes clear, Iran is also refusing them access, as required under its safeguards obligations, to the site where it is building its own plutonium-producing reactor, one that just happens to be ideally sized for making bomb material. And it will not answer increasingly pointed questions from inspectors about studies and other information provided by several governments that appear to show weapons-related work on uranium conversion, on high explosive testing for nuclear-trigger devices and—the evidence behind the doubts about Iran's "space" programme—on development work to redesign the inner cone of a re-entry vehicle for Iran's Shahab-3 missile, so as to accommodate a nuclear warhead.

North Korea's neighbours may be prepared simply to huddle together, trusting in the best efforts of diplomacy and missile defences. But countries in the vicinity of Iran are becoming

more agitated. Israel's probable new prime minister, Binyamin Netanyahu, has said a nuclear Iran poses a far graver threat than the global recession.

So Barack Obama and his new team—he has now appointed special envoys to deal with both Iran and North Korea—don't have much time to show that their promised readiness to talk directly to Iran can produce results. And unless results are forthcoming, the long-running drama over Iran's nuclear ambitions could rapidly escalate into a global crisis.

2. "Testing … one, two, three … testing" (28 May 2009)

Miguel Marín Bosch [1]

It never rains but it pours. Just when it seemed that the world was moving towards nuclear disarmament, the Democratic People's Republic of Korea (DPRK) pulls off one of its periodic and mischievous military stunts. Last Monday Pyongyang announced it had again tested a nuclear device. It was its second test. The first, in 2006, was not very successful. What is Kim Jong Il up to?

The international reaction to this second test was immediate and there has been much speculation concerning the purpose of this explosión. From a scientific and technical point of view it is probably an attempt to show the world that it does have a nuclear capability. From the outset countries that have played the nuclear card have had to tell the world: here I am, I'm a nuclear Power. And they do so with a test. In the DPRK's case, the first one was a dud. This second one was not.

Moreover, to have a credible nuclear capability one needs a system to deliver the bombs. And here the DPRK's timing has been better. Its initial test three years ago would not have provoked such concern among its neighbors had it not been launching for over a decade short, medium and long-range missiles. The Republic of Korea and Japan felt threatened. Now the North Koreans have gotten their act together by testing a missile last Tuesday. In other words, in a 48-hour period they were able to demonstrate the two elements mentioned before: a nuclear device and its delivery system.

From a political point of view, this test by the DPRK could mean different things. One is linked to the question of succession which some insist is around the corner in Pyongyang. According to this hypothesis, Kim Jong Il is in failing health and the powers that be would like a smooth transition, as in 1994 when, after the death of Kim Il Sung, the founder of the DPRK in 1948, his son took over. Now some have in mind his grandson Kim Jong, who is only 25 years of age. Perhaps this youngster will perpetuate the dynasty. In any case, the nuclear test served to remind the North Korean population that, despite the many shortages the country must endure (especially foods and energy), the Kim family is looking out for their security in light of the threats from abroad.

Another political hypothesis is that Pyongyang wants the new United States president to pay attention to its government. From the beginning of his administration Barack Obama has been trying to solve a wide variety of problems. He has certainly not devoted much time to the DPRK. Now he will have to. And the North Koreans want him to deal directly with them, bypassing the multilateral diplomatic channels Washington has relied on in the past, especially

[1] This article appeared in Spanish in the Mexico City newspaper, *LA JORNADA* on 28 May 2009.

the United Nations Security Council and the so-called six-party talks (DPRK, South Korea, Japan, China, Russia and the United States).

Is this the challenge Joseph Biden, then senator and Democratic vice-presidential candidate, alluded to in October 2008? On that occasion Biden predicted that at the beginning of his administration President Obama would face an international crisis that would test his mettle as a leader.

Obama has now reacted and has done so in a predictable manner. That same Monday he called the North Korean nuclear test a "blatant defiance of international law," adding that it was not only deepening its own isolation but inviting greater international pressure as well. And he concluded by stating that the DPRK "will not find security and respect through threats and illegal weapons."

But, why "illegal"? And what will a "greater international presssure" turn out to be?

If the DPRK's nuclear weapons are illegal, so are those of the United States, Russia, the United Kingdom, France, China, Israel, India and Pakistan. Pyongyang has the right to develop a nuclear arsenal. Clearly, when it signed the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), it committed itself not to do so. But the NPT itself allows for the possibility of a country withdrawing from it if decides that extraordinary events have jeopardized its supreme interests. And the DPRK withdrew from the NPT in 1993, then returned, and withdrew again in 2003.

What can the Security Council do beyond its resolutions of 2006? Then it demanded that the DPRK cease launching missiles and abandon its nuclear program. It imposed sanctions, including a ban on imports of materials that could be used to manufacture nuclear weapons.

By a quirk of fate, I was able to follow closely this question. When in 1993 President Bill Clinton came to power in Washington, I had already spent almost four years in Geneva as ambassador. One day my colleague from the DPRK paid me a visit. Ambassador Ri Tcheul had been in Geneva since 1987 and he is still there almost two decades later. He was his country's permanent representative to the international organizations headquartered in that city. It seems his government has taken seriously the meaning of permament representative.

Ambassador Ri came to see me on many occasions to talk about the new administration in Washington. He wanted my opinion as to how best to deal with those officials. From the outset I told him he would find honest and reasonable persons ready to listen. Ri revealed to me his country's intentions regarding the NPT and shared with me much of what has occurred since then. The DPRK continues to test.

3. Resolution 1874 adopted by the UN Security Council on 12 June 2009

The Security Council,

Recalling its previous relevant resolutions, including resolution 825 (1993), resolution 1540 (2004), resolution 1695 (2006), and, in particular, resolution 1718 (2006), as well as the statements of its President of 6 October 2006 (S/PRST/2006/41) and 13 April 2009 (S/PRST/2009/7),

Reaffirming that proliferation of nuclear, chemical and biological weapons, as well as their means of delivery, constitutes a threat to international peace and security,

Expressing the gravest concern at the nuclear test conducted by the Democratic People's Republic of Korea (the DPRK) on 25 May 2009 (local time) in violation of resolution 1718 (2006), and at the challenge such a test constitutes to the Treaty on Non-Proliferation of Nuclear Weapons (the NPT) and to international efforts aimed at strengthening the global regime of non-proliferation of nuclear weapons towards the 2010 NPT Review Conference, and the danger it poses to peace and stability in the region and beyond,

Stressing its collective support for the NPT and commitment to strengthen the Treaty in all its aspects, and global efforts towards nuclear non-proliferation and nuclear disarmament, and *recalling* that the DPRK cannot have the status of a nuclear-weapon State in accordance with the NPT in any case,

Deploring the DPRK's announcement of withdrawal from the NPT and its pursuit of nuclear weapons,

Underlining once again the importance that the DPRK respond to other security and humanitarian concerns of the international community,

Underlining also that measures imposed by this resolution are not intended to have adverse humanitarian consequences for the civilian population of the DPRK,

Expressing its gravest concern that the nuclear test and missile activities carried out by the DPRK have further generated increased tension in the region and beyond, and *determining* that there continues to exist a clear threat to international peace and security,

Reaffirming the importance that all Member States uphold the purposes and principles of the Charter of the United Nations,

Acting under Chapter VII of the Charter of the United Nations, and taking measures under its Article 41,

1. *Condemns* in the strongest terms the nuclear test conducted by the DPRK on 25 May 2009 (local time) in violation and flagrant disregard of its relevant resolutions, in particular resolutions 1695 (2006) and 1718 (2006), and the statement of its President of 13 April 2009 (S/PRST/2009/7);

2. *Demands* that the DPRK not conduct any further nuclear test or any launch using ballistic missile technology;

3. *Decides* that the DPRK shall suspend all activities related to its ballistic missile programme and in this context re-establish its pre-existing commitments to a moratorium on missile launches;

4. *Demands* that the DPRK immediately comply fully with its obligations under relevant Security Council resolutions, in particular resolution 1718 (2006);

5. *Demands* that the DPRK immediately retract its announcement of withdrawal from the NPT;

6. *Demands* further that the DPRK return at an early date to the NPT and International Atomic Energy Agency (IAEA) safeguards, bearing in mind the rights and obligations of States Parties to the NPT, and *underlines* the need for all States Parties to the NPT to continue to comply with their Treaty obligations;

7. *Calls upon* all Member States to implement their obligations pursuant to resolution 1718 (2006), including with respect to designations made by the Committee established pursu-

ant to resolution 1718 (2006) (the Committee) pursuant to the statement of its President of 13 April 2009 (S/PRST/2009/7);

8. *Decides* that the DPRK shall abandon all nuclear weapons and existing nuclear programmes in a complete, verifiable and irreversible manner and immediately cease all related activities, shall act strictly in accordance with the obligations applicable to parties under the NPT and the terms and conditions of the IAEA Safeguards Agreement (IAEA INFCIRC/403) and shall provide the IAEA transparency measures extending beyond these requirements, including such access to individuals, documentation, equipment and facilities as may be required and deemed necessary by the IAEA;

9. *Decides* that the measures in paragraph 8(b) of resolution 1718 (2006) shall also apply to all arms and related materiel, as well as to financial transactions, technical training, advice, services or assistance related to the provision, manufacture, maintenance or use of such arms or materiel;

10. *Decides* that the measures in paragraph 8(a) of resolution 1718 (2006) shall also apply to all arms and related materiel, as well as to financial transactions, technical training, advice, services or assistance related to the provision, manufacture, maintenance or use of such arms, except for small arms and light weapons and their related materiel, and *calls upon* States to exercise vigilance over the direct or indirect supply, sale or transfer to the DPRK of small arms or light weapons, and further *decides* that States shall notify the Committee at least five days prior to selling, supplying or transferring small arms or light weapons to the DPRK;

11. *Calls upon* all States to inspect, in accordance with their national authorities and legislation, and consistent with international law, all cargo to and from the DPRK, in their territory, including seaports and airports, if the State concerned has information that provides reasonable grounds to believe the cargo contains items the supply, sale, transfer, or export of which is prohibited by paragraph 8 (a), 8 (b), or 8 (c) of resolution 1718 or by paragraph 9 or 10 of this resolution, for the purpose of ensuring strict implementation of those provisions;

12, *Calls upon* all Member States to inspect vessels, with the consent of the flag State, on the high seas, if they have information that provides reasonable grounds to believe that the cargo of such vessels contains items the supply, sale, transfer, or export of which is prohibited by paragraph 8 (a), 8 (b), or 8 (c) of resolution 1718 (2006) or by paragraph 9 or 10 of this resolution, for the purpose of ensuring strict implementation of those provisions;

13. *Calls upon* all States to cooperate with inspections pursuant to paragraphs 11 and 12, and, if the flag State does not consent to inspection on the high seas, *decides* that the flag State shall direct the vessel to proceed to an appropriate and convenient port for the required inspection by the local authorities pursuant to paragraph 11;

14. *Decides* to authorize all Member States to, and that all Member States shall, seize and dispose of items the supply, sale, transfer, or export of which is prohibited by paragraph 8 (a), 8 (b), or 8 (c) of resolution 1718 or by paragraph 9 or 10 of this resolution that are identified in inspections pursuant to paragraph 11, 12, or 13 in a manner that is not inconsistent with their obligations under applicable Security Council resolutions, including resolution 1540 (2004), as well as any obligations of parties to the NPT, the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction of 29 April 1997, and the Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction of 10 April 1972, and *decides* further that all States shall cooperate in such efforts;

15. *Requires* any Member State, when it undertakes an inspection pursuant to paragraph 11, 12, or 13, or seizes and disposes of cargo pursuant to paragraph 14, to submit promptly reports containing relevant details to the Committee on the inspection, seizure and disposal;

16. *Requires* any Member State, when it does not receive the cooperation of a flag State pursuant to paragraph 12 or 13 to submit promptly to the Committee a report containing relevant details;

17. *Decides* that Member States shall prohibit the provision by their nationals or from their territory of bunkering services, such as provision of fuel or supplies, or other servicing of vessels, to DPRK vessels if they have information that provides reasonable grounds to believe they are carrying items the supply, sale, transfer, or export of which is prohibited by paragraph 8 (a), 8 (b), or 8 (c) of resolution 1718 (2006) or by paragraph 9 or 10 of this resolution, unless provision of such services is necessary for humanitarian purposes or until such time as the cargo has been inspected, and seized and disposed of if necessary, and *underlines* that this paragraph is not intended to affect legal economic activities;

18. *Calls upon* Member States, in addition to implementing their obligations pursuant to paragraphs 8 (d) and (e) of resolution 1718 (2006), to prevent the provision of financial services or the transfer to, through, or from their territory, or to or by their nationals or entities organized under their laws (including branches abroad), or persons or financial institutions in their territory, of any financial or other assets or resources that could contribute to the DPRK's nuclear-related, ballistic missile-related, or other weapons of mass destruction-related programmes or activities, including by freezing any financial or other assets or resources on their territories or that hereafter come within their territories, or that are subject to their jurisdiction or that hereafter become subject to their jurisdiction, that are associated with such programmes or activities and applying enhanced monitoring to prevent all such transactions in accordance with their national authorities and legislation;

19. *Calls upon* all Member States and international financial and credit institutions not to enter into new commitments for grants, financial assistance, or concessional loans to the DPRK, except for humanitarian and developmental purposes directly addressing the needs of the civilian population, or the promotion of denuclearization, and also *calls upon* States to exercise enhanced vigilance with a view to reducing current commitments;

20. *Calls upon* all Member States not to provide public financial support for trade with the DPRK (including the granting of export credits, guarantees or insurance to their nationals or entities involved in such trade) where such financial support could contribute to the DPRK's nuclear-related or ballistic missile-related or other WMD-related programmes or activities;

21. *Emphasizes* that all Member States should comply with the provisions of paragraphs 8(a)(iii) and 8(d) of resolution 1718 (2006) without prejudice to the activities of the diplomatic missions in the DPRK pursuant to the Vienna Convention on Diplomatic Relations;

22. *Calls upon* all Member States to report to the Security Council within forty-five days of the adoption of this resolution and thereafter upon request by the Committee on concrete measures they have taken in order to implement effectively the provisions of paragraph 8 of resolution 1718 (2006), as well as paragraphs 9 and 10 of this resolution, as well as financial measures set out in paragraphs 18, 19 and 20 of this resolution;

23. *Decides* that the measures set out at paragraphs 8 (a), 8 (b) and 8 (c) of resolution 1718 (2006) shall also apply to the items listed in INFCIRC/254/Rev.9/Part 1a and INFCIRC/254/Rev.7/Part 2a;

24. *Decides* to adjust the measures imposed by paragraph 8 of resolution 1718 (2006) and this resolution, including through the designation of entities, goods, and individuals, and directs the Committee to undertake its tasks to this effect and to report to the Security Council within 30 days of adoption of this resolution, and further *decides* that, if the Committee has not acted, then the Security Council will complete action to adjust the measures within seven days of receiving that report;

25. *Decides* that the Committee shall intensify its efforts to promote the full implementation of resolution 1718 (2006), the statement of its President of 13 April 2009 (S/PRST/2009/7) and this resolution, through a work programme covering compliance, investigations, outreach, dialogue, assistance and cooperation, to be submitted to the Council by 15 July 2009, and that it shall also receive and consider reports from Member States pursuant to paragraphs 10, 15, 16 and 22 of this resolution;

26. *Requests* the Secretary-General to create for an initial period of one year, in consultation with the Committee, a group of up to seven experts (Panel of Experts), acting under the direction of the Committee to carry out the following tasks: (a) assist the Committee in carrying out its mandate as specified in resolution 1718 (2006) and the functions specified in paragraph 25 of this resolution; (b) gather, examine and analyse information from States, relevant United Nations bodies and other interested parties regarding the implementation of the measures imposed in resolution 1718 (2006) and in this resolution, in particular incidents of non-compliance; (c) make recommendations on actions the Council, or the Committee or Member States, may consider to improve implementation of the measures imposed in resolution 1718 (2006) and in this resolution; and (d) provide an interim report on its work to the Council no later than 90 days after adoption of this resolution, and a final report to the Council no later than 30 days prior to termination of its mandate with its findings and recommendations;

27. *Urges* all States, relevant United Nations bodies and other interested parties, to cooperate fully with the Committee and the Panel of Experts, in particular by supplying any information at their disposal on the implementation of the measures imposed by resolution 1718 (2006) and this resolution;

28. *Calls upon* all Member States to exercise vigilance and prevent specialized teaching or training of DPRK nationals within their territories or by their nationals, of disciplines which could contribute to the DPRK's proliferation sensitive nuclear activities and the development of nuclear weapon delivery systems;

29. *Calls upon* the DPRK to join the Comprehensive Nuclear-Test-Ban Treaty at the earliest date;

30. *Supports* peaceful dialogue, *calls upon* the DPRK to return immediately to the Six-Party Talks without precondition, and *urges* all the participants to intensify their efforts on the full and expeditious implementation of the Joint Statement issued on 19 September 2005 and the joint documents of 13 February 2007 and 3 October 2007, by China, the DPRK, Japan, the Republic of Korea, the Russian Federation and the United States, with a view to achieving the verifiable denuclearization of the Korean Peninsula and to maintain peace and stability on the Korean Peninsula and in North-East Asia;

31. *Expresses* its commitment to a peaceful, diplomatic and political solution to the situation and welcomes efforts by Council members as well as other Member States to facilitate a peaceful and comprehensive solution through dialogue and to refrain from any actions that might aggravate tensions;

32. *Affirms* that it shall keep the DPRK's actions under continuous review and that it shall be prepared to review the appropriateness of the measures contained in paragraph 8 of resolution 1718 (2006) and relevant paragraphs of this resolution, including the strengthening, modification, suspension or lifting of the measures, as may be needed at that time in light of the DPRK's compliance with relevant provisions of resolution 1718 (2006) and this resolution;

33. *Underlines* that further decisions will be required, should additional measures be necessary;

34. *Decides* to remain actively seized of the matter.

International calls for Nuclear Disarmament gather momentum[1]

President Obama takes office in the United States against a background of increased calls for progress on nuclear disarmament. In an article published in *Frankfurter Allgemeine Zeitung* and the *International Herald Tribune* Helmut Schmidt, Richard von Weizsäcker, Egon Bahr and Hans-Dietrich Genscher lend their support to the Kissinger, Schultz, Perry and Nunn initiatives and argue that "all remaining U.S. nuclear warheads should be withdrawn from German territory."

In the US an oped by Senator Dianne Feinstein appeared in the *Wall Street Journal* calling on Obama to commit to a nuclear-free world. "We must recognize nuclear weapons for what they are -- not a deterrent, but a grave and gathering threat to humanity. As president, Barack Obama should dedicate himself to their world-wide elimination," she writes.

Writing in the *Boston Globe*, to coincide with Hillary Clinton's confirmation hearings as Secretary of State Senate Foreign Relations Committee Chair, John Kerry calls on the Obama administration to "embrace the goal of reducing our strategic nuclear arsenals to 1,000 deployed warheads and work to persuade the Russians to do the same", and commits himself to "begin working to build the necessary bipartisan support for US ratification of the Comprehensive Nuclear Test Ban Treaty".

In the German newspaper Sueddeutche, IAEA Director-General Dr Mohamed El Baradei criticised nuclear sharing provisions in NATO's Strategic Concept: "Imagine this: a country or group of countries serves notice that they plan to withdraw from the nuclear Non-Proliferation Treaty (NPT) in order to acquire nuclear weapons, citing a dangerous deterioration in the international security situation... The international uproar that would follow such a move is predictable. Yet the rationale I have just cited to justify nuclear weapons is taken from NATO's current Strategic Concept."

Former Clinton Administration official Steve Andreasen calls for a rethink on missile defence in the *San Fransico Chronicle*. "If the United States and our European allies could forge agreement with Moscow, it could improve U.S. and European security at far less cost to the American taxpayer, as well as improve relations with Russia and possibly enable cooperation on other difficult issues," he writes.

Whilst on the Guardian's Comment is Free blog, former German Foreign Minister and Vice Chancellor Joschka Fischer calls for a new approach to engagement with Russia. "Why not think about transforming Nato into a real European security system, including Russia?" he argues.

Welcome to Nuclear Non-Proliferation News, a new monthly news service from the Acronym Institute for Disarmament Diplomacy. We aim to provide links to a selection of UK and international news stories relevant to UK and NATO nuclear weapons issues. An archive of press coverage will also be available on our website at: www.acronym.org.uk/news. We welcome your comments and feedback. Please send your comments to martin at acronym.org.uk.

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[1] *Disarmament Diplomacy*, Edition 9, 25 February 2009

Russia and America

And now for a nuclear remake

From *The Economist* print edition March 12th 2009

A WHIFF OF "SUPERPOWER" DIPLOMACY AS ARMS CONTROL AGAIN TOPS THE AGENDA

THE world no longer holds its breath when the leaders of America and Russia meet to talk. But there will be something of the feel of an old newsreel when America's new president, Barack Obama, meets his Russian counterpart, Dmitri Medvedev, early next month at the G20 summit in London and the follow-on 60th anniversary bash for NATO being hosted by Germany and France. That is because, 20 years after the cold war ended, hopes of deeper cuts in Russian and American long-range nuclear weapons are back at the heart of efforts to stabilise a difficult and hitherto deteriorating relationship.

Both sides are signalling a truce. They have fallen out badly in recent years. Russia disliked NATO's eastward expansion and the Bush administration's plans for new missile defences in Europe. America has fretted over Russia's manipulation of gas supplies to pressure Ukraine and other neighbours, and its August war with Georgia, and unilateral recognition of two secessionist bits of Georgian territory. Russia has also dug in its heels at the UN Security Council, so as to limit sanctions on Iran.

Earlier this month America's secretary of state, Hillary Clinton, told the Russian foreign minister, Sergei Lavrov, that America and its allies would never recognise the Georgian enclaves, or Russia's claims to a sphere of influence over "unwilling nations". But she did agree to a restoration of NATO-Russia ties, suspended since the Georgia conflict. A recent letter from Mr Obama to Mr Medvedev reportedly pointed out that, if the Iranian nuclear threat failed to materialise, there would be less need for new missile defences in Europe.

LINKING THE UNLINKABLE?

Russia publicly rejects such linkage. However it appears to have withdrawn a threat made by Mr Medvedev in November to put nuclear-capable missiles in Kaliningrad to target the Poles and Czechs. There are reports too that, at least for now, a brake has been put on the sale of Russia's longer-range and more capable S300 anti-aircraft missiles to Iran; it had already sold Iran a shorter-range system.

Could it be an omen, though, that the chirpy Clinton-Lavrov double-act intended to symbolise this new talkativeness—pressing the "reset button" in America-Russia relations for the cameras (see picture)—got partly lost in translation? Mistakenly the Americans labelled the button in Russian not reset but "overload". That might better describe the difficulties in repairing relations, not least in arms control.

Russia would like America to ratify the Comprehensive Test-Ban Treaty; Mr Obama seems willing to make the case, but it is for Congress, which blocked the CTBT first time round in 1999 in a highly partisan vote, to decide. America and its NATO allies want Russia to end its "suspension" of the treaty governing numbers of troops and equipment and their movements in Europe, and to stick to a 1987 treaty that it has been talking of scrapping which bans both America and Russia from even producing, let alone fielding, any intermediate-range nuclear missiles. Russian officials worry that China is still free to deploy these sorts of missiles near

Russia's borders, but NATO worries that any that Russia built in retaliation could just as easily pose a new threat to Europe.

Some conciliatory moves have already been made. Both America and Russia have declared a readiness to conclude a new legally binding treaty to replace their 1991 strategic arms reduction treaty (called START-1) which expires in December. A replacement is vital, since the 2002 Moscow treaty, signed by George Bush and Vladimir Putin and cutting operationally deployed warheads on each side to no more than 1,700-2,200 (down from START-1's 6,000 apiece) by 2012, relies entirely on the earlier treaty's rules for verification.

Both agree that these START-1 rules are now too costly and complex and can be simplified. They are also both ready for deeper weapons cuts. Russia fears that without an agreement that would cut America's stockpile too, its own slow and mishap-prone efforts to modernise its ageing fleet of long-range missiles will soon leave it at a clear numerical disadvantage. Meanwhile, further arms cuts, both hope, might smooth the path to agreement on boosting the battered Nuclear Non-Proliferation Treaty at its five-yearly review in 2010; the last one ended badly after a diplomatic punch-up between nuclear haves and have-nots over whether disarmament or curbing the proliferation activities of Iran and others should be the priority.

So might an early and radical chop in weapons numbers be announced by the two presidents next month? Mr Obama has already set "getting to zero" as the guiding principle of his nuclear policy, to loud applause from would-be disarmers. Some have speculated that he could go for an eye-catching first cut to 1,000 warheads each, with more to come. But that could be dangerously over-ambitious.

The lower the numbers go, the trickier the problems get. Imagine cutting to, say, 1,500 on each side and imposing stricter counting rules to meet Russian concerns that America could otherwise still rebuild its arsenal a lot faster, if it so chose: that would require a lot more transparency from Russia's defence ministry and arms factories than they have ever accepted.

Meanwhile the Bush administration had started putting conventional warheads on some of America's fast-flying strategic missiles, so as to strike quickly at important terrorist or other targets. Russia will demand tighter curbs on delivery systems, not just new rules for counting warheads; it will also want any missiles dedicated to "prompt global strike" to be counted in the nuclear tally, since they could be switched back to nuclear use.

Go to 1,000 and America at least would have to consider abandoning one leg of its strategic triad of land-based missiles, nuclear-armed submarines and strategic bombers. That is something not best done by presidential fiat, but only after careful consideration. Awkwardly America's next nuclear posture review won't be ready until the end of this year; talks on a START-1 replacement cannot take their cue from that.

In any case, at such low numbers, the smaller arsenals of China, France and Britain (not to mention India, Pakistan and Israel) loom a lot larger. So does the problem of missile defences, and not just in Europe.

Neither side wants to return to a time where Russia measured its GDP in the hours it could keep America at the nuclear negotiating table. But even with the best will, nailing down a new nuclear treaty by year's end will be tough going.

24 September 2009

Security Council
SC/9746

Department of Public Information • News and Media Division • New York

Security Council
6191st Meeting (AM)

HISTORIC SUMMIT OF SECURITY COUNCIL PLEDGES SUPPORT FOR PROGRESS ON STALLED EFFORTS TO END NUCLEAR WEAPONS PROLIFERATION

Resolution 1887 (2009) Adopted with 14 Heads of State, Government Present

At a historic summit meeting presided over by President Barack Obama of the United States and addressed by 13 other Heads of State and Government, the Security Council pledged its backing this morning for broad progress on long-stalled efforts to staunch the proliferation of nuclear weapons and ensure reductions in existing weapons stockpiles, as well as control of fissile material.

Joining President Obama, whose country holds the rotating Council presidency, were United Nations Secretary-General Ban Ki-moon, Presidents Óscar Arias Sánchez of Costa Rica, Stjepan Mesić of Croatia, Dmitry Medvedev of the Russian Federation, Felipe Calderón Hinojosa of Mexico, Heinz Fischer of Austria, Nguyen Minh Triet of Viet Nam, Yoweri Kaguta Museveni of Uganda, Hu Jintao of China, Nicolas Sarkozy of France and Blaise Compaore of Burkina Faso, as well as Prime Ministers Gordon Brown of the United Kingdom, Yukio Hatoyama of Japan and Recep Tayyip Erdoğan of Turkey.

Also addressing the summit were Abdurrahman Mohamed Shalgham, Permanent Representative of Libya, and Mohamed ElBaradei, Director General of the International Atomic Agency (IAEA).

Unanimously adopting resolution 1887 (2009) in its first comprehensive action on nuclear issues since the mid-1990s, Council members emphasized that the body had a primary responsibility to address nuclear threats, and that all situations of non-compliance with nuclear treaties should be brought to its attention.

The Council reaffirmed, in particular, its strong support for the Treaty on the Non-Proliferation of Nuclear Weapons, calling on States that were not yet signatories to accede to it. It also called on States parties to comply fully with their obligations and to set realistic goals to strengthen, at the 2010 Review Conference, all three of the Treaty's pillars -- disarmament of countries currently possessing nuclear weapons, non-proliferation to countries not yet in possession, and the peaceful use of nuclear energy for all.

While the resolution did not target specific countries, the Council demanded that parties involved in "major challenges to the non-proliferation regime" comply fully with their obligations, and reaffirmed its call on them to find early negotiated solutions to their issues.

The text underlined the right to pursue peaceful nuclear energy under IAEA supervision, but also urged States to curb the export of nuclear-related material to countries that had terminated their compliance with Agency safeguards agreements. It also called for the enforcement of strict controls on nuclear material to prevent it from falling into dangerous hands.

In addition, the Council called upon all States to refrain from conducting nuclear test explosions and to ratify the Comprehensive Nuclear-Test-Ban Treaty in order to bring it into force as soon as possible. It called upon the Conference on Disarmament to quickly negotiate a treaty banning the production of fissile materials for explosive devices.

Addressing the summit following adoption of the text, Secretary-General Ban said he had long advocated a stronger role for the Council in nuclear non-proliferation and disarmament, and he urged the 15-member body to make the most of the moment to sustain the momentum. "The need for action is clear. Thousands of nuclear weapons remain on hair-trigger alert. More States have sought and acquired them," he added.

"And every day, we live with the threat that weapons of mass destruction could be stolen sold or slip away," the Secretary-General said, emphasizing that nuclear disarmament was the only sane path to a safer world. He called for new ways to increase transparency with regard to the weapons programmes of the recognized nuclear-weapon States, and pledged the commitment of the United Nations in that area and in all other relevant efforts.

In his own opening remarks, President Obama said today's resolution represented agreement on a broad framework of action to end the complex dangers posed by nuclear weapons in the post-cold-war world. To that end, he pledged that the United States would host a Summit in early 2010 and pursue deeper cuts in its nuclear arsenal, as well as agreements with the Russian Federation towards the total elimination of nuclear weapons. He said the resolution also emphasized the Council's authority to respond to violations of its resolutions, including those on Iran and the Democratic People's Republic of Korea. "The world must stand together and demonstrate that international law is not an empty promise," he added.

In the ensuing discussion, speakers agreed that much stronger action must be taken on all fronts of the nuclear issue, with many expressing hope that today's resolution would end the prevailing international paralysis. Presidents Museveni of Uganda and Compaore of Burkina Faso, emphasizing the importance of keeping Africa a nuclear-weapon-free zone, said the continent should be assisted in developing urgently needed peaceful nuclear energy. Libya's representative said his country should be rewarded with aid for having voluntarily abandoned its nuclear programme.

President Arias Sánchez of Costa Rica emphasized that, with the proliferation of nuclear and conventional weapons, the United Nations had failed to keep its promise to allow the world's people to sleep peacefully. "This Council fails in its historic mission every day that it turns a blind eye to the rampant arms race," he said, pointing out that the world spent $3.5 million every day on weapons and soldiers, and that each year more than $42 billion worth of conventional arms were sold to developing nations, money that could be used towards much better ends.

The meeting began at 9:30 a.m. and ended at 11:30 a.m.

Background

For its consideration of nuclear non-proliferation and nuclear disarmament, the Security Council had before it a concept paper conveyed in a letter dated 15 September 2009 (document S/2009/463) from the President of the Security Council and addressed to the Secretary-General.

According to the paper, the Security Council will focus broadly on nuclear non-proliferation and nuclear disarmament and not on any specific countries, with the goals of un-

derscoring the global reach of proliferation threats; the broadly shared obligation to respond; the positive steps taken to reduce nuclear dangers; and the Council's essential role in addressing growing and pressing nuclear threats.

The paper states that preventing the spread and use of nuclear weapons is fundamental to the security of nations and the peace of the world. With the recent Group of Eight (G-8) statement on non-proliferation in L'Aquila, Italy, the upcoming Global Nuclear Security Summit in March 2010 and the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) Review Conference to follow, there is an opportunity for important global attention and focus on this critical security issue.

During today's summit, the paper continues, three key and related nuclear threat reduction topics will be discussed: arms control and nuclear disarmament; strengthening the international nuclear non-proliferation regime; and denying and disrupting illicit trafficking in materials of proliferation concern and securing such materials wherever they might be located.

According to the paper, the summit is intended as an opportunity to build support for fissile material cut-off treaty negotiations; the International Atomic Energy Agency (IAEA) Additional Protocol; ratification of the Comprehensive Nuclear-Test-Ban Treaty; and strategic arms control, including new negotiations over the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START).

With its goal of strengthening the existing international nuclear non-proliferation regime, the paper says, the summit can facilitate support for technical assistance and access to peaceful uses of nuclear energy, multilateral approaches to the nuclear fuel cycle and efforts to improve and ensure compliance with non-proliferation and safeguards obligations while preventing abuse of the NPT withdrawal provision. The summit is also an opportunity to explore ways to enhance the abilities of States to counter proliferation financing and eliminate procurement networks while reinforcing implementation of resolution 1540 (2004). It is further intended to underscore the importance of an accelerated effort to secure nuclear weapons materials around the world and to build support for establishing and sharing best practices for nuclear security.

Action on Draft Resolution

At the outset of the summit meeting, the Security Council unanimously adopted resolution 1887 (2009), the full text of which reads as follows: [see document 57].

Opening Remarks

BARACK OBAMA, President of the United States, recalled that the Council and the United Nations had been established at the dawn of the nuclear age, pointing out, however, that while a nuclear nightmare had been averted during the cold war, today the threat of proliferation was growing in scope and complexity. Just one explosion of a nuclear weapon could kill hundreds of thousands of people. The United Nations had a pivotal role to play in avoiding that.

He said the resolution just adopted had brought agreement on a broad framework for action, which acknowledged that all nations had a right to peaceful energy, and those with nuclear weapons had a responsibility to move towards nuclear disarmament. To that end, the United States would host a summit in April 2010. The resolution would strengthen institutions and initiatives aimed at battling trafficking in proliferation-sensitive materi-

als. It also called for safeguards to prevent the conversion of peaceful nuclear energy programmes into weapons programmes.

The Council had the authority to respond to violations of its resolutions, including on Iran and the Democratic People's Republic of Korea, he said, emphasizing: "The world must stand together and demonstrate that international law is not an empty promise." The coming 12 months would be critical to implementation of today's resolution. Meanwhile, the United States would pursue an agreement with the Russian Federation, as well as ratification of the Comprehensive Nuclear-Test-Ban Treaty. It would also make deeper cuts in its nuclear arsenal.

"We harbour no illusions about the difficulty of bringing about a world without nuclear weapons," he said, cautioning that there would be "days like today that push us forward" and that told a different story. "It is the story of a world that understands that no difference or division is worth destroying all that we have built and all that we love." Quoting the words of President Ronald Reagan, he said a nuclear war could not be won and must never be fought. "We must never stop until we see the day that nuclear arms are banished from the face of the earth. That is our task."

BAN KI-MOON, Secretary-General of the United Nations, said he had long advocated a stronger role for the Security Council in nuclear non-proliferation and disarmament. The Council should make the most of this moment to sustain the momentum. "The need for action is clear. Thousands of nuclear weapons remain on hair-trigger alert. More States have sought and acquired them. […] And every day, we live with the threat that weapons of mass destruction could be stolen, sold or slip away," he said, emphasizing that nuclear disarmament was the only sane path to a safer world.

Calling for new ways to increase transparency with regard to the weapons programmes of the recognized nuclear-weapon States, he pledged the Secretariat's willingness to serve as a repository for information. Member States should make the best use of the United Nations disarmament machinery, including the work of the Conference on Disarmament on a fissile material cut-off treaty.

Disarmament and non-proliferation must proceed together, he continued, stressing the importance of effective verification of disarmament and ensuring that IAEA had the resources and support it needed to implement its growing safeguards responsibility. For too long, a divided international community had lacked the will, vision and confidence to move ahead. "Together we have dreamed about a nuclear-weapon-free world. Now we must act to achieve it".

Statements

ÓSCAR ARIAS SÁNCHEZ, President of Costa Rica, said the United Nations had been founded on the promise that all would be able to sleep peacefully. That promise had not been kept. "While we sleep, death is awake. Death keeps watch from the warehouses that store more than 23,000 nuclear warheads, like 23,000 eyes open and waiting for a moment of carelessness." It did not seem plausible to discuss disarmament as long as existing agreements were not even being honoured. Countries resisted ratifying the Nuclear Non-Proliferation Treaty and Comprehensive Nuclear-Test-Ban Treaty, and rejected international mechanisms for verification as long as the clandestine network of proliferation of nuclear supplies continued.

It did not seem plausible to speak of a safer world as long as weapons proliferation took second place on the international agenda, he continued. "This Council fails in its historic mission every day that it turns a blind eye to the rampant arms race," he said, pointing out that the world spent $3.5 million every day on weapons and soldiers and that each year, more than $42 billion worth of conventional arms were sold to developing nations.

Even in Latin America, which had never been more peaceful or democratic, $60 billion would be assigned to military spending this year, he noted. "That is why I ask that we approve the arms trade treaty that my Government has presented to this Organization, because if it is legitimate for us to worry about the possibility that terrorist networks gain access to a nuclear weapon, it is also legitimate for us to worry about the rifles, grenades and machine guns that are given into their hands."

STJEPAN MESIĆ, President of Croatia, said there was one action to be taken this very day with regard to limiting nuclear proliferation: reinforce the role of the United Nations in that effort. That would not replace any institution or forum dealing with non-proliferation, but would affirm, unanimously and jointly, that the greatest efforts were needed to stop the proliferation of nuclear weapons while also guaranteeing the right of every country to the peaceful use of nuclear energy. If necessary, more stringent universally accepted international controls would be implemented.

The goal was to affirm or establish principles that would help lead to a world free of nuclear weapons without necessarily entering into debate over concrete issues, he said. A first step would be to support, without any reservation, a contractual multilateral system of treaties on the control of nuclear weapons and disarmament, including strict implementation and verification components. The next step would be to call on Member States to contribute to activities aimed at preventing abuse of existing treaties and strengthening both non-proliferation efforts, as well as resources to support them.

He said the long-standing effort to limit and then reduce nuclear weapons with the end-goal of disarmament had received a strong new impetus from the announcement by the President of the United States that his final objective was a world free of nuclear weapons. As a result of that pronouncement, the task of those present in the Council today should be to send a message to the world which had authorized them to act that there was political will to pursue a policy that would provide for the security of all countries without nuclear weapons. The objective was "peace in security", not the "balance of fear" that had prevailed during the cold war, a time of peace without security.

DMITRY A. MEDVEDEV, President of the Russian Federation, said it was obvious to everyone that issues of security were indivisible and global, and that only on the basis of the principles of equal security, mutual respect and compliance with the norms of international law could present-day threats be fought. "Only in this way can we strengthen the nuclear non-proliferation regime and give additional impetus to the nuclear disarmament process," he said. The measures contained in the resolution were a realistic programme of action for the international community to respond efficiently to common threats in the nuclear sphere.

He said his country and the United States had carried out unprecedented reductions of strategic nuclear arsenals within the framework of the Treaty on the Reduction and Limitation of Strategic Offensive Arms (START). The Russian Federation had tabled proposals during negotiations with the United States on a new treaty to replace START. "Our main shared goal

is to untie the problem 'knots' in the field of non-proliferation and disarmament." That could not be done overnight, as the level of distrust among nations remained too high. Because one of the most dangerous threats was that of nuclear components falling into the hands of terrorists, the existing "back-up system" needed to be modernized.

Underscoring the importance of paying serious attention to peaceful nuclear energy, he said new nuclear power programmes were a key to resolving many of the problems afflicting developing countries and an incentive for the economic growth of entire regions. However, States that carried out such programmes must abide strictly by non-proliferation agreements. Priorities in that area of international cooperation included strengthening the global non-proliferation and disarmament regime, in particular the Nuclear Non-Proliferation Treaty.

The system of IAEA safeguards must be universalized, and there was also a need to stimulate the earliest ratification of the Comprehensive Nuclear-Test-Ban Treaty by the countries that would ensure its entry into force, he said. The non-proliferation measures of resolution 1540 (2004) must be used more actively. An effective solution to many of the aforementioned problems depended on an interested and constructive engagement by all parties. The strengthening of the nuclear non-proliferation regime and the intensification of the nuclear disarmament process required, most of all, strategic stability and ensuring security for each and every State.

FELIPE CALDERÓN HINOJOSA, President of Mexico, said world peace and security could not be built on nuclear arsenals. Welcoming the arms-reduction talks between the United States and the Russian Federation, he said their final objective should be the total elimination of nuclear weapons. While efforts to put the Comprehensive Nuclear-Test-Ban Treaty into effect were also welcome, Mexico could not accept the paralysis on disarmament and non-proliferation, which must end with today's resolution.

He expressed support for the right of every State to avail itself of atomic energy for peaceful uses under IAEA supervision, saying that only through related incentives could proliferation be contained. Mexico had taken steps to join export control regimes in order to keep nuclear materials out of the hands of those who must not have them. He also urged the Security Council to help "put the brakes" on the illicit trade in small arms and light weapons, which also wreaked havoc on the Earth.

HEINZ FISCHER, Federal President of Austria, said the international community should no longer accept complacency about the nuclear shadow hanging over the world, adding that a world without nuclear weapons must be the goal. Meanwhile, the Nuclear Non-Proliferation Treaty must be strengthened and universal, while the nuclear States must reduce their arsenals.

He said his country had worked hard to get the Test-Ban Treaty into force and would also work for a fissile cut-off treaty. IAEA monitoring capabilities and export controls must be strengthened, and confidence should be built through the establishment of nuclear-weapon-free zones. Today's text was a strong one, but resolutions were not enough. Austria, as well as the European Union, would move forward on non-proliferation and disarmament.

NGUYEN MINH TRIET, President of Viet Nam, said nuclear weapons used up resources that could be used for development. They also threatened mass destruction and were liable to fall into the hands of terrorists. Viet Nam supported all efforts to strengthen international action to prevent those ills, in addition to the total elimination of nuclear weapons, start-

ing with unilateral and multilateral reductions. The countries with the largest arsenals must take leading roles in that area. The strength of IAEA also must be enhanced. Viet Nam supported a nuclear-weapon-free zone in South-East Asia and called for more action on peaceful uses of nuclear energy. The Vietnamese had suffered greatly from wars and therefore pledged their strong efforts to accomplish disarmament and non-proliferation for the purpose of strengthening peace.

YOWERI KAGUTA MUSEVENI, President of Uganda, said it was critical to consider non-proliferation, disarmament and peaceful use of nuclear energy in a balanced way in order to address them effectively. It was imperative that nuclear-weapon States accelerate their engagement so as to achieve complete disarmament. The possession of nuclear weapons by some countries was the sole cause for the desire of others to possess them. Welcoming the desire expressed by the largest nuclear weapons States to reduce their arsenals, he stressed that Africa was not interested in nuclear weapons, but in nuclear energy, which was much cheaper than other alternatives, in order to meet the continent's future needs.

HU JINTAO, President of China, said the threat of nuclear war must be eliminated and, for that to happen, global balance and stability must be maintained. Proliferation should be stopped and the nuclear-weapon States with the largest arsenals should reduce those arsenals, after which the countries with smaller arsenals should also begin to reduce their stocks. In order to maintain the peace, there was a need to renounce the use of nuclear weapons, as well as the threat to use them against non-nuclear-weapon States. Work should then commence on the total elimination of nuclear weapons.

He said the right to the peaceful use of nuclear energy should be actively promoted, and IAEA strengthened with that purpose in mind. All countries should strictly observe international agreements on nuclear materials and work together to keep them out of the hands of terrorists. China had always supported the complete elimination of nuclear weapons. It only held them for defence, having pledge no first use and no use against non-nuclear-weapon States. China would continue to play its role in upholding international non-proliferation and disarmament regimes.

BLAISE COMPAORE, President of Burkina Faso, said international security demanded the elimination of all nuclear weapons and their testing. International norms must be respected and deep thought must be put into keeping countries from seeking nuclear weapons when others continued to build them. Bilateral actions to reduce arms were also needed. Now more than ever, there was a need to support the IAEA in order to allow nuclear energy to become an effective development tool. That was the purpose of having a nuclear-weapon-free zone in Africa, which should be assisted in its non-proliferation efforts.

GORDON BROWN, Prime Minister of the United Kingdom, said that by adopting today's resolution, nuclear-weapon States as well as non-nuclear-weapon States were making a commitment to ridding the world of the danger of nuclear weapons. The global bargain underlying the Nuclear Non-Proliferation Treaty –- based on the obligations of both categories -–- must be strengthened through a renewed commitment to ensuring compliance and seeking solutions to technical and policy problems.

The world could not stand by when Iran and the Democratic People's Republic of Korea breached international agreements, he stressed. Far tougher sanctions must be considered, and the onus of proof must be on those who breached the relevant agreements. The United

Kingdom welcomed efforts to prevent nuclear weapons and materials to fall into the hands of terrorists. It had already taken major steps towards nuclear disarmament, reducing its nuclear-strike capability by 75 per cent. Retaining only the absolute minimum needed for national security, Britain would also reduce its nuclear submarine fleet as a way to further disarmament goals.

NICOLAS SARKOZY, President of France, said that while "we are here to secure peace" and say yes to reductions, two countries, "right in front of us", were doing exactly the opposite. What Iran and the Democratic People's Republic of Korea were doing undermined the very rules upon which collective security was based. In violation of five Security Council resolutions, Iran had been pursuing nuclear proliferation activities since 2005, he said. It was amassing centrifuges and enriched uranium, while threatening to wipe a United Nations Member State off the map.

"There comes a moment when stubborn facts will compel us to take a decision," he said. "Let us not accept violations of international rules. We may all be threatened one day by a neighbour endowing itself with nuclear weapons," he warned. The Democratic People's Republic of Korea had acted in defiance of all Council decisions since 1993 and continued to test ballistic missiles. "Here again there will come a moment one has to agree and take sanctions," he said, stressing that Council decisions must be followed by results.

Access to nuclear energy for peaceful uses and the transfer of technology by developed countries would obviate the arguments of those who claimed that they needed nuclear energy but converted their nuclear programmes into weapons programmes. Given the courage to impose sanctions against those violating Council resolutions, efforts towards a world without nuclear weapons would gain credibility. Those who needed civil nuclear energy must be guaranteed sustainable access to technologies and fuel, and the entire international community must be assured that nuclear safety, security and non-proliferation would be respected.

YUKIO HATOYAMA, Prime Minister of Japan, said his country had a special moral responsibility as the only one ever to suffer atomic bombings. Describing a wrenching visit to Hiroshima and Nagasaki, he encouraged all world leaders to experience on their own the cruelty of nuclear weapons by speaking to survivors. Having chosen not to possess nuclear weapons, Japan had signed onto the Nuclear Non-Proliferation Treaty and Nuclear-Test-Ban Treaty to try to prevent the vicious cycle of a nuclear arms race. He renewed his country's commitment to the three non-nuclear principles no matter what steps neighbouring countries took.

Calling upon nuclear-weapons States to reduce their arsenals and foster a climate for disarmament by ensuring transparency, he urged the pursuit of nuclear-weapons-free zones, the entry into force of the Nuclear-Test-Ban Treaty and the immediate start of negotiations on a fissile materials cut-off treaty. Japan would engage in active diplomacy to lead international efforts on nuclear disarmament and non-proliferation. The nuclear development programme of the Democratic People's Republic of Korea, in particular, posed a grave threat to the peace and security of Japan and the world as a whole, and must not be tolerated. There was also cause for concern about Iran in that regard and there was a need to strengthen the Council's ability to meet those challenges.

RECEP TAYYİP ERDOĞAN, Prime Minister of Turkey, stressed the need to bolster the integrity and credibility of the three pillars of the Nuclear Non-Proliferation Treaty -- non-proliferation, disarmament and peaceful use of nuclear energy –- by treating them equally, with

universal adherence and implementation as key objectives. The current meeting should re-energize the international community for new initiatives towards the Review Conference next year.

Nuclear disarmament required an incremental but sustained approach in which treaty-based commitments were "absolutely indispensable", he said. One of the treaty's big achievements was the unequivocal undertaking by nuclear-weapons States to eliminate their arsenals. That responsibility must now be upheld, building on article VI of the Nuclear Non-Proliferation Treaty and the 13 practical steps for disarmament agreed in 2000. It was in that context that Turkey welcomed and encouraged efforts to replace START with a new legally-binding instrument.

Irreversible progress on nuclear disarmament would also reinforce the other two pillars of the Nuclear Non-Proliferation Treaty, he continued, pointing out that it was with that understanding that his country spared no effort in continuing to promote key non-proliferation issues, including the entry into force of the Comprehensive Nuclear-Test-Ban Treaty; the start of negotiations on a fissile material cut-off treaty; and promotion of IAEA's role in advancing the safe and peaceful use of nuclear technology.

States in compliance with safeguard obligations should enjoy unfettered access to civilian nuclear technology, as enshrined in the NPT, which placed strict obligations on States, he said. The most credible assurance about the peaceful nature of national programmes was implementation of the Additional Protocol now serving as the verification standard. Confidence in nuclear technology depended on the strength and reliability of safety measures while nuclear terrorism and illicit trafficking posed grave security threats. The international community should work towards a comprehensive and mutually reinforcing approach based on already available conventions.

ABDURRAHMAN MOHAMED SHALGHAM (Libya) said his country had taken an historic initiative by voluntarily ceasing work on the nuclear bomb it had been on the verge of producing. Libya therefore deserved the appreciation of the world and assistance in developing its nuclear energy capability for peaceful purposes. It also deserved a permanent seat on the Security Council.

While all countries had a right to develop nuclear energy for peaceful purposes, with IAEA oversight, the agency must monitor all States without exception, including the recognized nuclear-weapon States, he stressed. Furthermore, the Middle East must become a nuclear-weapon-free zone, and for that to happen, Israel must open its nuclear facilities to inspection. Otherwise, other States would have a desire to build their own weapons.

MOHAMED ELBARADEI, Director General of the International Atomic Energy Agency (IAEA), said the global nuclear non-proliferation regime was fragile and had many shortcomings. The Agency's legal authority was severely limited in some countries because many States had not concluded the required agreements with it. Thus, in more than 90 States, it either had no verification authority at all, or its authority was inadequate and it could not verify whether a country was engaged in clandestine nuclear activities. Moreover, the verification mandate centred on nuclear material. If IAEA was expected to pursue possible weaponization activities, it must be given the corresponding legal authority, he emphasized.

A growing number of States had mastered uranium enrichment or plutonium reprocessing and any one of them could develop nuclear weapons quickly if they decided to with-

draw from the Nuclear Non-Proliferation Treaty, he warned. To address that, a shift was needed from national to multinational control of the nuclear fuel cycle. He said he had proposed the establishment of a low enriched uranium bank that would ensure that States had a guaranteed supply of nuclear fuel for their reactors and did not need to process their own. Complementary proposals had subsequently been made, but the main goal should be the full multinationalization of the fuel cycle towards nuclear disarmament. Furthermore, efforts to secure vulnerable material must be intensified to prevent extremists from getting hold of nuclear and radioactive material.

He went on to emphasize that the Agency itself must be strengthened. Given its dilapidated infrastructure and lack of state-of-the-art technology, which was key to modern-day verification, it would be unable to fulfil its mission at current funding levels. To provide the agency with the kind of supportive political process it needed, the Council needed to develop a comprehensive compliance mechanism to address consistently and systematically cases of non-compliance with or withdrawal from the Nuclear Non-Proliferation Treaty, including giving the Agency additional authority to act in specific cases as needed.

More emphasis should also be placed on addressing the insecurities behind many proliferation cases, including endemic conflicts, security imbalances and lack of trust, he said. By demonstrating their commitment to achieving a world free of nuclear weapons, the nuclear-weapon States would give legitimacy to the non-proliferation regime and gain moral authority in their calls to curb the proliferation of those inhumane weapons.

Closing Remarks

President OBAMA of the United States said in his closing remarks that the statements heard today affirmed the commitment to a difficult but achievable goal, adding that he had been inspired by the seriousness with which all participants had approached the question and "extraordinarily" encouraged by the unanimous adoption of the resolution. "Words alone will not get the job done, but, having affirmed our stated goal, I am confident that if we are diligent we can in fact move this process forward and provide the sort of peace and security for our children and grandchildren that all of us so desperately want," he said.

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United Nations
Security Council

S/RES/1887 (2009)
Distr.: General
24 September 2009

Resolution 1887 (2009)
Adopted by the Security Council at its 6191st meeting, on 24 September 2009

The Security Council,

Resolving to seek a safer world for all and to create the conditions for a world without nuclear weapons, in accordance with the goals of the Treaty on the Non-Proliferation of Nuclear Weapons (NPT), in a way that promotes international stability, and based on the principle of undiminished security for all,

Reaffirming the Statement of its President adopted at the Council's meeting at the level of Heads of State and Government on 31 January 1992 (S/23500), including the need for all Member States to fulfil their obligations in relation to arms control and disarmament and to prevent proliferation in all its aspects of all weapons of mass destruction,

Recalling also that the above Statement (S/23500) underlined the need for all Member States to resolve peacefully in accordance with the Charter any problems in that context threatening or disrupting the maintenance of regional and global stability,

Reaffirming that proliferation of weapons of mass destruction, and their means of delivery, constitutes a threat to international peace and security,

Bearing in mind the responsibilities of other organs of the United Nations and relevant international organizations in the field of disarmament, arms control and non-proliferation, as well as the Conference on Disarmament, and supporting them to continue to play their due roles,

Underlining that the NPT remains the cornerstone of the nuclear non-proliferation regime and the essential foundation for the pursuit of nuclear disarmament and for the peaceful uses of nuclear energy,

Reaffirming its firm commitment to the NPT and its conviction that the international nuclear non-proliferation regime should be maintained and strengthened to ensure its effective implementation, and *recalling* in this regard the outcomes of past NPT Review Conferences, including the 1995 and 2000 final documents,

Calling for further progress on all aspects of disarmament to enhance global security,

Recalling the Statement by its President adopted at the Council's meeting held on 19 November 2008 (S/PRST/2008/43),

Welcoming the decisions of those non-nuclear-weapon States that have dismantled their nuclear weapons programs or renounced the possession of nuclear weapons,

Welcoming the nuclear arms reduction and disarmament efforts undertaken and accomplished by nuclear-weapon States, and *underlining* the need to pursue further efforts in the sphere of nuclear disarmament, in accordance with Article VI of the NPT,

Welcoming in this connection the decision of the Russian Federation and the United States of America to conduct negotiations to conclude a new comprehensive legally binding agreement to replace the Treaty on the Reduction and Limitation of Strategic Offensive Arms, which expires in December 2009,

Welcoming and *supporting* the steps taken to conclude nuclear-weapon-free zone treaties and *reaffirming* the conviction that the establishment of internationally recognized nuclear-

weapon-free zones on the basis of arrangements freely arrived at among the States of the region concerned, and in accordance with the 1999 United Nations Disarmament Commission guidelines, enhances global and regional peace and security, strengthens the nuclear non-proliferation regime, and contributes toward realizing the objectives of nuclear disarmament,

Noting its support, in this context, for the convening of the Second Conference of States Parties and signatories of the Treaties that establish Nuclear-Weapon-Free Zones to be held in New York on 30 April 2010,

Reaffirming its resolutions 825 (1993), 1695 (2006), 1718 (2006), and 1874 (2009),

Reaffirming its resolutions 1696 (2006), 1737 (2006), 1747 (2007), 1803 (2008), and 1835 (2008),

Reaffirming all other relevant non-proliferation resolutions adopted by the Security Council,

Gravely concerned about the threat of nuclear terrorism, and *recognizing* the need for all States to take effective measures to prevent nuclear material or technical assistance becoming available to terrorists,

Noting with interest the initiative to convene, in coordination with the International Atomic Energy Agency (IAEA), an international conference on the peaceful uses of nuclear energy,

Expressing its support for the convening of the 2010 Global Summit on Nuclear Security,

Affirming its support for the Convention on the Physical Protection of Nuclear Material and its 2005 Amendment, and the Convention for the Suppression of Acts of Nuclear Terrorism,

Recognizing the progress made by the Global Initiative to Combat Nuclear Terrorism, and the G-8 Global Partnership,

Noting the contribution of civil society in promoting all the objectives of the NPT,

Reaffirming its resolution 1540 (2004) and the necessity for all States to implement fully the measures contained therein, and *calling upon* all Member States and international and regional organizations to cooperate actively with the Committee established pursuant to that resolution, including in the course of the comprehensive review as called for in resolution 1810 (2008),

1. *Emphasizes* that a situation of non-compliance with non-proliferation obligations shall be brought to the attention of the Security Council, which will determine if that situation constitutes a threat to international peace and security, and *emphasizes* the Security Council's primary responsibility in addressing such threats;

2. *Calls upon* States Parties to the NPT to comply fully with all their obligations and fulfil their commitments under the Treaty,

3. *Notes* that enjoyment of the benefits of the NPT by a State Party can be assured only by its compliance with the obligations thereunder;

4. *Calls upon* all States that are not Parties to the NPT to accede to the Treaty as non-nuclear-weapon States so as to achieve its universality at an early date, and pending their accession to the Treaty, to adhere to its terms;

5. *Calls upon* the Parties to the NPT, pursuant to Article VI of the Treaty, to undertake to pursue negotiations in good faith on effective measures relating to nuclear arms reduction and disarmament, and on a Treaty on general and complete disarmament under strict and effective international control, and *calls on* all other States to join in this endeavour;

6. *Calls upon* all States Parties to the NPT to cooperate so that the 2010 NPT Review Conference can successfully strengthen the Treaty and set realistic and achievable goals in all the Treaty's three pillars: non-proliferation, the peaceful uses of nuclear energy, and disarmament;

7. *Calls upon* all States to refrain from conducting a nuclear test explosion and to sign and ratify the Comprehensive Nuclear Test Ban Treaty (CTBT), thereby bringing the treaty into force at an early date;

8. *Calls upon* the Conference on Disarmament to negotiate a Treaty banning the production of fissile material for nuclear weapons or other nuclear explosive devices as soon as possible, *welcomes* the Conference on Disarmament's adoption by consensus of its Program of Work in 2009, and *requests* all Member States to cooperate in guiding the Conference to an early commencement of substantive work;

9. *Recalls* the statements by each of the five nuclear-weapon States, noted by resolution 984 (1995), in which they give security assurances against the use of nuclear weapons to non-nuclear-weapon State Parties to the NPT, and *affirms* that such security assurances strengthen the nuclear non-proliferation regime;

10. *Expresses* particular concern at the current major challenges to the non-proliferation regime that the Security Council has acted upon, *demands* that the parties concerned comply fully with their obligations under the relevant Security Council resolutions, and *reaffirms* its call upon them to find an early negotiated solution to these issues;

11. *Encourages* efforts to ensure development of peaceful uses of nuclear energy by countries seeking to maintain or develop their capacities in this field in a framework that reduces proliferation risk and adheres to the highest international standards for safeguards, security, and safety;

12. *Underlines* that the NPT recognizes in Article IV the inalienable right of the Parties to the Treaty to develop research, production and use of nuclear energy for peaceful purposes without discrimination and in conformity with Articles I and II, and *recalls* in this context Article III of the NPT and Article II of the IAEA Statute;

13. *Calls upon* States to adopt stricter national controls for the export of sensitive goods and technologies of the nuclear fuel cycle;

14. *Encourages* the work of the IAEA on multilateral approaches to the nuclear fuel cycle, including assurances of nuclear fuel supply and related measures, as effective means of addressing the expanding need for nuclear fuel and nuclear fuel services and minimizing the risk of proliferation, and *urges* the IAEA Board of Governors to agree upon measures to this end as soon as possible;

15. *Affirms* that effective IAEA safeguards are essential to prevent nuclear proliferation and to facilitate cooperation in the field of peaceful uses of nuclear energy, and in that regard:

   a. *Calls upon* all non-nuclear-weapon States party to the NPT that have yet to bring into force a comprehensive safeguards agreement or a modified small quantities protocol to do so immediately,
   b. *Calls upon* all States to sign, ratify and implement an additional protocol, which together with comprehensive safeguards agreements constitute essential elements of the IAEA safeguards system,
   c. *Stresses* the importance for all Member States to ensure that the IAEA continue to have all the necessary resources and authority to verify the declared use of nuclear materials and facilities and the absence of undeclared activities, and for the IAEA to report to the Council accordingly as appropriate;

16. *Encourages* States to provide the IAEA with the cooperation necessary for it to verify whether a state is in compliance with its safeguards obligations, and *affirms* the Security

Council's resolve to support the IAEA's efforts to that end, consistent with its authorities under the Charter;

17. *Undertakes* to address without delay any State's notice of withdrawal from the NPT, including the events described in the statement provided by the State pursuant to Article X of the Treaty, while noting ongoing discussions in the course of the NPT review on identifying modalities under which NPT States Parties could collectively respond to notification of withdrawal, and *affirms* that a State remains responsible under international law for violations of the NPT committed prior to its withdrawal;

18. *Encourages* States to require as a condition of nuclear exports that the recipient State agree that, in the event that it should terminate, withdraw from, or be found by the IAEA Board of Governors to be in non-compliance with its IAEA safeguards agreement, the supplier state would have a right to require the return of nuclear material and equipment provided prior to such termination, non-compliance or withdrawal, as well as any special nuclear material produced through the use of such material or equipment;

19. *Encourages* States to consider whether a recipient State has signed and ratified an additional protocol based on the model additional protocol in making nuclear export decisions; 20. *Urges* States to require as a condition of nuclear exports that the recipient State agree that, in the event that it should terminate its IAEA safeguards agreement, safeguards shall continue with respect to any nuclear material and equipment provided prior to such termination, as well as any special nuclear material produced through the use of such material or equipment;

21. *Calls for* universal adherence to the Convention on Physical Protection of Nuclear Materials and its 2005 Amendment, and the Convention for the Suppression of Acts of Nuclear Terrorism;

22. *Welcomes* the March 2009 recommendations of the Security Council Committee established pursuant to resolution 1540 (2004) to make more effective use of existing funding mechanisms, including the consideration of the establishment of a voluntary fund, and *affirms* its commitment to promote full implementation of resolution 1540 (2004) by Member States by ensuring effective and sustainable support for the activities of the 1540 Committee;

23. *Reaffirms* the need for full implementation of resolution 1540 (2004) by Member States and, with an aim of preventing access to, or assistance and financing for, weapons of mass destruction, related materials and their means of delivery by non-State actors, as defined in the resolution, *calls upon* Member States to cooperate actively with the Committee established pursuant to that resolution and the IAEA, including rendering assistance, at their request, for their implementation of resolution 1540 (2004) provisions, and in this context *welcomes* the forthcoming comprehensive review of the status of implementation of resolution 1540 (2004) with a view to increasing its effectiveness, and *calls upon* all States to participate actively in this review;

24. *Calls upon* Member States to share best practices with a view to improved safety standards and nuclear security practices and raise standards of nuclear security to reduce the risk of nuclear terrorism, with the aim of securing all vulnerable nuclear material from such risks within four years;

25. *Calls upon* all States to manage responsibly and minimize to the greatest extent that is technically and economically feasible the use of highly enriched uranium for civilian purposes, including by working to convert research reactors and radioisotope production processes to the use of low enriched uranium fuels and targets;

26. *Calls upon* all States to improve their national capabilities to detect, deter, and disrupt illicit trafficking in nuclear materials throughout their territories, and *calls upon* those States in a position to do so to work to enhance international partnerships and capacity building in this regard;

27. *Urges* all States to take all appropriate national measures in accordance with their national authorities and legislation, and consistent with international law, to prevent proliferation financing and shipments, to strengthen export controls, to secure sensitive materials, and to control access to intangible transfers of technology;

28. *Declares* its resolve to monitor closely any situations involving the proliferation of nuclear weapons, their means of delivery or related material, including to or by non-State actors as they are defined in resolution 1540 (2004), and, as appropriate, to take such measures as may be necessary to ensure the maintenance of international peace and security;

29. *Decides* to remain seized of the matter.

A Nuclear-Weapons-Free-World: Is It Achievable? [1]

Miguel Marin-Bosch

To the memory of William Epstein,
a relentless advocate of nuclear disarmament.

After the worst of times, we are perhaps entering the best of times for proponents of nuclear disarmament. At long last, advocates of the elimination of nuclear weapons have reason for some guarded optimism. The road to a nuclear-weapons-free world will be long and bumpy, but those expected to take the initiative seem to have finally decided to lead. That is encouraging.

Sixty-four years ago the world was free of nuclear weapons, but after the production of some 140,000 of these artifacts of mass destruction, there seems to be a significant shift in the role some Governments have assigned to them. They are no longer generally considered to be the best means to ensure national security. Deterrence and mutually-assured destruction have become outdated concepts in a world now more concerned with other questions and challenges, including widespread poverty, climate change, a worldwide economic and financial meltdown, and other threats such as the recent alarm over the pandemic outbreak of a new kind of influenza virus.

Above all, the motivation for seeking the elimination of nuclear weapons now seems to be a fear of the further proliferation of these weapons to other states and possibly to the so-called non-state actors, including terrorist groups. There is the rub.

Nuclear weapons are intrinsically dangerous and pose an unparalleled threat to the very existence of humankind. They do not enhance a country's security, but rather imperil the survival of all nations, which should be the point of departure of nuclear disarmament efforts.

To dwell on the potential danger that they may fall into the wrong hands is to misconstrue the argument for their elimination. They should be banned because they are immoral—and probably illegal—tools of destruction. They cannot even be considered instruments of war.

The twin questions of nuclear weapons and nuclear energy have been on the agenda of the United Nations since the beginning: the dawn of the atomic age coincided with its birth. The UN Charter, however, makes no mention of nuclear weapons for the simple reason that it was adopted at the San Francisco conference three weeks before the first test and six weeks before their use in Hiroshima and Nagasaki. The transcendental nature of the discovery of atomic energy prompted the delegates to the UN General Assembly's first session to address the issue immediately. In its very first resolution—1 (I) of 24 January 1946—the Assembly established the Atomic Energy Commission, composed of the Security Council members and Canada, and requested that it submit specific proposals for ensuring the use of atomic energy for peaceful purposes only, for the elimination of atomic and other weapons of mass destruction and for the

[1] UN Chronicle

A historian by training (B.A. from Yale and Ph.D. from Columbia University), Ambassador Marín-Bosch is a retired Mexican diplomat who has participated in the disarmament debates at the UN for over three decades. He has served as Deputy Permanent Representative to the UN in New York, Permanent Representative in Geneva, Deputy Foreign Minister and Director of his country's Foreign Service academy. In 1994 he chaired the first year of the CTBT negotiations in Geneva and later the Secretary-General's expert group study on disarmament and non-proliferation education.

establishment of a system of safeguards, including inspections, to prevent violations and evasions.

A number of specific proposals followed, including one by the United States in June 1946. As the only nuclear-weapon State (NWS), it was natural that the United States put forward its own ideas on the matter. These were contained in what became known as the Baruch Plan, which was based largely on the United States government publication *Report on the International Control of Atomic Energy*, issued in March of that year.

The US, which still held an unchallenged nuclear monopoly, called for an open exchange among all nations of basic scientific information for peaceful ends; control of atomic energy to the extent necessary to ensure its use only for peaceful purposes; the elimination of atomic weapons and all other major weapons adaptable to mass destruction from national arsenals; and the establishment of effective safeguards by way of inspection and other means to protect complying States against the hazards of violations and evasions.

Though forward-looking in many aspects, the Baruch Plan had several drawbacks. The most controversial one was probably its insistence that the United States retain its nuclear stockpile (which then consisted of nine weapons) until it was satisfied with the effectiveness of the international control system.[1] This proved unacceptable to the USSR, which wanted to reverse the order: all should first surrender their nuclear weapons and then implement an international verification system. One will never know if the world might have returned in 1946 to its nuclear-weapons-free status. What we do know is that there followed four decades of an unbridled nuclear arms race between the US and the USSR and the acquisition of those weapons and their delivery systems by other nations.

After the USSR's first nuclear test in 1949, the United Kingdom would follow in 1952, France in 1960, China in 1964 and India and Pakistan in 1998. Israel also acquired nuclear weapons as did South Africa, which would later surrender its stockpile. After the USSR's collapse, Belarus, Kazakhstan and Ukraine became for a time *de facto* NWS. The Democratic People's Republic of Korea has also tested a nuclear device. In addition, there are also many countries that possess the scientific know-how, technology and fissile material that would allow them to play the nuclear card in a relatively short time.

In 1952 the US achieved a qualitative leap in the nuclear-arms race when it detonated its first thermonuclear device. A year later the Soviet Union followed suit.

The development of nuclear-weapon delivery systems — bombers, missiles and submarines — is another chapter of the arms race. However, the testing of nuclear weapons and the rockets to

[1] Bernard Baruch, the US representative to the UN Atomic Energy Commission, submitted the proposal on 14 June 1946 and stated in part: "The United States proposes the creation of an International Atomic Development Authority, to which should be entrusted all phases of the development and use of atomic energy….

"We of this nation, desirous of helping to bring peace to the world and realizing the heavy obligations upon us arising from our possession of the means of producing the bomb and from the fact that it is part of our armament, are prepared to make our full contribution toward effective control of atomic energy.

When an adequate system for control of atomic energy, including the renunciation of the bomb as a weapon, has been agreed upon and put into effective operation and condign punishments set up for violations of the rules of control which are to be stigmatized as international crimes, we propose that:

–Manufacture of atomic bombs shall stop;

–Existing bombs shall be disposed of pursuant to the terms of the treaty; and

–The Authority shall be in possession of full information as to the know-how for the production of atomic energy."

transport them would eventually rally public opinion (at least momentarily) in favor of nuclear disarmament measures.

Despite repeated and sometimes intense efforts to put disarmament efforts on track, the United Nations was unable to devise negotiating schemes that would bring the different parties together. Deep-rooted suspicion of the rival's motives and the absence of political will ensured a negotiating stalemate for almost two decades.

In the early 1960s the US and USSR finally agreed to lead disarmament talks at the Geneva Eighteen-Nation Committee (ENDC) meeting. Calls for an end to nuclear tests, especially in the atmosphere, and a stop to further horizontal proliferation were instrumental in getting the ENDC going in 1962. Not surprisingly, the first order of business was a treaty to ban tests in the atmosphere, under water and in outer space.

The 1963 Partial Test-Ban Treaty was agreed upon rather quickly. It did not contain verification measures and it prohibited activities which the ENDC's three participating NWS—the UK, the USA and the USSR (France refused to take its seat at the table)—were ready to forego. Underground testing would continue for over 30 years.

The next item on the ENDC's agenda was a multilateral legal agreement to prevent the further spread of nuclear weapons to other nations (horizontal proliferation). The 1968 Treaty on the Non-Proliferation of Nuclear Weapons (NPT) has become the cornerstone of nuclear disarmament efforts since its entry into force in 1970.

By the late 1950s the possible spread of nuclear weapons to more countries (horizontal proliferation) had become a source of increasing concern. So had the continued improvement of existing arsenals (vertical proliferation) and the testing of those weapons was seen as the key element of the qualitative nuclear arms race. Both horizontal proliferation and nuclear testing had found their way on to the UN's agenda.

By the mid-1960s a number of countries had decided to forego the nuclear option and seemed prepared to exact a price from the NWS in return for a legally-binding commitment to remain non-nuclear-weapon States (NNWS). It was time to sit down and negotiate a treaty. Countries in Latin America had already begun the pioneering efforts to establish a nuclear-weapon-free zone in their region. They saw this as a way to begin to achieve a nuclear-weapons-free world.

The NPT's approach was different. It rests on three pillars: horizontal non-proliferation; vertical non-proliferation and nuclear disarmament, and the peaceful uses of nuclear energy. It is a contract between NWS and NNWS. The latter will enjoy the benefits of the peaceful uses of nuclear energy and refrain from acquiring nuclear weapons. The former will pursue nuclear disarmament, beginning with the cessation of all nuclear tests.

By then, the International Atomic Energy Agency (IAEA) was in place and would provide the parties with an international verification system, including inspections. The IAEA would do the same for the nuclear-weapon-free zones that have been established.

The NPT was done in good faith, but the NNWS insisted that the situation regarding its implementation be reviewed periodically; thus the five-year conferences. In addition, the NPT was a temporary agreement whose extension would have to be examined after 25 years. In 1995 it was extended indefinitely.

After 1970, despite some very limited bilateral agreements between the US and the USSR, the nuclear arms race continued. The 1963 PTBT had been a hoax since underground tests multiplied. It appeared that since nuclear tests were out of sight, they were also out of mind. Calls for a comprehensive nuclear-weapon-test prohibition (CTBT) fell on deaf ears.

The non-nuclear-weapon States tried to raise the visibility of the nuclear disarmament issues. Some pursued an amendment conference of the Partial Test-Ban Treaty to convert it into a Comprehensive Test Ban Treat (CTBT) as a means of promoting public awareness of the dangers of a continued nuclear arms race. Others refused to endorse the conclusions of the NPT's five-year review unless a CTBT was specifically mentioned. Still others requested an advisory opinion from the International Court of Justice regarding the legality of the use or threat of use of nuclear weapons. Some continued to insist on the conclusion of a treaty prohibiting those weapons of mass destruction. After all, the international community had already banned biological and chemical weapons through multilateral treaties. Why not nuclear weapons as well?

In 1996 the CTBT was finally concluded. Unfortunately, it contains a provision for its entry into force that is reminiscent of the conditions set forth by the Baruch Plan fifty years earlier in order to proceed to a nuclear-weapons-free world. The CTBT must be ratified by the world's 44 nations that have nuclear-related activities. That is the bad news. The good news is that the five NWS that have signed the NPT are abiding by the CTBT's provisions.

In 2009 the international community has come full circle. The 1946 United Nations General Assembly resolution contained the basic elements of a nuclear-weapons-free world: a general commitment to the elimination of nuclear weapons and an internationally-acceptable and verifiable system to promote the peaceful uses of atomic energy. After more than six decades of nuclear proliferation—both horizontal as well as vertical—the world seems poised to implement those same basic elements. And, as in 1946, the US is expected to take the lead.

Public officials in some countries have begun to consider what a world without nuclear weapons would look like. The UN Secretary-General has detailed a five-point proposal.[1] The UK has put forward its ideas in this regard.[2] A number of former political leaders in and out of the US have enlivened the debate with calls for the elimination of nuclear weapons.[3]

A new administration in Washington has begun to bring about some important changes in international relations. During last year's presidential campaign, then Senator Barack Obama called for a world in which there are no nuclear weapons, adding that to get there would not entail unilateral disarmament but a continuing commitment under the NPT on the long road towards eliminating them.[4]

Once in office, President Obama has reiterated his general commitment to the elimination of nuclear weapons. That was one of the basic tenets of the 1946 General Assembly resolution. In his speech in Prague, on 5 April 2009, President Obama described the path to a nuclear-weapons-free world.[5] He began by stating what many believe: "The existence of thousands of nuclear weapons is the most dangerous legacy of the cold war." He then added:

"Today, the cold war has disappeared but thousands of those weapons have not. In a strange turn of history, the threat of global nuclear war has gone down, but the risk of a nuclear attack has gone up. More nations have acquired these weapons. Testing has continued. Black markets trade in nuclear secrets and nuclear materials. The technology to build a bomb has spread. Ter-

[1] "The United Nations and security in a nuclear-weapon-free world," 24 October 2008.

[2] "Lifting *the Nuclear Shadow: Creating the Conditions for Abolishing Nuclear Weapons", a Policy Information Paper by the Foreign and Commonwealth Office, 4 February 2009.*

[3] For example, George P. Shultz, William J. Perry, Henry A. Kissinger and Sam Nunn, "A World Free of Nuclear Weapons," and "Toward a Nuclear-Free World," *Wall Street Journal*, 4 January 2007 and 15 January 2008.

[4] His proposals were the most sweeping put forward by a presidential candidate except for Congressman Dennis J. Kucinich's call for the abolition of nuclear weapons.

[5] The White House, www.whitehouse.gov.

rorists are determined to buy, build or steal one. Our efforts to contain these dangers are centered on a global non-proliferation regime, but as more people and nations break the rules, we could reach the point where the center cannot hold.

Admitting that the goal of a nuclear-weapons-free world would not be easy to achieve, he then described the steps the United States was ready to take:

- reduce the role of nuclear weapons in our national security strategy
- negotiate a new Strategic Arms Reduction Treaty (START) with Russia this year to reduce our warheads and stockpiles[1]
- ratify the CTBT
- conclude a treaty that verifiably ends the production of fissile materials intended for use in nuclear weapons
- strengthen the NPT as a basis for cooperation in the peaceful uses of nuclear energy
- ensure that terrorists never acquire a nuclear weapon
- promote a new international effort to secure all vulnerable nuclear material around the world within four years.

President Barack Obama has made a bold proposal for the elimination of nuclear weapons. If nothing else, he has put nuclear disarmament on the international agenda. A long debate and complicated negotiations will follow, but the US has shown a willingness to lead and, even more important, to set an example. The START proposal is a case in point.

Fortunately, Russia seems to be a willing partner in this first stage. Moscow and Washington must reduce their own arsenals before asking others to do the same. Yet there is bound to be much foot dragging among some of the other nuclear-weapon States. In that regard, the US will also have to point the way in its nuclear posture review. Significant changes in its official nuclear policy could translate into a new nuclear posture for the North Atlantic Treaty Organization. Nuclear-weapon States and their allies must abandon the way they now relate to nuclear weapons.

Another question which President Obama did not mention is the degree to which his proposals will encounter resistance within his own country, especially among groups most interested in the maintenance of the nuclear *status quo*, beginning with the nuclear laboratories themselves. In the US, as elsewhere in the nuclear-weapon States, these have grown accustomed to forming part of the national defense budget. The development, effectiveness and safety of nuclear weapons are their livelihood, which they have resisted to surrender in the past.

Six decades ago it might have been easier to achieve a nuclear-weapons-free world, but now it will take enlightened leadership to do so.

[1] On 1 April 2009 Presidents Obama and Medvedev agreed in London to pursue such an agreement.

Toward a world without nuclear weapons[1]

Jean Chrétien, Joe Clark, Ed Broadbent and Lloyd Axworthy

At the end of the Second World War, Canada was one of the few countries that possessed the technology and raw materials needed to produce nuclear weapons. In the wake of the destruction of Hiroshima and Nagasaki, the Canadian leaders of the day, shocked at the terrifying power of the bomb, renounced that option and turned their attention to achieving an international agreement to control the spread of nuclear weapons and to free humanity from the risk of annihilation.

Lester Pearson was under no illusions that the genie could be put back into the bottle. In his memoirs, he recorded his feelings of despair as he contemplated the postwar nuclear security environment: "Peace may have little to do with victory."

Regrettably, Canada's future Nobel Peace Prize winner was right, and the world endured 45 years of East-West confrontation with each side threatening to unleash its nuclear weapons on the other in the case of war. People of goodwill thus rejoiced when the Cold War ended. And in the mood of euphoria that prevailed, many expected that a way would surely be found to deal once and for all with the threat nuclear weapons posed to the security of the world.

Unfortunately, that hope proved to be illusory.

New nuclear weapons states have emerged. Others are on the point of becoming nuclear capable. And these states cannot be counted on to adhere to the doctrine of "mutually assured destruction" that ironically helped keep the peace between NATO and the Warsaw Pact throughout the Cold War.

We also live in an era of international terrorism, a period when individuals are prepared to kill themselves for the sake of what they consider to be a higher cause. It is not to be excluded that suicide bombers will one day obtain nuclear weapons or nuclear materials.

It is thus a welcome development that more and more statesmen have been sounding a wake-up call to governments and peoples to deal urgently with the nuclear crisis. President Barack Obama has launched a debate in the United States. He has been joined by others in Germany, the United Kingdom, Italy and Australia. A number of specific proposals have been made to further the goal of eventually abolishing nuclear weapons in their entirety.

We believe that the future of humanity is as threatened now as it was at the end of the Second World War from proliferation of nuclear weapons. There are many good ideas already on the table to begin to tackle the issues, but unless action is taken now, the situation could become catastrophic.

We therefore support the goals of our colleagues in the United States, the United Kingdom, Germany, Italy and Australia and call on governments and ordinary people everywhere to push for action now before it is too late.

Jean Chrétien and Joe Clark are former prime ministers of Canada. Ed Broadbent is a former leader of the federal New Democratic Party, and Lloyd Axworthy is a former foreign affairs minister.

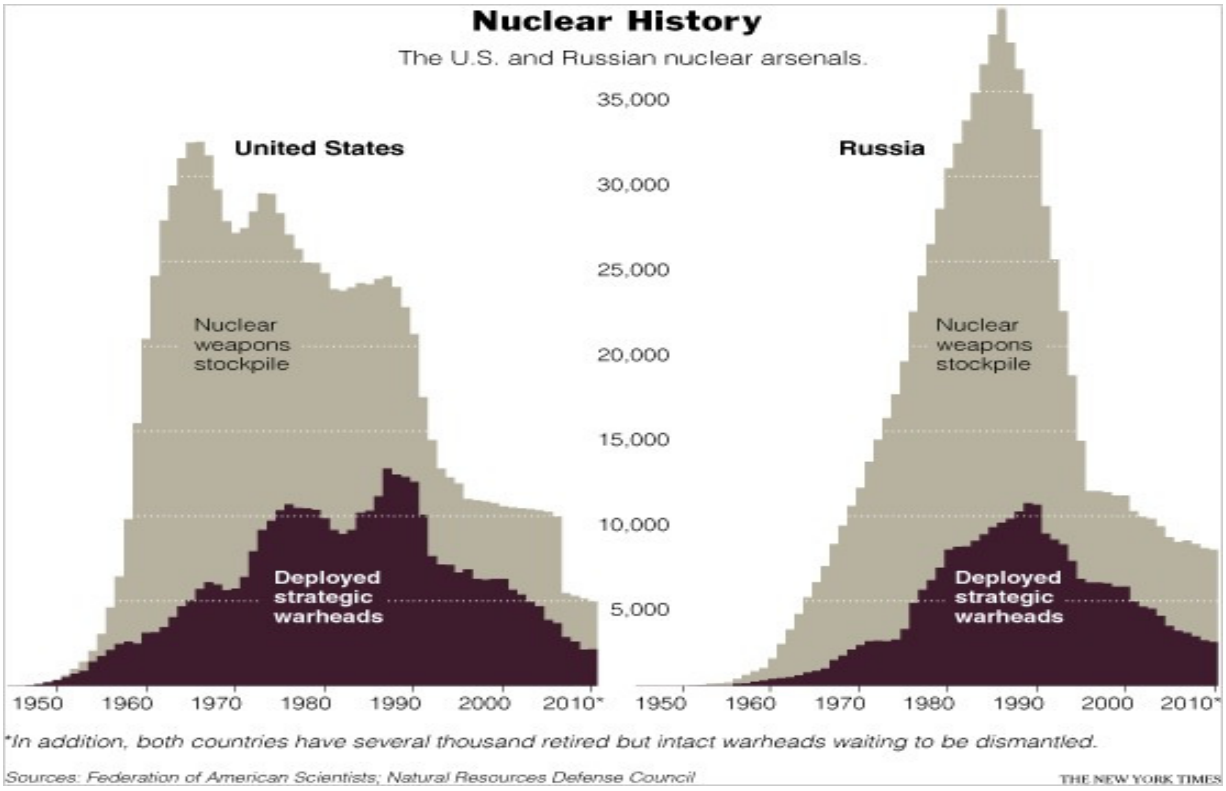
[1] March 26, 2010, *Globe and Mail*, Toronto, Canada.

NEW START TREATY

(Three newspaper clippings, a chart and two comments)

1. United States and Russia Nuclear History Chart
2. "Russia and U.S. Sign Nuclear Arms Reduction Pact" (nota de Peter Baker en *The New York Times*, April 8, 2010).
3. "Disposal of Plutonium From U.S.-Russian Disarmament Is Likely to Take Decades" (nota de Matthew L. Wald en *The New York Times*, April 8, 2010).
4. "A Season for Disarmament" (artículo de Hans Blix en el I.H.T., April 4, 2010
5. "Talking points on the Prague Treaty (a few critical remarks)" (text by Jozef Goldblat distributed among the members of the Pugwash Movement, 8 April 2010).
6. "The Next Treaties," editorial, *The New York Times,* December 31, 2010.

1. United States and Russia Nuclear History Chart



2. Russia and U.S. Sign Nuclear Arms Reduction Pact

(Nota de Peter Baker en *The New York Times*, April 8, 2010)

PRAGUE — With flourish and fanfare, President Obama and President Dmitri A. Medvedev of Russia signed a nuclear arms control treaty on Thursday and opened what they hoped would be a new era in the tumultuous relationship between two former cold war adversaries.

Meeting here in the heart of a once-divided Europe, the two leaders put aside the acrimony that has characterized Russian-American ties in recent years as they agreed to bring down their arsenals and restore an inspection regime that expired in December. Along the way, they sidestepped unresolved disputes over missile defense and other issues.

"When the United States and Russia are not able to work together on big issues, it is not good for either of our nations, nor is it good for the world," Mr. Obama said as his words echoed through a majestic, gilded hall in Prague Castle. "Together we have stopped the drift, and proven the benefits of cooperation. Today is an important milestone for nuclear security and nonproliferation, and for U.S.-Russia relations."

Mr. Medvedev called the treaty signing "a truly historic event" that will "open a new page" in Russian-American relations. "What matters most is this is a win-win situation," he said. "No one stands to lose from this agreement. I believe this is a typical feature of our cooperation. Both parties have won."

The Russian president signaled general support for the American-led drive to impose new sanctions on Iran, saying that Tehran's nuclear program has flouted the international community. "We cannot turn a blind eye to this," Mr. Medvedev said, while adding that sanctions "should be smart" and avoid hardship for the Iranian people.

Mr. Obama said he expected "to be able to secure strong, tough sanctions" on Iran during the spring.

The apparently warm relationship between the presidents was on display as they entered the hall to trumpet music. They whispered and smiled with each other in English as they sat side by side signing copies of the so-called New Start treaty, then traded compliments during a follow-up exchange with reporters.

Mr. Obama called the Russian a "friend and partner" and said, "Without his personal efforts and strong leadership, we would not be here today." For his part, Mr. Medvedev said the two had developed a "very good personal relationship and a very good personal chemistry, as they say."

While the treaty will mandate only modest reductions in the actual arsenals maintained by the two countries, it caps a turnaround in relations with Moscow that sank to rock bottom in August 2008 during the war between Russia and its tiny southern neighbor, Georgia. When he arrived in office, Mr. Obama made restoring the relationship a priority, a goal that coincided with his vision expressed here a year ago of eventually ridding the world of nuclear weapons.

Even as the two presidents hailed the treaty, however, they found no common ground on American plans to build an antimissile shield in Europe to counter any Iranian threat. Mr. Obama refused Russian demands to include limits on missile defense in the treaty, nearly scuttling the agreement. In the days leading up to the ceremony here, Russian officials alternately claimed the agreement would bind the program or complained that it did not and threatened to withdraw if it went forward.

The treaty, if ratified by lawmakers in both countries, would require each country to deploy no more than 1,550 strategic warheads, down from 2,200 allowed in the Treaty of Moscow signed by President George W. Bush in 2002. Each would be limited to 800 total land-, air- and sea-based launchers — 700 of which can be deployed at any given time — down from 1,600 permitted under the Strategic Arms Reduction Treaty of 1991, or Start.

Because of counting rules and unilateral reductions over the years, neither country would have to actually eliminate large numbers of weapons to meet the new limits. Moreover, the treaty does not apply to whole categories of weapons, including thousands of strategic warheads held in reserve and tactical warheads, some of which are still stationed in Europe.

But the treaty would re-establish an inspection regime that lapsed along with Start last December and bring the two countries back into a legal framework after years of tension. Moreover, both sides hope to use it as a foundation for a new round of negotiations that could lead to much deeper reductions that will cover weapons like stored or tactical warheads.

The first task for Mr. Obama after returning to Washington will be persuading the Senate to ratify the new treaty, and advisers planned to head to Capitol Hill on Thursday, even before his return, to brief Senate staff members.

Ratification requires a two-thirds vote, or 67 senators, meaning the president needs at least eight Republicans. The White House is counting on the support of Senator Richard G. Lugar of Indiana, the senior Republican on the Foreign Relations Committee and one of his party's most respected voices on international affairs, to clear the way.

But it could still have to contend with skeptics like Senator Jon Kyl of Arizona, the Republican whip, who have expressed concern about limiting American defenses. And the polarized politics of Washington heading into a midterm election are volatile, meaning a vote could be delayed until after the election, which would further put off other elements of Mr. Obama's antinuclear agenda, such as consideration of the Comprehensive Test Ban Treaty.

The White House wants a vote by the end of the year, and Robert Gibbs, the president's press secretary, reminded reporters on Air Force One during the flight here that past arms control treaties have received near-unanimous votes. "We are hopeful that reducing the threat of nuclear weapons remains a priority for both parties," he said.

But what he did not note is that the Senate has also rejected an arms control agreement in recent times, refusing to ratify the test ban treaty when it was originally brought up in 1999. Moreover, it took three years in the 1990s to ratify the first Start follow-up treaty, known as Start 2, which never went into force because of a dispute over Russian conditions attached during its own ratification process.

Mr. Obama hopes to use the trust built during the treaty negotiations to leverage more cooperation from Moscow on other issues, most notably pressuring Iran to give up its nuclear program.

Speaking after signing the treaty with Mr. Medvedev, Mr. Obama said the United States and Russia were "part of a coalition of nations insisting that the Islamic Republic of Iran face consequences, because they have continually failed to meet their obligations" under international rules governing the use of nuclear materials.

"Those nations that refuse to meet their obligations will be isolated, and denied the opportunity that comes with international integration," he said. Iran maintains its nuclear program is for civilian purposes, but the United States and its western allies suspect Tehran wants to build a nuclear weapon.

Warmer relations with the Kremlin worry American allies in Central and Eastern Europe, which were already concerned that Mr. Obama's decision last year to scrap Mr. Bush's missile defense plan in favor of a reformulated architecture was seen as a concession to Moscow.

Hoping to soothe those concerns, Mr. Obama plans to have dinner Thursday night in Prague with 11 leaders from the region, including the presidents or prime ministers of Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia.

Similarly, Mr. Obama made sure before leaving Washington to speak by phone with President Mikheil Saakashvili of Georgia to reassure him of American support. He will meet separately with Czech leaders on Friday morning before returning to Washington.

Alan Cowell contributed reporting from Paris, and Dan Bilefsky from Prague.

3. Disposal of Plutonium From U.S.-Russian Disarmament Is Likely to Take Decades "

(Nota de Matthew L. Wald en *The New York Times*, April 8, 2010)

WASHINGTON — The plutonium that is the key ingredient in thousands of nuclear weapons sidelined in the new arms control treaty between the United States and Russia is likely to be around for decades at least, according to experts. They say the process for destroying plutonium has not yet started to whittle down the surplus already created by previous agreements.

Plutonium can be consumed in nuclear power reactors, creating the possibility of a swords-to-plowshares conversion that would have the added benefit of making redeployment of the weapons impossible. But converting the weapons plutonium for civilian reactor use has proved much slower than expected.

Since the late 1990s, the United States has been trying to build a factory at the Savannah River Site, near Aiken, S.C., that would convert the plutonium to reactor fuel. Government officials once hoped that such fuel could be loaded into reactors in 2002. But construction did not begin until 2007 and even if all goes well, the plant will not be finished until 2016. The cost of the plant, once estimated at $2.3 billion, is now $4.8 billion. The plant is the largest nuclear construction project in the country.

The plan is to use the amount already declared surplus, 34 tons, over about 15 years, so if the new arms agreement results in more plutonium being declared surplus, it would not start to be converted to fuel until the 2030s, at the earliest, people involved in the project say.

"If we're going to dismantle more warheads based on a new agreement, you'd have to stretch out the time," said Alan Hanson, a vice president of Areva, a French company participating in the plant construction. "We're stuck with the geometry of the building that's under construction right now."

Energy officials said the effort had slowed because of its expense. They must also build a factory that will take the plutonium metal from the bombs and convert it into a powdered oxide, the form in which it can be fashioned into fuel pellets, but there is not enough money to do all this at once, officials say.

And the civilian nuclear power industry is unenthusiastic about the product, which would substitute for the uranium they ordinarily use.

Duke Energy signed a contract to use some of the plutonium fuel assemblies on a test basis, but let the contract expire in 2008 because it wanted guarantees that the factory would deliver the fuel on schedule. The Energy Department would not agree.

And the Duke test uncovered a flaw in the fuel assembly design. Metals used in reactors tend to expand as they are bombarded with radiation, because the subatomic particles that sustain the radiation weaken bonds in the metal. But the test assemblies, built for the department by Areva, expanded more than expected. Engineers are now considering alternative metals.

Meanwhile the Energy Department is negotiating with the Tennessee Valley Authority, a federal agency that runs several power reactors. Current reactors are limited in how much plutonium they can substitute for their normal fuel, uranium, so the department needs half a dozen reactors as customers to consume the output of the fuel factory, 3.5 tons a year. A single reactor could accept the plutonium from about 150 weapons a year.

The Energy Department plans to sell the plutonium at a discount, to replace the uranium that the utilities usually buy.

"It's frankly not as attractive" as uranium, said Ken Bromberg, assistant deputy administrator for fissile materials at the National Nuclear Security Administration, part of the Energy Department.

Opponents of the plutonium conversion technology say plutonium creates security concerns, because stolen plutonium fuel assemblies could be reprocessed into bombs, unlike stolen uranium fuel assemblies.

In the Clinton administration, the Energy Department proposed a quicker route to disposal. The department has tanks filled with millions of gallons of high-level liquid waste, that it is slowly mixing with molten glass, to solidify for eventual burial. It proposed mixing the plutonium in with the glass.

But Mr. Bromberg said the Russians objected to that method because it seemed less permanent than using the plutonium in reactor fuel, where much of it would be broken down into materials that are hard to handle, and useless for bombs.

The Russians were supposed to destroy a like amount of plutonium, 34 tons, in parallel, and their program has also been delayed for years, partly because Western countries promised to raise $2 billion to pay for the Russian program, but never did. The plan now is for Russia to consume the plutonium in a reactor that is already running and is designed to use plutonium; the United States is paying for modifications to the plant so it does not create more plutonium than it consumes.

Whether the American queue of weapons plutonium awaiting conversion into reactor fuel will grow longer is not clear; first, a president would have to declare additional material as surplus. The new agreement with the Russians is over launchers and delivery systems, and does not require the dismantlement of weapons.

But eliminating weapons-usable material is a long-term goal, and the United States already has such a large plutonium surplus that it may be running out of storage places.

The inspector general of the Energy Department concluded in January 2009 that the Energy Department plant that disassembled the bombs, in Amarillo, Tex., may be filling up. The plant, called Pantex (for Panhandle of Texas), stores the plutonium "pits," the softball-sized spheres at the heart of the bombs, in bunkers built by the Army in the 1930s for artillery shells. But the audit said the storage capacity was unclear because plant managers did not know how much space had already been consumed.

4. "A Season for Disarmament"

(Article by Hans Blix, *IHT*, April 4, 2010)

STOCKHOLM — The financial crisis and global warming have had the world's attention in recent years. Thanks to President Barack Obama's initiative, perhaps the season for nuclear disarmament has finally arrived.

On Thursday, President Obama will meet Russian President Dmitri Medvedev in Prague to sign a nuclear arms control agreement between the United States and Russia that will reduce their arsenals by 30 percent.

The new treaty will be received positively. There will be praise for the Obama administration's attitude toward arms control and disarmament and for Russia's readiness to join hands with the United States.

Though not achieving the drastic cuts in nuclear arsenals and delivery vehicles that the world is longing for, the U.S.-Russian treaty is important and encouraging. Coming after Bush administration policies that nearly sent the two states into a new Cold War, the new treaty constitutes the resetting of an important button. It preserves arrangements for confidence-building mutual inspections and sets the stage for negotiating more far-reaching cuts.

We should be aware, however, that a next step of deeper reductions will hardly be attainable unless there is agreement on extensive cooperation on missile defense. Russia is deeply suspicious that the missile shield could enable the United States to launch an attack on any target in Russia while itself remaining immune to any such attacks. Further bilateral disarmament will also be impeded if Russia feels that the NATO alliance seeks to encircle it by expanding its military cooperation through membership or otherwise with more states neighboring Russia.

The signing on Thursday will take place one year after President Obama's presentation in Prague of a detailed program for the revival of global nuclear arms control and disarmament. Later this month he will be the host in Washington of a large summit meeting that will focus on nuclear security. In May, the operation of the Nuclear Non-Proliferation Treaty will be the subject of review at a conference in New York in which nearly all governments in the world will take part. The review that took place in 2005 ended in acrimony and some predicted the end of the treaty.

Through adherence to the nonproliferation treaty that was concluded in 1970, states have committed themselves to stay away from nuclear weapons or to move away from these weapons. If all states had joined and fulfilled their commitments, the treaty would have led by now to a world free of nuclear weapons. This has not happened, of course. The number of nuclear weapons, which peaked at more than 50,000 during the Cold War, is still over 20,000 — most of them in the United States and Russia. The number of states with nuclear weapons has gone from five to nine since 1970.

There is also frustration at the lack of progress on many important items relevant to the treaty. The Comprehensive Test Ban Treaty has not entered into force because the United States, China and a number of other states have not ratified it. The negotiation of a convention prohibiting the production of enriched uranium and plutonium for weapons remains blocked at the Geneva Disarmament Conference. The Additional Protocol of the International Atomic Energy Agency for strengthened safeguards inspections remains unratified by a large number of states, including Iran.

Some items are bound to attract much attention at the nonproliferation treaty review conference in May. One is that 20 years after the end of the Cold War, the obligation of five nuclear-weapon states under the treaty to negotiate toward nuclear disarmament has not led us anywhere near zero. Another grievance — especially among Arab states — is that Israel has nuclear weapons and has refrained from adhering to the treaty. A third is that the treaty has been violated by several states. Although Iraq and Libya have been brought into compliance, North Korea has not and Iran and perhaps others might be aiming to ignore the treaty.

As everyone knows, views on Iran's program for the enrichment of uranium have long been divided and they are likely to remain divided at the nonproliferation treaty conference. There are many reasons for suspecting that the aim of Iran's enrichment program is the development of a nuclear weapon in breach of treaty obligations or, at least, to move close to the ability to make a weapon. This has already resulted in a dangerous increase of tension in the region.

Why has it not been possible so far to persuade Iran to abandon or suspend the enrichment program? It is hard to avoid the impression that the approach to Iran has often been high-handed and clumsy. Iran has been told that negotiations about a variety of benefits would be open but only on the condition that the enrichment program first be suspended. Who gives up a trump card before the game?

President Obama has had the good sense to authorize direct talks without any precondition. These talks are now stuck, but should be resumed.

States developing nuclear weapons have mostly done so for perceived security reasons and for status. When Iran began its alleged enrichment program in the 1980s it might have rightly perceived Iraq as a future nuclear threat. With that threat gone, how wise has it been for the U.S. and Israel to float the idea of bombing Iran's enrichment facilities?

Would it not be wiser to offer diplomatic relations and guarantees against armed attacks/subversion as a part of a nuclear deal? This was done in the case of North Korea. Why not in the case of Iran?

The treaty review conference will hardly enter into these questions. But it will probably discuss how the concept of a Middle East zone free of weapons of mass destruction can be taken up for consideration. Such a zone could well be designed so as to facilitate ventures to use nuclear power for electricity generation or desalination of water, perhaps even on a regional basis.

However, to reduce tensions in the region, the concept needs to exclude from the whole zone not only nuclear weapons but also plants for the enrichment of uranium and reprocessing of plutonium.

In the last few years the appeals have intensified for governments to aim, as the nonproliferation treaty does, to free the world from nuclear weapons. In January 2007, former U.S. Secretaries of State George Shultz and Henry Kissinger, former Secretary of Defense Bill Perry and former Senator Sam Nunn published an article in which they reminded the United States and the world that the Cold War was over. They argued that if the United States, Russia and others continued to see nuclear weapons as necessary for their security, others would see the same thing and proliferation would result. They urged that the United States and Russia take the lead in a long process that would eventually result in a nuclear-weapon-free world.

Their plea has had a broad and strong response in the world. While focusing on many near-term measures, such as the current deal, Mr. Obama and Mr. Medvedev jointly espoused the long-term aim of full disarmament in a declaration in London in April 2009.

Is this long-term aim naïve and utopian? Not necessarily. Between 1910 and 1945 the world experienced two world wars and a collapsed League of Nations. Much could happen between 2010 and 2045. Interdependence is rapidly accelerating and forcing states to show regard for each other's security interests. For the moment, however, there is only a hopeful start on a long journey.

Hans Blix was the head of the International Atomic Energy Agency from 1981 to 1997 and chief U.N. arms inspector for Iraq from 2000 to 2003.

5. "Talking points on the Prague Treaty (a few critical remarks)"

(Text by Jozef Goldblat distributed among the members of the Pugwash Movement, 8 April 2010)

From the political point of view, the importance of the document signed in Prague on April 8, 2010, is undeniable. It will certainly facilitate U.S.-Russian cooperation in settling the present major inter-state disputes. But to call it a "huge" step toward nuclear arms control, as U.S. Senator Kerry has done in his recently published article (IHT of 30 March 2010) is an exaggeration. In some respects the treaty makes a step backwards as compared with certain previously negotiated agreements.

The main quantitative limitations of nuclear weapons apply to warheads operationally deployed on launchers and prepared for instantaneous firing. The parties may keep as many as 1550 such strategic warheads. According to the agreed counting rules, a heavy bomber designed to carry more than one weapon is to be counted only as one. Consequently, the reductions from the present levels are modest, but each of these weapons is capable of destroying a city with a population of several million inhabitants and produce catastrophic environmental effects for the entire globe. Warheads possessed by the parties in excess of agreed limits do not need to be decommissioned. They may be kept in storage, whereas tactical nuclear weapons are not covered at all. The verification of compliance provisions are far from allowing on-site inspections to the extent necessary to build mutual confidence. The treaty is to last only seven years. Even during this short period, each party has the right to withdraw from it at any time and under any pretext.

A new cycle of negotiations will be needed to fill the gaps of the Prague Treaty and to remove its shortcomings. These negotiations should start without delay after the treaty's entry into force and proceed full speed, beginning perhaps with the drafting of a convention banning the use of nuclear weapons Otherwise, our great grandchildren will still live in a nuclear age.

6. The Next Treaties

(Editorial, *The New York Times,* December 31, 2010)

Even after the herculean effort required to win Senate ratification of the New Start treaty, President Obama has no time to rest. The treaty, which mandates modest cuts in long-range nuclear weapons, is on its way to approval by the Duma, the lower house of Parliament in Russia.

Once that happens, Washington and Moscow should quickly begin discussing other, more far-reaching agreements.

Two decades after the end of the cold war, the United States and Russia still have many thousands of nuclear weapons. The two countries cannot credibly argue for restraining the nuclear ambitions of Iran, North Korea and other wannabes unless they keep working to bring their own numbers down.

One of their most urgent tasks is slashing — or better, doing away with — their tactical nuclear weapons. These smaller arms, with a 300- to 400-mile range, have no military utility or deterrent value. They also have never been the subject of a treaty, or of any verification. That is what makes them so particularly frightening.

The United States has about 500 tactical nukes, including 180 in Belgium, Germany, Italy, the Netherlands and Turkey. These weapons are considered secure. But Russia's arsenal is much larger — between 3,000 and 5,000 — and, likely, vulnerable to covert sale or theft.

President Obama is already committed to negotiating cuts in tactical nukes. And he may have some new allies: Republicans who pushed through a side resolution to the New Start treaty requiring negotiations on tactical weapons within a year. If they meant what they said — and weren't just trying to kill New Start — they need to support the president in any negotiations and commit to swift ratification of a treaty.

Whether Russia would give up its "advantage" in tactical weapons is hard to gauge. Moscow had said it wouldn't negotiate until Washington removed all of its tactical weapons from Europe. More recently, Russian officials appear more open to discussions.

The two sides cannot stop there. They also need to reduce their number of stored warheads — their "hedge." Russia and the United States are each estimated to have around 2,000 stored weapons. Some spares are needed as replacements in case of catastrophic failure in deployed warheads or cheating by the other side, but these huge reserves are far more than necessary.

Russia will want to include missile defenses in any negotiations. That doesn't need to be a deal breaker. The administration has already made important progress by persuading Moscow to cooperate with NATO in jointly developing a system intended to intercept short- and medium-range missiles.

We also strongly urge President Obama to press Congress to ratify the Comprehensive Test Ban Treaty, signed by President Bill Clinton in 1996. It is nearly impossible for countries to build weapons without testing, so the treaty is a powerful tool for curbing proliferation. But it cannot come into force without ratification by the United States and a handful of other countries.

Senate Republicans blocked ratification in 1999. But there are few agreements more in this country's favor. The United States tested its weapons more than 1,000 times before adopting a voluntary moratorium nearly 18 years ago. President Obama has already promised a huge infusion of new money — $85 billion over 10 years — to ensure the nuclear weapons complex remains safe and up to date without testing.

President George W. Bush scoffed at arms control treaties as old think. President Obama was right to revive negotiations, but he still has a lot of work ahead. The threat of nuclear proliferation and nuclear terrorism are all too clear and present.

United States' 2010 Nuclear Posture Review

(Five newspaper clippings and comments)

1. "Mr. Obama's Nuclear Policy" (editorial *The New York Times*, April 6, 2010).
2. "Nuclear Weapons" (note in *The New York Times,* April 6, 2010).
3. "Nuclear Labs Raise Doubts Over Viability of Arsenals" (note by William J. Broad, *The New York Times,* March 26, 2010).
4. "After Prague, What's Next for Arms Control?" (article by George Perkovich, I.H.T, April 7, 2010).
5. "What Obama's Nuclear Posture Review accomplishes" (article by Joshua Pollack, *Bulletin of the Atomic Scientists*, 8 April 2010).

1. "Mr. Obama's Nuclear Policy"

(Editorial *The New York Times*, April 6, 2010)

President Obama has spoken eloquently about his vision of a world without nuclear weapons. It is a lofty goal that will not be achieved during his presidency — or for years after that. But in a very dangerous time, he is taking important steps to make the world safer and bolster this country's credibility as it tries to constrain the nuclear ambitions of Iran, North Korea and others.

Two decades after the end of the cold war, the United States and Russia still have a combined total of more than 20,000 nuclear weapons. Mr. Obama has revived arms control negotiations, and later this week, he and President Dmitri Medvedev of Russia will sign a new agreement (the first since 2002) that will reduce the number of strategic warheads each side has deployed from 2,200 to 1,550.

On Tuesday, Mr. Obama released his Nuclear Posture Review. It does not go as far as it should, but it is an important down payment on a saner nuclear policy.

The document substantially narrows the conditions under which the United States would use nuclear weapons. The last review — done in 2002 by the George W. Bush administration — gave nuclear weapons a "critical role" in defending the country and its allies and suggested that they could be used against foes wielding chemical, biological or even conventional forces.

The new review says the "fundamental role" of nuclear weapons is to deter nuclear attack on the United States and its allies, and it rules out the use of nuclear weapons against nonnuclear countries, even if they attack the United States with unconventional weapons.

There is an important caveat. That assurance only goes to countries that are in compliance with the Nuclear Nonproliferation Treaty, which leaves out North Korea and Iran. It would have been better if Mr. Obama made the "sole" purpose of nuclear weapons deterring a nuclear attack. No one in their right mind can imagine the United States ever using a nuclear weapon again. America's vast conventional military superiority is more than enough to defend against most threats.

This formulation seems mainly intended to deter hard-line critics on Capitol Hill. But any loophole undercuts Washington's arguments that nonnuclear states have no strategic reason to develop their own arms.

Mr. Obama has wisely made the prevention of nuclear terrorism and proliferation a central strategic priority. And the administration has rightly decided to lead by example. We were especially encouraged to see the review's statement that the country "will not develop new nuclear warheads." There is still some wiggle room, which we hope is not exercised. New nuclear warheads are not needed.

The review commits to pursuing further arms reductions with Russia. And it says that future talks must also focus on cutting back the 15,000 warheads, in total, that the United States and Russia keep as backup — the so-called hedge — and short-range nuclear weapons.

The United States has 500 tactical nuclear weapons, which are considered secure, but Russia has 3,000 or more that are far too vulnerable to theft. Any agreement will take years to complete, and Mr. Obama and Mr. Medvedev should start talking now. The review also commits to talking to China about its arsenal.

Mr. Obama has committed to maintaining the safety and security of America's nuclear stockpile. He has already backed that up with an extra $624 million in next year's budget for the nuclear labs and promised — far too generously, in our view — an additional $5 billion over the next five years to build up their aging infrastructure. Mr. Obama has also promised support for more advanced conventional arms.

None of those measures are likely to quiet his critics, who already are charging that Mr. Obama is weakening America's defenses. They will likely get even louder when it comes time to ratify the New Start treaty with Russia and the long-deferred Comprehensive Test Ban Treaty.

The stakes for this country's security are high. And most Americans aren't paying attention. Mr. Obama has a strong argument. He will need to push back hard.

2. Nuclear Weapons

(Note in *The New York Times,* April 6, 2010)

Almost from the moment the first atomic bomb was detonated in New Mexico in July 1945, the menacing aura of the nuclear age has inspired visions of a world free of nuclear weapons. Barack Obama is the first president to make nuclear disarmament a centerpiece of American defense policy.

Since the end of the Cold War, the nuclear challenge posed by Russia is perhaps the least pressing. Both Washington and Moscow want to renew the Strategic Arms Reduction Treaty, which expired in late 2009, and both say they want to shrink their arsenals.

More complex are problems posed by the rise of new nuclear states, chiefly North Korea, which has now conducted two nuclear tests, and Iran, which experts say will be able to build a warhead soon, if it cannot already. Pakistan has the fastest-growing arsenal, India's is improving, and Israel's nuclear capacity has never been publicly discussed, much less dealt with, by the United States.

The Nuclear Posture Review

President Obama's new strategy, known as the Nuclear Posture Review, will declare that "the fundamental role" of nuclear weapons is to deter nuclear attacks on the United States, allies or partners, a narrower presumption than the past. It also eliminates much of the ambiguity that has deliberately existed in American nuclear policy since the opening days of the cold war. For

the first time, the United States is explicitly committing not to use nuclear weapons against nonnuclear states that are in compliance with the Nuclear Nonproliferation Treaty, even if they attacked the United States with biological or chemical weapons or launched a crippling cyberattack.

While Mr. Obama ended financing in 2009 for a new nuclear warhead sought by the Bush administration, the new strategy goes further. It commits Mr. Obama to developing no new nuclear weapons, including a low-yield, deeply-burrowing nuclear warhead that the Pentagon sought to strike buried targets, like the nuclear facilities in North Korea and Iran. Mr. Obama, officials said, has determined he could not stop other countries from seeking new weapons if the United States was doing the same.

Mr. Obama's reliance on new, non-nuclear "Prompt Global Strike" weapons is bound to be contentious. As described by advocates within the Pentagon and in the military, the new weapons could achieve the effects of a nuclear weapon, without turning a conventional war into a nuclear one. As a result, the administration believes it could create a new form of deterrence — a way to contain countries that possess or hope to develop nuclear, biological or chemical weapons, without resorting to a nuclear option.

At the center of the new strategy is a renewed focus on arms control and nonproliferation agreements, which were largely dismissed by the Bush administration. That includes an effort to win passage of the Comprehensive Test Ban Treaty, which was defeated during the Clinton administration and faces huge hurdles in the Senate, and revisions of the Nuclear Nonproliferation Treaty to close loopholes that critics say have been exploited by Iran and North Korea.

Tactical nuclear weapons were developed during the cold war as generally lower-yield, shorter-range explosives that could be used on the battlefield. The United States and its NATO allies relied on them as a deterrent to any invasion of Western Europe by what were presumed to be superior Soviet and Warsaw Pact land forces. Since the demise of the Soviet Union, Russia has come to view tactical nuclear weapons as a bulwark against American conventional supremacy.

Washington and Moscow emerged from the cold war determined to reduce tactical nuclear arms, and both sides announced unilateral cuts in 1991. As a result, 17,000 tactical nuclear weapons were withdrawn from service, but no treaty ever imposed legally binding limits. To curb the proliferation of nuclear weapons, the United States and Russia have said they hope to conclude a new agreement that would envisage deep cuts in land-based strategic missiles.

Such an accord would build on the second Strategic Arms Reduction Treaty, known as Start II, which called for the elimination of almost three-quarters of the nuclear warheads and all the multiple-warhead land-based missiles held by the United States and the former Soviet republics.

The Nuclear Nonproliferation Treaty

The Nuclear Nonproliferation Treaty, or NPT, entered into force in 1970. It was claimed at the time as one of the most effective tools in curbing the spread of nuclear weapons and sought to codify the right of nations to use nuclear technology for peaceful purposes.

There are five declared nuclear states — the United States, Britain, France, Russia and China. Three states with nuclear weapons have refused to sign the NPT — India, Pakistan and Israel — and North Korea renounced the treaty in 2003. Iran remains a signatory, but the United Nations Security Council has repeatedly found it in violation of its obligations, because it has

hidden nuclear plants and refused to answer questions about evidence it was working on a warhead.

3. "Nuclear Labs Raise Doubts Over Viability of Arsenals"

(Note by William J. Broad, *The New York Times,* March 26, 2010)

In a challenge to the White House, the nation's nuclear weapons laboratories have warned Congress that federal programs to extend the life of the nation's aging nuclear arsenal are insufficient to guarantee the viability of the weapons for decades to come.

The warning, which implicitly endorsed the idea of creating an expensive new generation of more reliable nuclear warheads, has no direct bearing on the new arms control agreement reached this week by the United States and Russia.

Rather, it addresses a long-simmering debate on what steps the United States should take to ensure confidence in the destructive capacity of its shrinking nuclear arsenal.

President Obama came into office vowing to end a Bush administration initiative to build a new generation of nuclear arms. In a speech last month to the National Defense University, Vice President Joseph R. Biden Jr. praised the labs for maintaining the arsenal and promised an additional $5 billion over the next five years to support that work.

The new warning about the arsenal's reliability came in letters from the directors of the nation's three nuclear weapons labs to Representative Michael R. Turner, an Ohio Republican who is the ranking minority member of the Armed Services Committee's subcommittee on strategic forces. He had asked the directors for their opinions about a federal report, made public late last year, that suggested programs to extend the life of the nation's nuclear weapons were good enough to guarantee their potency for decades to come.

That finding, from an independent group of scientists that advises the federal government on issues of science and technology, could influence whether the Senate ratifies another nuclear treaty, the Comprehensive Test Ban Treaty — a prime objective of the Obama administration — or whether the nation instead prepares for the design of new nuclear arms.

Republicans on Capitol Hill have argued that concerns over the reliability of the aging stockpile and the possible need for new designs compel the nation to retain the right to conduct underground tests of new weapons.

The three laboratory directors all criticized the report from the group of independent scientists, which is known as the Jason panel. Michael R. Anastasio, director of the Los Alamos National Laboratory, said he "did not agree" with the report's conclusion about maintaining the nuclear arsenal for decades with existing methods.

"Some materials and components in the current stockpile cannot be replicated in a refurbishment," he wrote, adding that available ways to mitigate aging were "reaching their limits."

George H. Miller, director of the Lawrence Livermore National Laboratory, said the main findings of the panel's report "understate, in my view, the challenges and risks encountered in ensuring a safe and reliable nuclear force."

Although the three letters were all written in January, Mr. Turner's office released them now amid reports of an agreement on the new arms reduction treaty.

Arms control advocates dismissed the letters from the nuclear laboratories, which employ many thousands of nuclear specialists, as blatant attempts to protect their turf, rather than to air objective assessments.

"They are calculating that the administration does not have the courage to do battle with them, and they may be right," said Greg Mello, executive director of the Los Alamos Study Group, a private organization that monitors the nuclear laboratories.

"Stepping back," he added, "it appears the White House and liberals in Congress have been outmaneuvered — again — by the nuclear weapons establishment."

In a statement on Thursday, Mr. Turner said that he was making the letters public "to further inform the public discussion on U.S. nuclear weapons policy and strategy" and that he planned to raise the reliability issue at a coming hearing with the director of the National Nuclear Security Administration, which runs the weapons laboratories.

4. "After Prague, What's Next for Arms Control?"

(Article by George Perkovich, I.H.T, April 7, 2010)

In Prague one year ago, President Obama declared "America's commitment to seek the peace and security of a world without nuclear weapons." The speech elicited strong reactions around the world. Elites and media who favor nuclear disarmament applauded. Others jeered, warning that a world without nuclear weapons would destabilize regional and global power balances and raise the risks of great power war.

More importantly, the range of states whose cooperation would be necessary to implement the Prague agenda either oppose it or have done little to help achieve it. Public opinion has not mobilized to make nuclear disarmament and nonproliferation a highly salient issue in any single country, including the United States. The result is a president ready to lead a long-term campaign to remove the existential threats posed by nuclear weapons, but as yet lacking sufficient followers to make it happen.

Proponents and critics have selectively interpreted or misinterpreted the vision Mr. Obama set out in Prague. Some on the left hope (and on the right fear) that he intends to pursue a treaty to ban nuclear weapons, or that he contemplates unilateral U.S. nuclear disarmament. Some believe that all of the obstacles to global disarmament will somehow fall out of the way now that the U.S. has an enlightened leader. Some charge that he will leave allies in Europe and Asia vulnerable to Russia, China, North Korea or Iran.

In reality, Mr. Obama had in mind neither the caricature of the left nor that of the right. As he said clearly in Prague, nuclear weapons probably could not be eliminated in his lifetime, and the United States would maintain a nuclear deterrent as long as other states possess or threaten to acquire these weapons. The Nuclear Posture Review released by the Pentagon on Tuesday clearly negates the idea of U.S. unilateral nuclear disarmament. So does the president's increased budget to refurbish the aging infrastructure of nuclear weapons laboratories and material-handling facilities.

Rather, Mr. Obama posits the need for all states that now possess nuclear weapons or rely on extended nuclear deterrence to take the steps necessary to obviate their perceived need for these weapons. The Posture Review reaffirms America's interest in a world without nuclear weapons and clearly reduces the role of nuclear weapons in U.S. security policy. It calls for

high-level talks with Russia and China to promote the stability and cooperation that would lead to global reductions of nuclear weapons and cooperation in regional security-building. This is an inherently multilateral challenge. As Mr. Obama said, "all nations must come together to build a stronger, global regime."

It is only realistic to think that the eventual elimination of all nuclear arsenals would proceed in a co-evolutionary process. Improvements in security relations among key states will facilitate arms control and disarmament steps, which in turn beget further improvements in security relations, and so on.

The new START accord helps improve U.S.-Russian relations, but differences in capabilities and doubts about intentions will make further steps harder. NATO states worry about Russian bullying and so-called "tactical nuclear weapons," while Russia will cling to its nuclear weapons unless conventional military balances are readjusted and it is reassured about future U.S. missile defense capabilities.

The U.S. and China have only begun to explore how their strategic relations could be cooperative over the long-term. China, India, and Pakistan have not yet imagined the sorts of confidence-building and arms control processes that would be required to reverse their nuclear build ups. In the Middle East, Israel's willingness to move toward nuclear disarmament would depend on achieving durable peace with its neighbors and verifiable guarantees that Iran and other regional states would not acquire nuclear weapons.

Countries without nuclear arms were in many ways the primary audience Mr. Obama sought to influence with the Prague speech. To some extent he succeeded. Newspapers around the world reflected wide support. The Nobel Committee was moved to award him its peace prize (which actually did not help his nuclear agenda at home or in Moscow).

But the leaders of Brazil, South Africa, Indonesia, Malaysia and other influential non-nuclear-weapon states have not embraced Mr. Obama's logic that step-by-step progress on disarmament needs to be reciprocated by step-by-step progress in strengthening the nonproliferation regime. The Nuclear Posture Review strengthens the U.S. assurance to non-nuclear-weapon states that it "will not use or threaten to use nuclear weapons" against them. It is reasonable for such states to insist that the United States and other nuclear-armed countries must deliver more disarmament. Yet they could encourage this by communicating their intent to reciprocate with concrete measures to strengthen nonproliferation rules and enforcement in light of flaws exposed by the A.Q. Khan network and the actions of Iran and North Korea.

Two approaching events will indicate whether Mr. Obama has made progress with non-nuclear-weapon states. Next week he will be the host of a meeting of leaders from 40 states to enhance cooperation to prevent nuclear terrorism. In May, the parties to the nonproliferation treaty will gather in New York to review the accord. All the leaders attending will be asked to make commitments to guard nuclear material and prevent nuclear smuggling and terrorism. Will they follow up? Will they act to build the material-accounting and control systems necessary not only to prevent nuclear terrorism but also to enable verification of nuclear disarmament?

The nonproliferation review conference in May requires a consensus of the nearly 200 states in attendance in order to make new nonproliferation rules or to leverage compliance with current rules. In practice this makes the conference simply a barometer of moods and trends.

Will the consensus express strong enduring support for the nonproliferation regime, or instead a sense of hedging and recrimination? Will key states without nuclear weapons support universal adoption of the stronger International Atomic Energy Agency inspection protocols necessary to build everyone's confidence that proliferation will not occur as nuclear energy technology spreads to new markets?

In word and deed Mr. Obama shows he would like to push harder to reduce nuclear dangers, which he knows cannot be accomplished with double standards and agreements that only benefit the United States. Without follow-on forces determined to widen the offensive he has opened, he risks being cut off and isolated. The most important question is whether those who support the president's agenda will become more active or instead will turn away in passive resignation.

George Perkovich is vice president of studies at the Carnegie Endowment for International Peace.

5. "What Obama's Nuclear Posture Review accomplishes"[1]

By Joshua Pollack[2]

After repeated delays, the 2010 Nuclear Posture Review--just the third such effort since the end of the Cold War--is finished. This document has been by far the most anticipated of its kind. Judging by occasional reports, it has been extensively coordinated and worked over--the hallmarks of a high-priority policy document.

The agony was worth it. The report is a genuine accomplishment, bringing the threats of proliferation and terrorism into the foreground of nuclear policy. Arriving shortly before the signing ceremony for START follow-on in Prague and the upcoming Nuclear Security Summit in Washington, the posture review builds momentum toward the consequential 2010 Nuclear Non-Proliferation Treaty (NPT) Review Conference. The RevCon, as it's called, will run in New York for nearly the entire month of May--longer than some Broadway shows, but with the ending in doubt until the close.

The posture review report lays out the U.S. vision for strengthening the nonproliferation regime: reversing the nuclear ambitions of North Korea and Iran; strengthening international nuclear safeguards; creating consequences for noncompliance; impeding sensitive nuclear trade; and promoting the peaceful uses of nuclear energy.

The connection between nuclear posture and nonproliferation is made in two crucial areas, telegraphed in excerpts released before the full report. These decisions send a credible signal to the rest of the world that Washington regards its nuclear arsenal as a defensive asset, not as a tool of coercion and domination. There is therefore no call for other countries to offset it with their own nuclear arsenals or "nuclear options," or to water down nonproliferation rules in the name of a misplaced sense of fairness.

[1] *Bulletin of the Atomic Scientists*, 8 April 2020.

[2] Pollack is a consultant to the U.S. government. He has conducted studies in several areas, including arms control, verification technologies, proliferation, deterrence, intelligence, homeland security, counterterrorism, and Middle East security affairs. He is a regular contributor at the prominent blog Arms Control Wonk, focusing primarily on current challenges to the nuclear nonproliferation regime.

First, the report rules out the creation of “new nuclear warheads” that would “support new military missions or provide for new military capabilities.” This decision makes clear, if it wasn't already, that the Obama administration's push to modernize the nuclear infrastructure is intended to maintain the arsenal without nuclear testing, not to upgrade it in pursuit of some marginal advantage.

Second, and probably of greater importance, the report declares that the “fundamental role” of the country's nuclear arsenal “is to deter nuclear attack on the United States, our allies, and partners.” This welcome statement of purpose marks the first time anything of the sort has been offered in a formal policy document (beyond the NATO context). The report further affirms that the United States “will not use or threaten to use” its nuclear arsenal against states that don't have nuclear weapons of their own, and are “in compliance with their nuclear nonproliferation obligations.” In this connection, the report decisively breaks with the idea of “calculated ambiguity,” which had been based on the doubtful theory that nuclear weapons might be necessary to deter chemical or biological attack.

What's more, the policy shift is authoritative. In contrast to the last review, which was rolled out in early 2002 by a mid-ranking Pentagon official and never implemented, this one has been introduced with a presidential interview in the Oval Office, followed by a press briefing with three cabinet secretaries and the chairman of the joint chiefs of staff.

Let's be clear about what these changes cost, what they achieve, and what they don't achieve. For starters, the cost is basically nil. Discarding a bit of superfluous flexibility might spark a few objections. But the key choices in the review follow directly from the consensus that proliferation and terrorism have ascended higher on the nuclear security agenda than the remnant of the Soviet threat.

What's been achieved is an investment in goodwill. The posture review demonstrates that the nonproliferation agenda is advanced in good faith, not out of some desire to derive benefit from the nuclear weapons oligopoly. While this move won't sway North Korea or Iran, it will help to isolate Iran at the upcoming Review Conference. (North Korea, having withdrawn from the NPT, won't be present.) Still, much heavy lifting remains to be done.

What hasn't been achieved is any radical departure from Cold War nuclear legacies. Alert postures won't change, and the “nuclear Triad” of land-based missiles, submarine-based missiles, and bombers will be maintained for the time being. The scale of the Russian strategic nuclear force remains the basis for that of the United States. Nor does the posture review call for the removal of tactical nuclear weapons from Europe. Major shifts in any of these departments would have been hard to imagine while negotiating START follow-on with Moscow and preparing for a new NATO Strategic Concept.

Timing aside, too, there's simply a limit to how much change can work through the system at once. Keeping this reality in mind should dampen any disappointment with questionable parts of the outcome, such as the retention of the previous posture review's idea of developing conventional “prompt global strike” weapons. An emphasis on dialogue with Russia and China points the way toward the future.

Above all else, the posture review has boosted the fortunes of the nonproliferation regime by delivering on President Barack Obama's year-old promise to “reduce the role of nuclear weapons in our national security strategy.” But that's the easy part! The real test is to come next month.

Washington Nuclear Security Summit (13 April 2010)
(Communiqué and three newspaper clippings)

1. Communiqué of the Washington Nuclear Security Summit (13 April 2010).
2. "Obama Vows Fresh Proliferation Push as Summit Ends" (note by David E. Sanger in *The New York Times*, April 13, 2010).
3. "Cold War Nuclear Fears Now Apply to Terrorists" (note by Scott Shane in *The New York Times*, April 15, 2010).
4. "Gates Says U.S. Lacks Policy to Curb Iran's Nuclear Drive" (note by David E. Sanger and Thom Shanker in *The New York Times*, April 17, 2010).

1. Communiqué of the Washington Nuclear Security Summit

Nuclear terrorism is one of the most challenging threats to international security, and strong nuclear security measures are the most effective means to prevent terrorists, criminals, or other unauthorized actors from acquiring nuclear materials.

In addition to our shared goals of nuclear disarmament, nuclear nonproliferation and peaceful uses of nuclear energy, we also all share the objective of nuclear security. Therefore those gathered here in Washington, D.C. on April 13, 2010, commit to strengthen nuclear security and reduce the threat of nuclear terrorism. Success will require responsible national actions and sustained and effective international cooperation.

We welcome and join President Obama's call to secure all vulnerable nuclear material in four years, as we work together to enhance nuclear security.

Therefore, we:

1. Reaffirm the fundamental responsibility of States, consistent with their respective international obligations, to maintain effective security of all nuclear materials, which includes nuclear materials used in nuclear weapons, and nuclear facilities under their control; to prevent non-state actors from obtaining the information or technology required to use such material for malicious purposes; and emphasize the importance of robust national legislative and regulatory frameworks for nuclear security;

2. Call on States to work cooperatively as an international community to advance nuclear security, requesting and providing assistance as necessary;

3. Recognize that highly enriched uranium and separated plutonium require special precautions and agree to promote measures to secure, account for, and consolidate these materials, as appropriate; and encourage the conversion of reactors from highly enriched to low enriched uranium fuel and minimization of use of highly enriched uranium, where technically and economically feasible;

4. Endeavor to fully implement all existing nuclear security commitments and work toward acceding to those not yet joined, consistent with national laws, policies and procedures;

5. Support the objectives of international nuclear security instruments, including the Convention on the Physical Protection of Nuclear Material, as amended, and the International Convention for the Suppression of Acts of Nuclear Terrorism, as essential elements of the global nuclear security architecture;

6. Reaffirm the essential role of the International Atomic Energy Agency in the international nuclear security framework and will work to ensure that it continues to have the appropriate structure, resources and expertise needed to carry out its mandated nuclear security activities in accordance with its Statute, relevant General Conference resolutions and its Nuclear Security Plans;

7. Recognize the role and contributions of the United Nations as well as the contributions of the Global Initiative to Combat Nuclear Terrorism and the G-8-led Global Partnership Against the Spread of Weapons and Materials of Mass Destruction within their respective mandates and memberships;

8. Acknowledge the need for capacity building for nuclear security and cooperation at bilateral, regional and multilateral levels for the promotion of nuclear security culture through technology development, human resource development, education, and training; and stress the importance of optimizing international cooperation and coordination of assistance;

9. Recognize the need for cooperation among States to effectively prevent and respond to incidents of illicit nuclear trafficking; and agree to share, subject to respective national laws and procedures, information and expertise through bilateral and multilateral mechanisms in relevant areas such as nuclear detection, forensics, law enforcement, and the development of new technologies;

10. Recognize the continuing role of nuclear industry, including the private sector, in nuclear security and will work with industry to ensure the necessary priority of physical protection, material accountancy, and security culture;

11. Support the implementation of strong nuclear security practices that will not infringe upon the rights of States to develop and utilize nuclear energy for peaceful purposes and technology and will facilitate international cooperation in the field of nuclear security; and

12. Recognize that measures contributing to nuclear material security have value in relation to the security of radioactive substances and encourage efforts to secure those materials as well.

Maintaining effective nuclear security will require continuous national efforts facilitated by international cooperation and undertaken on a voluntary basis by States. We will promote the strengthening of global nuclear security through dialogue and cooperation with all states.

Thus, we issue the Work Plan as guidance for national and international action including through cooperation within the context of relevant international fora and organizations. We will hold the next Nuclear Security Summit in the Republic of Korea in 2012.

April 13, 2010

2. "Obama Vows Fresh Proliferation Push as Summit Ends"

(Article by David E. Sanger, *The New York Times*, April 13, 2010)

WASHINGTON — President Obama completed a first meeting of world leaders on combating nuclear terrorism with a list of specific commitments from dozens of nations to eliminate or lock down nuclear materials, in what he called a "bold and pragmatic" program to finish the task in the next four years.

But in a news conference after leading the conversation among 47 presidents, prime ministers and senior officials, Mr. Obama acknowledged that tough choices lay ahead on many of the far more politically volatile issues in stopping the proliferation of nuclear weapons.

He issued a specific warning to Iran, which was not represented at the conference, saying that after four years of failed efforts on sanctions, the penalties he was trying to win at the United Nations Security Council had to be significant enough to get the attention of the Iranian leadership.

Speaking to reporters, Mr. Obama said he had insisted to President Hu Jintao of China that in dealing with Iran: "Words have to mean something. There have to be some consequences."

The meeting that Mr. Obama convened, and to a great degree stage-managed, was unlike any negotiations over arms control with the Soviets during the cold war or, more recently, the so-far fruitless talks to get North Korea to disarm. This was a far broader effort to persuade African, Latin American, Asian and European nations to agree on steps to deny terrorist groups the two materials necessary to make a bomb: plutonium and highly enriched uranium.

Mr. Obama began the session arguing that while superpower confrontation was far more remote, the risk of nuclear terrorism had never been greater, and he quoted the warning of Albert Einstein soon after the beginning of the nuclear age: "We are drifting towards a catastrophe beyond comparison."

Mr. Obama deliberately narrowed the scope of the meeting to avoid some of the most contentious issues, and at a news conference on Tuesday he dodged questions about trying to get Pakistan to stop producing weapons-grade plutonium, or pressing Israel to acknowledge its nuclear arsenal. He simply urged them to sign the Nuclear Nonproliferation Treaty, which both have rejected, along with India.

Critics contended that this session was all for show.

"The summit's purported accomplishment is a nonbinding communiqué that largely restates current policy, and makes no meaningful progress in dealing with nuclear terrorism threats or the ticking clock represented by Iran's nuclear weapons program," said Senator Jon Kyl, the Arizona Republican who has vowed to oppose nuclear treaties Mr. Obama regards as essential.

Mr. Obama acknowledged that the commitments were voluntary, but he said the situation was nothing new. "If you are asking, 'Do we have an international, one-world law enforcement,' we don't, and we never have," he said.

At the end of two days of meetings, Mr. Obama could claim two major accomplishments: The summit meeting forced countries that had failed to clean up their nuclear surpluses to formulate detailed plans to deal with them, and it kicked into action nations that had failed to move on previous commitments.

A second summit meeting will be held in two years in South Korea, Mr. Obama said, to make sure countries are on track.

Some countries arrived with what Gary Samore, Mr. Obama's nuclear adviser, called "house gifts" that the United States had encouraged as signs of sincerity. For example, Canada, Mexico and Ukraine committed to eliminating their surplus weapons-grade materials or giving them to the United States.

This week, Russia closed a plutonium reactor it had used to make weapons-grade fuel. Other nations agreed to convert research reactors to fuel that could not be used for weapons.

But much of what was completed over the past two days amounted to reviving, or putting in effect, long-dormant agreements. Secretary of State Hillary Rodham Clinton held a signing ceremony with her Russian counterpart over the disposal of an amount of plutonium that could

make 17,000 weapons. The first agreement on this issue was announced by her husband, Bill Clinton, when he was president, and signed with fanfare by Vice President Al Gore 10 years ago. The accord has never been acted upon, and by the White House's own accounting could take at least six years to complete.

Outside experts were optimistic. Sam Nunn, the former senator who tutored Mr. Obama on proliferation issues, said he thought "we are now closer to cooperation than catastrophe." Graham Allison, a Harvard expert on nuclear terrorism, made the case that if countries "lock down all nuclear weapons and bomb-usable material as securely as gold in Fort Knox, they can reduce the likelihood of a nuclear 9/11 to nearly zero."

But overcoming bureaucratic inertia, while important, leaves Mr. Obama far short of his broader goals. Now he must take on several far more delicate tasks: persuading Pakistan, India and China to halt the manufacture of more bomb fuel; coaxing North Korea to give up the small arsenal of 8 to 12 weapons it built over the past decade; and stopping Iran from becoming capable of making nuclear weapons.

The Pakistanis were fighting Mr. Obama's call for a treaty to end the production of fissile materials; its prime minister, Yousaf Raza Gilani, told reporters this week that "for a minimum deterrence, we have to have it."

Russia made it clear that if American missile-defense technology improved, it reserved the right to drop out of the new strategic arms reduction accord. Some Russian officials warn that cutting the country's arsenal more deeply, one of Mr. Obama's goals, will leave Moscow vulnerable to America's nuclear dominance. North Korea has backed away from the agreements it made with President George W. Bush, and Iran greeted the opening of the meeting here with a declaration, probably infused with more wishful thinking than reality, that it would soon be manufacturing a new generation of centrifuges to make uranium more quickly than ever.

Mr. Obama and his aides insist that they are unfazed. It took 60 years to build the current arsenals, they argue, and it could take that long, or longer, to destroy them.

The next test for Mr. Obama will come in May at a monthlong review of the Nuclear Nonproliferation Treaty in New York. Iran will take part in that session, just as sanctions are on the table for what the Security Council has called repeated violations of the treaty.

That will leave Mr. Obama trying to make long-term fixes in the treaty — closing loopholes that allowed North Korea to exit the treaty seven years ago and Iran to pick and choose which questions from nuclear inspectors it wanted to answer — while dealing with the Iran sanctions.

"My interest is not with having a long, drawn-out process for months," he said of the sanctions. But he warned anew that "sanctions aren't a magic wand."

"What sanctions do accomplish is, hopefully, to change the calculus of a country like Iran," he said."

Brian Knowlton, contributed reporting from Washington, Andrew Jacobs from Beijing and Alan Cowell from Paris.

3. Cold War Nuclear Fears Now Apply to Terrorists

(Article by Scott Shane, *The New York Times*, April 15, 2010)

WASHINGTON — The top secret National Intelligence Estimate did not mince words. The United States faced an enemy with "no scruples about employing any weapon or tactic," it said, and nuclear weapons smuggled across porous borders threatened to devastate American cities. Sleeper cells, the document warned, might already be inside the country.

Or so the Central Intelligence Agency told President Harry S. Truman. The year was 1951.

It has become conventional wisdom, repeated by President Obama at the nuclear summit meeting this week, that the cold war danger of huge strikes by thousands of nuclear missiles has given way to a new threat: terrorists killing tens of thousands of Americans with a stolen or homemade nuclear device. A broad range of security experts agree that nuclear terrorism may well be the most serious danger the United States faces today.

But it is not new. In fact, almost from the invention of the atomic bomb, government officials were alarmed by the threat that compact nukes would be smuggled into the United States by Soviet agents and detonated.

"Officials regard the possibility of atomic sabotage as the gravest threat of subversion that this country, with its virtually unpatrolled borders, has ever faced," The New York Times reported in 1953, telling readers that the Eisenhower administration was preparing to alert the public to the danger from "valise bombs."

Hundreds of pages of declassified documents from the 1950s, obtained by The New York Times from the F.B.I. under the Freedom of Information Act, lay out a strikingly familiar story, in which Communist agents played the role of today's Al Qaeda.

Then, as now, investigators searched for agents they feared were in the United States awaiting orders to attack. Then, too, the government spent millions to install radiation detectors at airports and seaports despite doubts about their effectiveness. (In those days, false nuclear alarms were set off by radium watch dials, once hidden in a woman's corset.)

Nor is the worry in recent years about nuclear material crossing the permeable Mexican border new. An F.B.I. memo from 1953 warned that "a saboteur could easily pose as a Mexican 'wetback' and get into the country without detection, presumably carrying an atomic weapon in his luggage."

Micah Zenko, a fellow at the Council on Foreign Relations who has written on nuclear history, said: "The fear of a clandestine nuclear attack on American soil goes back to the very beginning of the nuclear era. There's certainly nothing new here, even if they didn't call it terrorism back in the '50s."

Even before the Soviet Union detonated its first atomic bomb in 1949, security officials studied the threat from smuggled weapons. But secret reports concluded that the Soviet Union was likely to try such an attack only as a prelude to total war. An all-out attack, American experts believed, might even begin with the detonation of nuclear weapons smuggled into Soviet diplomatic offices in New York and Washington.

Intelligence officials feared that bomb parts might be delivered in diplomatic mail pouches, carried by international air travelers in their luggage or delivered by boat or submarine to an isolated beach.

Communist agents already in the country might then assemble, plant and detonate the weapons. “Surveillance of all Communist Party members and sympathizers is impossible and impractical since numerically they exceed by many times the total Special Agent force of the F.B.I.,” a bureau memo complained. J. Edgar Hoover, the F.B.I. director, who was intensely focused on the smuggling threat, proposed increasing manpower to cope.

Among many potential nuclear saboteurs, F.B.I. field offices identified the proprietor of a left-wing bookstore in Seattle, a reporter for the Soviet news agency Tass and even a representative of the American Council for a Democratic Greece.

When the Polish consul to Detroit arrived in the United States in the mid-1950s with four big boxes, F.B.I. agents surreptitiously searched them for nuclear material. They found 24 bottles of cherry cordial but “no article or part thereof that could be construed as a portion of a weapon of mass destruction,” their secret report solemnly declared.

The press, too, got in on the act. In 1954, a reporter for The Los Angeles Mirror, a tabloid newspaper, wrote a splashy story headlined “I Smuggled Mock A-Bombs into L.A.,” accompanied by a diagram of a man carrying a “baby A-bomb” in a suitcase.

The smuggling fears began to fade in the late 1950s with the advent of intercontinental ballistic missiles, which posed an incomparably greater threat of surprise attack. But in the half-century that followed, the worry never entirely went away.

Security officials later speculated about whether China might set off a smuggled nuke in the United States and make it look like a Soviet attack, provoking devastating war between its rivals. Later, as portable tactical nuclear weapons proliferated in both Eastern and Western Europe, there were periodic alarms about their security.

After the murder of Israeli athletes by Palestinian agents at the 1972 Olympics in Munich, American officials shifted their focus to terrorists. Their concern increased immeasurably after the Sept. 11 attacks in 2001, when reports that Al Qaeda had actively sought a nuclear weapon since the early 1990s took on a chilling significance.

In the 1950s the United States knew its adversaries had weapons; the mystery was whether they might use them. Today, said Jeffrey T. Richelson, a historian of nuclear weapons, the situation is reversed: Qaeda leaders have suggested publicly that they would use a nuclear weapon, “but as far as we know, Al Qaeda hasn’t even come close to building a bomb.”

Most security experts believe the focus in recent years on destroying or locking up nuclear material is far more effective than sealing American borders. The global effort to reduce the threat was advanced at the summit meeting in Washington this week, with commitments from many countries to destroy or secure supplies of plutonium and highly enriched uranium.

Knowing the history of periodic panics about smuggled nukes offers a kind of reassurance in the face of a horrifying danger, said Mr. Zenko of the Council on Foreign Relations.

“If you consider that the threat has been around for more than 60 years,” he said, “you don’t get overwhelmed by fear.”

4. "Gates Says U.S. Lacks Policy to Curb Iran's Nuclear Drive"

(Note by David E. Sanger and Thom Shanker, *The New York Times*, April 17, 2010)

WASHINGTON — Defense Secretary Robert M. Gates has warned in a secret three-page memorandum to top White House officials that the United States does not have an effective long-range policy for dealing with Iran's steady progress toward nuclear capability, according to government officials familiar with the document.

Several officials said the highly classified analysis, written in January to President Obama's national security adviser, Gen. James L. Jones, came in the midst of an intensifying effort inside the Pentagon, the White House and the intelligence agencies to develop new options for Mr. Obama. They include a set of military alternatives, still under development, to be considered should diplomacy and sanctions fail to force Iran to change course.

Officials familiar with the memo's contents would describe only portions dealing with strategy and policy, and not sections that apparently dealt with secret operations against Iran, or how to deal with Persian Gulf allies.

One senior official, who like others spoke on the condition of anonymity because of the sensitive nature of the memo, described the document as "a wake-up call." But White House officials dispute that view, insisting that for 15 months they had been conducting detailed planning for many possible outcomes regarding Iran's nuclear program.

In an interview on Friday, General Jones declined to speak about the memorandum. But he said: "On Iran, we are doing what we said we were going to do. The fact that we don't announce publicly our entire strategy for the world to see doesn't mean we don't have a strategy that anticipates the full range of contingencies — we do."

But in his memo, Mr. Gates wrote of a variety of concerns, including the absence of an effective strategy should Iran choose the course that many government and outside analysts consider likely: Iran could assemble all the major parts it needs for a nuclear weapon — fuel, designs and detonators — but stop just short of assembling a fully operational weapon.

In that case, Iran could remain a signatory of the Nuclear Nonproliferation Treaty while becoming what strategists call a "virtual" nuclear weapons state.

According to several officials, the memorandum also calls for new thinking about how the United States might contain Iran's power if it decided to produce a weapon, and how to deal with the possibility that fuel or weapons could be obtained by one of the terrorist groups Iran has supported, which officials said they considered to be a less-likely possibility.

Mr. Gates has never mentioned the memo in public. His spokesman, Geoff Morrell, declined to comment on specifics in the document, but issued a statement on Saturday saying, "The secretary believes the president and his national security team have spent an extraordinary amount of time and effort considering and preparing for the full range of contingencies with respect to Iran."

Pressed on the administration's ambiguous phrases until now about how close the United States was willing to allow Iran's program to proceed, a senior administration official described last week in somewhat clearer terms that there was a line Iran would not be permitted to cross.

The official said that the United States would ensure that Iran would not "acquire a nuclear capability," a step Tehran could get to well before it developed a sophisticated weapon. "That in-

cludes the ability to have a breakout," he said, using the term nuclear specialists apply to a country that suddenly renounces the nonproliferation treaty and uses its technology to build a small arsenal.

Nearly two weeks ago, Mr. Obama, in an interview with The New York Times, was asked about whether he saw a difference between a nuclear-capable Iran and one that had a fully developed weapon. "I'm not going to parse that right now," he said. But he noted that North Korea was considered a nuclear-capable state until it threw out inspectors and, as he said, "became a self-professed nuclear state."

Mr. Gates has alluded to his concern that intelligence agencies might miss signals that Iran was taking the final steps toward producing a weapon. Last Sunday on the NBC News program "Meet the Press," he said: "If their policy is to go to the threshold but not assemble a nuclear weapon, how do you tell that they have not assembled? I don't actually know how you would verify that." But he cautioned that Iran had run into production difficulties, and he said, "It's going slow — slower than they anticipated, but they are moving in that direction."

Mr. Gates has taken a crucial role in formulating the administration's strategy, and he has been known over his career to issue stark warnings against the possibility of strategic surprise.

Some officials said his memo should be viewed in that light: as a warning to a relatively new president that the United States was not adequately prepared.

He wrote the memo after Iran had let pass a 2009 deadline set by Mr. Obama to respond to his offers of diplomatic engagement.

Both that process and efforts to bring new sanctions against Iran have struggled. Administration officials had hoped that the revelation by Mr. Obama in September that Iran was building a new uranium enrichment plant inside a mountain near Qum would galvanize other nations against Iran, but the reaction was muted. The next three months were spent in what proved to be fruitless diplomatic talks with Iran over a plan to swap much of its low-enriched uranium for fuel for a medical reactor in Tehran. By the time Mr. Gates wrote his memo, those negotiations had collapsed.

Mr. Gates's memo appears to reflect concerns in the Pentagon and the military that the White House did not have a well prepared series of alternatives in place in case all the diplomatic steps finally failed. Separately, Adm. Mike Mullen, chairman of the Joint Chiefs of Staff, wrote a "chairman's guidance" to his staff in December conveying a sense of urgency about contingency planning. He cautioned that a military attack would have "limited results," but he did not convey any warnings about policy shortcomings.

"Should the president call for military options, we must have them ready," the admiral wrote.

Administration officials testifying before a Senate committee last week made it clear that those preparations were under way. So did General Jones. "The president has made it clear from the beginning of this administration that we need to be prepared for every possible contingency," he said in the interview. "That is what we have done from day one, while successfully building a coalition of nations to isolate Iran and pressure it to live up to its obligations."

At the same hearing before the Senate Armed Services Committee, Lt. Gen. Ronald L. Burgess Jr., director of the Defense Intelligence Agency, and Gen. James E. Cartwright, the vice chairman of the Joint Chiefs of Staff and one of the military's most experienced officers on nuclear matters, said that Iran could produce bomb-grade fuel for at least one nuclear weapon within a

year, but that it would probably need two to five years to manufacture a workable atomic bomb.

The administration has been stepping up efforts to contain the influence of Iran and counter its missiles, including placing Patriot anti-missile batteries, mostly operated by Americans, in several states around the Persian Gulf. The Pentagon also is moving ahead with a plan for regional missile defense that reconfigures architecture inherited from the Bush administration to more rapidly field interceptors on land and at sea.

On nuclear weapons, 'silence is indefensible'[1]

David Krieger[2]

Arundhati Roy, the great Indian writer and activist, has said, "There's nothing new or original left to be said about nuclear weapons." Nonetheless, she speaks out because, in her words, "silence would be indefensible." Silence is the norm. We live our day-to-day lives with these weapons capable of destroying our cities, our countries, our civilizations, even our species. How can silence be the norm?

This is what Roy herself says about nuclear weapons, "Whether they're used or not, they violate everything that is humane. They alter the meaning of life itself. Why do we tolerate them? Why do we tolerate the men who use nuclear weapons to blackmail the entire human race?"

Do we really trust our political leaders and those leaders who might come to power in the future to never unleash the fury of nuclear war? Do we believe that all leaders under all conditions, no matter how rushed or stressed, will refrain from using this power of annihilation? Perhaps we do, and this would explain the widespread complacency and silence.

Perhaps we just feel impotent to change the situation. This resignation is often summed up with the phrase, "the genie cannot be put back into the bottle." So, we have loosed the genie of atomic might on the world, and we appear content to let it roam. We seem to lack the cleverness or motivation even to try to trick the genie back into the bottle.

What were the odds of sudden economic collapse of powerful financial institutions? What were the odds of the collapse of the former Soviet Union, or the odds that the Berlin Wall would be peacefully dismantled? Why does virtually no one see big changes such as these on the horizon? While they are rarely foreseen, in hindsight they seem perfectly understandable.

What about the odds of two nuclear armed submarines colliding in the ocean? The chances of this occurring are infinitesimally small. Yet, it happened. Such rare occurrences happen. What are the odds of a nuclear war being unleashed on our planet? Could such a war begin by accident? Could it occur by miscalculation or overreaching? Perhaps the odds are small, but they are not zero and therefore they are above the acceptable level.

Are we silent because we believe that nuclear weapons actually keep us safer? This wouldn't be surprising because we have been taught to believe that we are protected by nuclear weapons, but this isn't the case. Nuclear weapons cannot protect their possessors. They can only be used to inflict massive retaliation and such retaliation is not protection. If nuclear weapons protected their possessors, missile defenses would not be needed. But they do not, and missile defenses are faulty tools for protection as well. In fact, those that possess nuclear weapons are guaranteed to be targeted by someone else's nuclear weapons.

The only safe number of nuclear weapons is zero, and to reach this level will require international cooperation, like every significant global problem. It will also require leadership and, as the possessors of over 95 percent of the nuclear weapons on the planet, the countries that must lead are the US and Russia. If they fail to lead, the nuclear genie will continue to roam.

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[1] *The National Catholic Reporter* , March 5, 2009.

[2] *David Krieger is President of the Nuclear Age Peace Foundation and a Councilor on the World Future Council.*

Why do we waste our resources on such weapons? Why do we use our scientists in such dehumanizing ways? Why do we debase ourselves with our implicit threats of mass murder?

Are we silent because we are numb? Have we become so distracted that we will not raise our voices because we cannot imagine consequences so horrific? Have we become so fearful of giving voice to our fears that we are dumb as well as numb?

Nuclear weapons diminish our humanity, and our silence condemns us in the eyes of those who will follow us on this planet.

I and others have said all of this before. Like Arundhati Roy, I continue to speak out, often repeating myself, in the belief that silence is indefensible.