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# REFLECTIONS ON THE ATOMIC DESTRUCTION OF HIROSHIMA AND THE PRESENT NUCLEAR RESURGENCE

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# About Just Solutions

Just Solutions is a BIPOC-led organization working to broaden and deepen the understanding of equitable and effective policies and programs to support the priorities of environmental justice organizations to define, innovate, replicate, and scale their solutions to the climate crisis. We do this work by: identifying and coalescing leading community-created policy solutions; conducting requested, relevant, comprehensive, and accessible policy analysis and research; organizing peer learning, foundational educational programming, space for states to share and strategize; and providing financial support for expertise, ideation and participation.

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Hiroshima was obliterated on August 6, 1945 razed to the ground by just one bomb from a single plane. That day, Mitsuno Ochi[1] had been waiting to withdraw money from a bank; she was instantly evaporated into a mere shadow that remains today. The advice of some leading scientists that the use of an atomic weapon without notice to the Soviet Union could trigger an unconstrained nuclear arms race resulting in the complete destruction of civilization was set aside. What was foretold, transpired. A bomb a thousand times as powerful as those dropped on Japan was already a gleam in some scientists' eyes. In the 1950s nuclear power was promoted as a distraction from the horrors of the radioactive fallout of such a weapon.

The Cuban Missile Crisis brought the world within a hair's breadth of total destruction; it did not cause fundamental change. The end of the Cold War and the disintegration of the Soviet Union saw a renewed U.S. delusion (and desire) that, as the "sole superpower", it could shape the world unconstrained.

Two decades later, the famous atomic "Doomsday Clock" is closer to midnight than ever "in large part because of Russian threats to use nuclear weapons in the war in Ukraine". Russia occupies the six-reactor Ukrainian Zaporizhia nuclear power plant, the largest in Europe. The site contains more highly-radioactive cesium-137 than was released in more than 200 atmospheric nuclear tests conducted by all nuclear states put together. A release of less than 2% of this inventory would be comparable to the 1986 Chernobyl disaster that blanketed parts of Ukraine, Belarus, Russia, and several European countries with radioactive fallout. In the midst of the war, Ukraine's state-owned nuclear corporation has signed a surreal agreement with a U.S. company, Holtec, to build as many as 20 small modular reactors with the aim of grid connection by 2029. All this while the United States, Russia, and China are re-engaged in a fevered nuclear weapon technological race. A nuclear bomb on a nuclear power plant could render an entire country uninhabitable.

It is a Matryoshka doll of delusions within delusions at the edge of the nuclear abyss and the climate emergency. I will try, as best I can, to draw on Gandhi's radical imagination that put truth at the center of India's freedom struggle to address our current predicament. I intend to do so in two parts. In this, the first, I examine how a totalitarian weapon was brought to the center of world affairs by the bombing of Hiroshima and Nagasaki. In the second, I will attempt to address how that understanding might shine a light on possible ways out.

Even as the Secretary of War Henry L. Stimson warned the newly installed

1 Her identity remains uncertain

President Truman about the potential for total destruction in April 1945, he also pointed to the possibility that the United States had for total control of the post-war world:

> "On the other hand, if the problem of the proper use of this weapon can be solved, we would have the opportunity to bring the world into a pattern in which the peace of the world and our civilization can be saved."[2]

An atomic-tipped coercive peace was not what the scientists, led by émigrés like Einstein and Leo Szilard (who first thought of the possibility of a nuclear chain reaction in 1933), had recommended. They asked for a U.S. bomb project as a deterrent against a Nazi atomic monopoly and blackmail.

But Vannevar Bush had a grander idea. Even before the United States was in the war, he believed "the world is probably going to be ruled by those who know how, in the fullest sense, to apply science."[3] New weapons of all kinds were not only about winning the war; they were about who would *rule the world*. A brilliant inventor, Bush was Vice-President of the Massachusetts Institute of Technology. At the start of the fateful year, 1939, in the wake of the discovery of nuclear fission in Germany, he was appointed President of the Carnegie Institution, a leading private funder of scientific research in the United States. He brimmed with ambition as he moved from Cambridge, Massachusetts to Washington's marbled corridors, inspired in part by imperial Rome.

The war spread quickly; between September 1939 and September 1940, the Nazis had invaded Poland, Denmark, Belgium, Holland, and France and were blitzing London with bombs. The United States was not yet in the war; Bush, like many others, believed that it should be prepared. He wanted to be at the center of the science that would deliver to the United States the capacity to rule the world.

On June 12, 1940, President Roosevelt penned a simple "OK—FDR" on his one-page proposal to centralize military research in the civilian sector in a new White House office and gave him his wish. The National Defense Research Committee (NDRC), with Bush at the helm, was born. It was the seed of the Manhattan Project and the bombing of Japan. Bush's ambition was centered on a single, simple, goal, powered by a practical *carte blanche* from President Roosevelt. Bush, his biographer has noted, wanted "to revolutionize the fighting of war within the framework of *this* war",[4] though Pearl Harbor was still a year-and-a-half away. The Uranium Committee, set up after Einstein recommended a bomb project in 1939, became part of his portfolio at the NDRC.

2 Henry L. Stimson, Memorandum discussed with the President, April 25, 1945
3 As quoted in G. Pascal Zachary, *Endless Frontier: Vannevar Bush, Engineer of the American Century*. New York: The Free Press, 1997, p. 89.
4 Zachary 1997, op. cit., p. 159.

At first, Bush did not press ahead with the atomic project. He doubted the bomb could be made in time for use in *this* war. He focused, instead, on projects with more immediate impact, like radar and the "proximity switch" (or "proximity fuze"), the technical core of what became the first smart explosive. Millions were made during the war.

The scene was transformed in two ways in the summer of 1941. First, a British scientific committee had concluded that a modest amount of uranium, enriched in the fissile isotope uranium-235, could be used to make a workable bomb. Second, Hitler, breaking his pact with Stalin, had invaded the Soviet Union on June 22, 1941; the Germans were speeding toward Moscow and Leningrad with terrifying efficiency. A Nazi atomic monopoly was suddenly far more menacing. Moreover, despite the flood of brilliant Jewish scientists who had emigrated to the United States in the 1930s (including Einstein), Germany still had one of the greatest physicists of them all – Werner Heisenberg, the author of the famed "uncertainty principle" in quantum mechanics. The combination changed everything.

On October 9, 1941, Bush recommended to FDR that the United States should make a major effort to determine the feasibility of making a workable and deliverable atom bomb. This time the "OK FDR" was verbal, even though large expenditures were unleashed. A prerequisite: uranium would have to be secured in quantity. Congo, with the richest ores in the world, was the go-to place; most of the uranium for the Hiroshima and Nagasaki bombs came from there. In fact, Einstein had specifically pointed to the Congolese ores; "the most important source of uranium", he said in his 1939 letter. Canada and the Colorado Plateau in the United States were more secure; their uranium resources were also tapped.

Thus, about two months before Pearl Harbor, the die was cast. Bush, with his determination that the weapons he oversaw should be used in this war, had recommended major investments and obtained the green light to pursue the bomb. Major questions still hung in the air. Would it work? If so, where would it be used?

The initial answer came on May 5, 1943, two years before the end of the war in Europe. The Manhattan Project was underway; J. Robert Oppenheimer had been appointed as its Scientific Director. Vast sums were being spent. The team in Chicago had built an "atomic pile" and demonstrated a chain reaction. General Leslie R. Groves, of the Army Corps of Engineers, had been put in operational charge in September 1942; he was the *de facto* Executive Director. The answer to the first question was known: yes, it would work.

A Military Policy Committee was appointed; it functioned as the board of directors. Bush was its Chairman; Groves was a member. The Committee reviewed the progress of the project that day. Then it discussed possible targets. The minutes are brief on this point, but the drift of the discussion is crystal clear. Germany was considered – and rejected. It was too risky in case the bomb was a dud; the Germans knew too much nuclear science. Preventing capture of advanced weapons, notably the proximity switch,

in case they were duds, was already policy. It was the same reasoning. Tokyo was discussed; it was also deemed too risky; after all, Japan had nuclear expertise too. The Japanese fleet stationed at the Pacific Island of Truk would be the target; if the bomb was a dud, it would sink and be difficult to recover.

No military commander was consulted—not General Eisenhower, not General MacArthur, not "Hap" Arnold, the chief of the Army Air Forces, not Admiral King, the Commander-in-Chief of the Navy. The Military Policy Committee had three members besides Bush and Groves, James Conant (president of Harvard University), General Styer (Army Corps of Engineers), and Admiral Purnell, who worked on new weapons development for the Navy.

Apart from Bush and Conant, no other scientists were present and none were consulted. Bush preferred it that way. He wanted, as Richard Rhodes, author of *The Making of the Atomic Bomb* has put it, to "run the show". Policy, Bush, said, "has not been turned over to them [other scientists] as a subject." They were to stick to technical matters.[5] It was an echo of the founding of the Royal Society in 1660 as the premier scientific institution in England. The scientists were not to meddle with "Divinity, Metaphysics, Morals, Politicks, Grammar, Rhetoric, or Logick."[6]

To all available evidence, Germany was never explicitly targeted, though the scientists at Los Alamos continued to believe the bomb project was all about Hitler. Even Oppenheimer had no clue, that, as Groves put it in his April 23, 1945 memorandum to Secretary of War Stimson, "The target is and *was always expected* to be Japan."[7] The answer to the second question, "Where would it be used?" was in two parts: *Japan; not Germany*. For all their brilliance and centrality to the bomb project, the scientists building the bomb had no control.

By December 1944, the Allies were deep enough into Nazi territory to know that Germany had no viable bomb project. The purpose for which Einstein had recommended the atomic effort was accomplished. Germany did not need to be deterred. But instead of stopping it, the project was *accelerated* to ensure the bomb would be used in *this* war. The purpose of Einstein's letter was defeated. In the year of his death, 1955, he called the letter his "one great mistake."

5 Richard Rhodes, *The Making of the Atomic Bomb*, Simon and Schuster, 1986,p. 378.
6 Lewis Mumford, *The Myth of the Machine: The Pentagon of Power*. New York: Harcourt Brace Jovanovich, 1970, p. 115.
7 General Leslie Groves, Memorandum to the Secretary of War, April 23, 1945;emphasis added.

It was the United States that would emerge from the war with an atomic bomb monopoly. What would it mean for the post-war world? Groves had been blunt about that.

> "There was never from about two weeks from the time [in September 1942] I took charge of this Project any illusion on my part but that Russia was our enemy, and the project was conducted on that basis."[8]

It would be a contest for world control with the Soviet Union. Looking to the post-war world, Groves's April 1945 memorandum was emphatic about the need to control Congo's uranium resources. Already in February 1944 the Military Policy Committee had recommended that the United States and Britain should take "joint control" of Congo's resources, "not only for the period of the war, but *for all time to come*."[9]

Belgium, one of the most brutal colonial regimes,[10] had already been extracting uranium ore (for its radium content) and copper decades before World War II. An intense U.S. spy operation during the war had the dual purpose of ensuring U.S. control of the uranium and denying it to the Nazis, who had overrun Belgium in May 1940. The Belgian administrator of Congo had decided to side with the Allies; he sent uranium ore stocked there to the United States at the end of 1940.[11]

The same dual purpose carried over after the war, with the Soviet Union replacing Germany as the primary object of uranium denial, both under Belgian rule, and, even more intensely, as the independence movement gathered steam in the 1950s. The U.S.-British promise of post-war self-determination, self-government, and freedom from want in the August

8 As quoted in Martin Sherwin, *A World Destroyed: Hiroshima and Its Legacies*, Third Edition, Stanford University Press, 2003, p. 62.
9 Military Policy Committee minutes, February 4, 1944, as quoted in Vincent C. Jones, Manhattan: The Army and the Atomic Bomb, Center of Military History, United States Army, 1985, p. 296, italics added.
10 Adam Hochschild has described Belgian rule in his book *King Leopold's Ghost: A Story of Greed, Terror, and Heroism in Colonial Africa*, Houghton, Mifflin, Harcourt, 1998.
11 A detailed account of U.S. war-time spying and a summary of post-war Congo is in Susan Williams, *Spies in the Congo: America's Atomic Mission in World War II*, Public Affairs, 2016.

1941 “Atlantic Charter” were cast aside.[12] That was the spirit of the 1948 advice of George Kennan, the architect of the policy of containment of the Soviet Union:

> “...we have about 50% of the world’s wealth but only 6.3% of its population. This disparity is particularly great as between ourselves and the peoples of Asia. In this situation, we cannot fail to be the object of envy and resentment. Our real task in the coming period is to *devise a pattern of relationships which will permit us to maintain this position of disparity* without positive detriment to our national security. To do so, we will have to dispense with all sentimentality and daydreaming....We need not deceive ourselves that we can afford today the luxury of altruism and world-benefaction.”[13]

Stimson warned Truman that the U.S. monopoly would not last. It didn’t. By the time of the Korean war, the Soviets had already tested their bomb, laid the Techa River in the Southern Ural mountains to waste, and, in an eerie, radioactive echo of the July 16, 1945 “Trinity” test in New Mexico, subjected villages near the test site in Kazakhstan to heavy fallout. In 1953, Oppenheimer forecast “a state of affairs in which two Great Powers will each be in a position to put an end to the civilization and life of the other, though not without risking its own. We may be likened to two scorpions in a bottle, each capable of killing the other, but only at the risk of his own life.”[14] Churchill, in his farewell address (in 1955) to the British Parliament, also made it graphic. The logic of deterrence, he said, was that “safety will be the sturdy child of terror, and survival the twin brother of annihilation.”

The rest of the world was hardly even a footnote in this U.S.-Soviet drama. They were, after all, only objects of total control or total destruction, with no agency.

Yet, the scorpions themselves were losing power. The terror was real, but the safety was not so sturdy.

12 His signature on the Atlantic Charter was hardly dry when British Prime Minister, Winston Churchill made clear it was not to apply to the colonies that Britain ruled. In November 1941 he said “Let me, however, make this clear....I have not become the King's First Minister in order to preside over the liquidation of the British Empire.” Congo’s resource curse continues. It is not so much uranium now. It is copper and cobalt and other minerals for batteries and smart phones and, as always, copper. Millions have been killed.

13 George Kennan 1948, as quoted in Thomas H. Etzold and John Lewis Gaddis, eds., *Containment: Documents on American Policy and Strategy 1945-1950*.New York: Columbia University Press, 1978, pp. 226-227; italics added.

14 J. Robert Oppenheimer, “Atomic Weapons and American Policy”, Foreign Affairs, July 1953.

The United States could not use nuclear weapons during the Korean War for fear of Soviet retaliation. Its nuclear threats did not prevent a costly stalemate. Millions died. Nuclear threats did not prevent the United States from defeat in its war on Vietnam. Millions were killed. Its 1971 nuclear threat to India during the South Asian war only precipitated India's decision to go nuclear, where it had been hesitant before. Its 1973 nuclear alert during the oil crisis did not prevent loss of control of oil resources in the Persian Gulf region by the multinational oil companies.[15] As for the Soviets, they built even more nuclear weapons than the United States. It did them no good; by the 1980s they had spent themselves to exhaustion. Most of the weapons are dismantled; the thousands of useless plutonium pits stored near Tomsk stand as Siberian sentinels to nuclear folly. The U.S. has its own near Amarillo, Texas.

Total control has yielded to near-total helplessness. A little known aspect of the 1962 Cuban Missile crisis reveals this truth. While President Kennedy and General Secretary Khruschev did make a secret deal to save the world and prevent a nuclear holocaust, they would not even have had the chance, had not Vasily Arkhipov, a Soviet naval chief, saved the world a few days before. The U.S. Navy was playing "cat-and-mouse" games with Soviet submarines, trying to force them to the surface, without a clue that they had nuclear weapons aboard. The officers on one of the Soviet submarines thought that a U.S.-Soviet war had begun. They had no way to talk to Moscow and had been preauthorized to use their nuclear weapons. Three officers had to agree. Two said fire; Arkhipov said no. The states that wielded the bomb had no agency; one morally awake Soviet sailor did, and spared us all.

The United States remained in ignorance of this fact for decades; it only became public at the end of the Cold War. But even that knowledge did not inspire the United States to step back as the Cold War ended and the Soviet Union disintegrated. There were proclamations of victory, even the "end of history". It was triumphalist self-delusion: the Russians continued to possess enough weapons to obliterate the United States in fifteen minutes.

Deep secrecy, deception, and delusion became a pattern. By 1953, atomic gloom was turning to thermonuclear doom as the United States and the Soviet Union prepared explosions that could evaporate entire islands. Eisenhower was preparing to address the United Nations but found the speech too somber. He wanted something brighter, more hopeful, to say. "Atoms for Peace" was born on December 8, 1953.

15 A list of nuclear alerts and threats, with references, is in Science for Democratic Action, October 1998, pp. 32-33

A propaganda campaign followed. In 1954, Louis Strauss, the Chairman of the U.S. Atomic Energy Commission, said of nuclear power that "our children would enjoy... electrical energy too cheap to meter" despite the fact that every serious study by government, industry, and academia concluded it would be expensive. Atomic power, wrote General Electric's director of research in 1950, is an "exceptionally costly and inconvenient means of obtaining energy....The economics of atomic power are not attractive at present, *nor are they likely to be for a long time in the future*. This is expensive power, not cheap power as the public has been led to believe."[16]

Cheap nuclear power is as far away as ever; in fact, there is no realistic prospect of it. The most promising U.S. Small Modular Reactor project (NuScale's "Carbon-Free Power Project") was abandoned in late 2023 when it was abandoned by prospective customers after a nearly four-fold cost increase before any concrete was even poured – a decade and hundreds of millions of dollars wasted. NuScale hopes to build its reactors in Ukraine, among other countries.

Nuclear power propaganda was deemed essential in a year when the world was focused on the deadly fallout from the March 1, 1954, 15-megaton U.S. test (1,000 times Hiroshima), named "Bravo", at Bikini Atoll that had made the people of Rongelap Atoll exiles in their own country, sickened Japanese fishermen in the Lucky Dragon Number 5 that was nearby, and poisoned the tuna aboard. There was a global uproar and a demand for cessation of testing. The Japanese were especially upset.

Secretary of State, John Foster Dulles, groaned that "Comparisons are now being made between ours and Hitler's military machine." Eisenhower was concerned that "Everybody seems to think that we are skunks, saber-rattlers, and warmongers." It would be salutary, it was thought, to divert Japanese eyes from the memory of the ashes of Hiroshima and Nagasaki. The United States could make "a dramatic and Christian gesture", as Commissioner Murray of the Atomic Energy Commission put it, in the form of a nuclear power plant.[17]

The "peaceful atom" was born as a fig leaf on the horror of the hydrogen bomb.

16 As quoted in Arjun Makhijani and Michele Boyd, "Nuclear Power: A Cold War Propaganda Tool", *Science for Democratic Action*, Vol. 8, No. 3, pp. 12-13.
17 Quotes are as they appear in Peter Kuznick, "Japan's nuclear history in perspective: Eisenhower and Atoms for War and Peace", *Bulletin of the Atomic Scientists*, April 13, 2011.

One result is atomic wastelands at hundreds of sites in the United States, the former Soviet Union, France, Britain, China, and elsewhere. The people of Rongelap, poisoned by the 1954 Bravo thermonuclear test are still in exile, as are the people of Bikini. That 1954 test series ("Castle") created hot spots in Mexico City, Mexico and in Colombo, Sri Lanka, among others. New Mexico communities irradiated with intense fallout by the first ever test, code-named "Trinity", still await recognition. Add Australia and Kiribati, Algeria, French Polynesia, Kazakhstan, Lop Nor....[18] In the United states alone the Navajo Nation and neighboring lands in the Colorado Plateau are littered with abandoned mines, poisoned waters, and hundreds of millions of tons of uranium mining and milling wastes.

There is also this little-known result: there is far more plutonium in highly-radioactive used fuel from nuclear power plants than in all the nuclear weapons in all nine nuclear-bomb-wielding countries.

The World War II archipelago of radioactive contamination of the Congo's uranium ore, extracted under Belgium's wretched rule, is a toxic emblem of what is being passed to future generations. It was stored on Staten Island. It was converted to forms needed to build the Hiroshima and Nagasaki bombs in Tonawanda ( New York), Port Huron (Ontario, Canada), Bloomfield (New Jersey), Cleveland (Ohio), downtown St. Louis (Missouri), Oak Ridge (Tennessee),[19] and on Indigenous lands in Hanford(Washington), where it was used to make plutonium. All before it was fashioned into bombs on Indigenous lands that Los Alamos occupied.

***Today, there are nine scorpions in the bottle****;* they are more confused than ever. They cannot let go, fearing the total control of the other. They refuse to enter into discussions with the parties to the Treaty on the Prohibition of Nuclear Weapons who have forsworn the bomb. Yet, they know that it could all be ended by accident, not to speak of by design. For example, large numbers of U.S. and Russian nuclear weapons remain in dangerous "launch-on-warning" posture – a recipe for misunderstandings and a nuclear holocaust by accident. The world has come close more than once.

Reason is lost to atomic terror and the contrary fear of losing control

18 A series of articles on the major nuclear weapon test sites, with references, can be found at https://ieer.org/resource/disarmamentpeace/articles-on-the-health-and-environmental-impacts-of-nuclear-weapons-testing-at-the-major-test-sites/

19 Department of Energy, Uranium Milling and Processing Facilities -- Manhattan Project: Interactive History.

and the world remains hostage at the edge of the nuclear void. It is the bitter fruit of not stopping in December 1944, when the job was done. Einstein came to believe that signing the 1939 letter had been his biggest mistake. Richard Feynman, among the great physicists at Los Alamos, gave the following reflections in a 1981 interview with the BBC:

> "With regard to moral questions, I do have something I would like to say about it. The original reason to start the project, which was that the Germans were a danger, started me off on a process of action which was to try to develop this first system at Princeton and then at Los Alamos, to try to make the bomb work. All kinds of attempts were made to redesign it to make it a worse bomb and so on. But what I did, - immorally I would say – was to not remember the reason that I said I was doing it, so that when the reason changed, because Germany was defeated, not the singlest thought came to my mind at all about that, that that, meant now I would have to reconsider why I am continuing to do this. *I simply didn't think, okay?*"[20]

Even this startling confession of immorality encompasses only part of the story. There was a broader, moral failure. Why did some U.S. scientists think, as late as 1960, that it was acceptable for the United States to inflict "major birth defects" on 6,000 babies *worldwide* so that it could conduct nuclear tests and build its vast arsenal?[21] Why are the people of the Congo still suffering; millions have died and are still dying -- only the resource mix is different? It is a country exemplary of how the carnage of the last 500 years turned the resources of the Global South into a curse.

Inside the Matryoshka doll of the delusions of nuclear weapons and power also lie the moral issues that total control, total destruction, and total helplessness have raised. Marrying these broader questions to nuclear weapons abolition is essential for an enduring peace with justice for all peoples. I will try to address that in my next essay on this topic.
Peace with justice will be, by all indications, a long struggle. But two steps could vastly increase safety and give us the time and room to get there. They are straightforward and can be implemented immediately. Specifically, the nuclear weapons powers should:

1. Accept the principles of nuclear weapons abolition in the Treaty on the Prohibition of Nuclear Weapons and engage with the parties to it

20 Richard Feynman, interview, 1981 in BBC Horizon TV, The Pleasure of Finding Things Out; emphasis added. Video at https://vimeo.com/340695809 ; quote starts at 16:40.
21 April 1960 editorial in the California Engineer, reprinted in 1990, and quoted in Arjun Makhijani, *Manifesto for Global Democracy*, Apex Press, 2004, Part II, p. 28.

to discuss how all nuclear weapon states might be integrated into its framework, and

2. Declare a "nuclear cease fire". The concept was developed by the late Admiral L. Ramdas, former Chief of Staff of the Indian Navy, after India and Pakistan tested nuclear weapons in 1998 as part of his advocacy for complete nuclear disarmament. It combines "no first use" with physical measures to take nuclear weapons off hair-trigger alert, known as "de-alerting", which makes verification of "no first use" possible, at least in principle.[22]

The three parties to the most serious nuclear tensions – the United States, Russia, or China – could take these steps *now unilaterally*. They should derive inspiration from the historic step that Presidents George H.W. Bush and Gorbachev took in 1991, as the Soviet Union was disintegrating. There was no time for treaties. Recognizing the dangers of "loose nukes", they unilaterally withdrew thousands of "tactical nuclear weapons" from deployment and dismantled them. It is most relevant to note that the United States acted first, on a proposal made years before by President Gorbachev.[23]

22 Discussion of dealerting and many other nuclear-disarmament-related issues can be found in the 1998 special issue of Science for Democratic Action, Achieving Enduring Nuclear Disarmament.
23 National Security Archive, "Unilateral U.S. pullback in 1991 matched by rapid Soviet cuts", September 30, 2016,