SELF-ASSURED DESTRUCTION:
U.S. DEFENSE POLICY IN THE NUCLEAR ERA

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Several months ago Tom McGanney suggested that we should have a paper on Daniel Ellsberg's book, *The Doomsday Machine,*[1] because of the importance of the subject matter, and that was difficult to argue with. Ellsberg's thesis is that the survival of the human species is in imminent and increasing danger, and that the defense policies of the United States and other nuclear powers are increasing that danger. That does, indeed, seem like a subject worthy of some serious attention.

That being so, it could seem surprising that the book has had so little impact. It received respectful reviews in the press, and reviewers noted the solidity of Ellsberg's documentation, and the depth of his credentials to discuss the subject. Overall, however, the book created very little stir.

Perhaps, after all, that should not have been surprising. Although Ellsberg's book adds a great deal of useful historical background, the crucial facts have been publicly known for years. Similar warnings have been issued before, by former Presidents, cabinet officers, and high ranking military commanders. And yet, the subject is not high on the public agenda. A former Secretary of Defense said recently: "The danger of a nuclear calamity is greater now than during the Cold War, yet most people seem blissfully unaware of it."

The title of Ellsberg's book, The Doomsday Machine, is a term coined in the 1950s by nuclear war planners, referring to a hypothetical device which could destroy all human life on Earth. As Ellsberg notes, such a device seemed to be only hypothetical then, as far as people knew at the time. The term "doomsday machine" was introduced into wider use in 1964 by the film *Dr. Strangelove,* Stanley Kubrick's sardonic comedy about nuclear war. Perhaps you may recall that the subtitle of that film was "How I Learned to Stop Worrying and Love the Bomb." Today it almost seems that most people have learned, if not to love the bomb, at least to accept it as a permanent feature of modern life, something we can live with into the indefinite future. But, as Ellsberg's book shows in grim detail, that is not a tenable option.

The book opens with an epigraph from the philosopher Friedrich Nietzsche: "Madness in individuals is something rare; but in groups, parties, nations and epochs it is the rule." Ellsberg frequently uses the vocabulary of madness in describing the accumulation of nuclear arsenals sufficient to extinguish human life on the planet. After recounting incidents in which the world came within

[1] Daniel Ellsberg, *The Doomsday Machine: Confessions of a Nuclear War Planner,* Bloomsbury 2017

minutes of accidental nuclear war, he declares that keeping nuclear missiles on hair trigger alert is “criminally insane.” And yet here too there is a paradox: this insane situation is the product of decades of careful analysis by presumably sane and intelligent people.

Ellsberg’s book is divided into two main parts. The first, subtitled “The Bomb and I,” recounts the history of his personal involvement in nuclear war planning. In various capacities with the Defense Department and with the RAND Corporation, with a top security clearance, he took an active part in planning nuclear strategy under two Administrations. Ellsberg describes how he changed over the years from a convinced Cold Warrior, believing in the necessity of nuclear arms for national security, to a critic believing that they are irrational and intolerably dangerous.

A number of factors were involved in his change of heart. One was the increasing magnitude of destructive power involved in the development of the hydrogen bomb. The H Bomb led a number of people to abandon defense-related work, including (although Ellsberg did not know it at the time) his own father.

Another source of his unease was the growing conviction that reliance on nuclear arms was eroding the American principle of civilian control of the military. He describes an extraordinary incident in which the Joint Chiefs resisted giving President Kennedy the full text of the nation’s nuclear war fighting plan.

He was shaken, also, by observing many gaps and weaknesses in the safeguards which were supposed to prevent accidental or unauthorized use of nuclear weapons. Some weapons systems, for example, could not be launched unless a lengthy code number was given, but Bruce Blair, a former missile control officer, cited instances in which the number in question was simply a string of zeroes. Ellsberg found that the two man rule, requiring at least two officers to implement every stage of a launch procedure, was often evaded in practice. Ellsberg also describes flaws in Fail-Safe procedures, under which planes which had been ordered to take off with nuclear bombs were not authorized to complete the mission unless they received a further order to “Execute” after they were airborne. He asked one base commander what the planes would actually do if they did not receive the “Execute” order, for example if the communications link with the base had been lost. The commander replied confidently “They would return to base.” After a pause he added: “Most of them.” (p.55)

Perhaps the most critical factor in moving Ellsberg to the conviction that the nuclear enterprise was irrational and immoral was his growing revulsion at the casualness with which nuclear war planners discussed extinguishing hundreds of millions of human lives. He describes (p. 99 et seq.) a top-level briefing on nuclear war fighting plans, near the end of the Eisenhower administration, in which among other things the general making the presentation said that the

American attack would kill 300 million Chinese. Someone in the audience asked (p. 102): “What if this isn’t China’s war? What if this is just a war with the Soviets? Can you change the plan?” Some in the audience were stunned by the response: “Well yeah,” said General Power resignedly, “we can, but I hope nobody thinks of it, because it would really screw up the plan.” Only one voice was raised in protest at this, the Commandant of the Marine Corps, who said (p.103): “All I can say is, any plan that murders three hundred million Chinese when it might not even be their war is not a good plan. That is not the American way ....” Ellsberg comments: “It was, however, the American plan. Though President Eisenhower was distressed when his science advisor... reported to him the tremendous amount of overkill in the plan, Eisenhower endorsed [it] without any modification and passed it on to John F. Kennedy a month later.”

In Part II of his book, titled “The Road to Doomsday,” Ellsberg focuses on the scientific findings as to nuclear winter. His presentation of the data, which is broken into several parts, may be hard for some readers to follow, but the concept is actually fairly simple.

In the early 1980s, when the number of nuclear weapons in the world was approaching its Cold War peak of almost 70,000, scientific research began to appear about the climate effects which would result from the smoke which would be generated by nuclear fire storms. Climate models then available indicated that smoke lingering in the atmosphere, and thus blocking sunlight, could cause drastic drops in temperature and severe disruption of world agriculture. The resulting publicity about what came to be called “nuclear winter” came to the attention of both Ronald Reagan and Soviet President Gorbachev, and they took it seriously. Both have said that it was one of the motivations for their joint declaration that: “A nuclear war cannot be won and must never be fought,” and for subsequent agreements sharply reducing the number of nuclear weapons. However, with the end of the Cold War and the lowering of international tensions, the concept of nuclear winter largely dropped out of public consciousness.

About a decade ago, motivated by increasing concern about nuclear risk and worsening relations between the US and Russia, a number of scientists reopened the inquiry into the climate effects of nuclear war. This time, of course, the climate models and computer resources available to them had improved enormously since the 1980s. The results of the new research showed that the early concerns about nuclear winter had, in fact, been greatly understated. The smoke generated by a nuclear exchange between the US and Russia, even at the lower number of weapons permitted by the New START Treaty, would linger in the upper atmosphere for a decade, dropping temperatures to levels not since the last Ice Age, and causing a collapse of world agriculture. One scientist reviewing the new data commented that the Cold War concept of “Mutually Assured Destruction” (MAD) had been replaced by Self-Assured Destruction, because any country initiating a nuclear war would literally be committing suicide.

The scientific findings further indicated that even a much smaller nuclear exchange, for example a regional war between India and Pakistan, would cause global disaster. If India and Pakistan were to each use 50 Hiroshima-sized bombs on cities- that is, a very small fraction of one per cent of the world's nuclear arsenal- the resulting climate impact on agriculture would put two billion people at risk of famine.

One might reasonably wonder how the world's nuclear powers have reacted to this information. So far as the public record indicates, they have simply ignored it, continuing to refine and modernize nuclear arsenals which none of them could use without committing national suicide. Efforts to call governmental attention to the crucial data have so far met no success. During the waning days of the Obama administration, two arms control groups were able to get a meeting with White House staff, and urged that the President should call attention to the nuclear winter findings in a major speech; the staff seemed receptive, but nothing came of it. On one occasion several U.S. Senators sought to offer an amendment to the defense appropriations bill, calling for a study of the data by the National Academy of Sciences, but the Senate leadership said there was no room for the proposal on the legislative calendar.

This information about nuclear winter, in large part, is what provokes Ellsberg's rhetoric about insanity. He describes several earlier incidents in which the United States and Russia have already come within minutes of accidental nuclear war, by human or computer error. In one case, for example, a defective computer chip at the North American Air Defense Command falsely reported incoming Soviet missiles. The mistake was discovered just as the National Security Advisor was about to call the President, informing him of an attack and recommending a retaliatory strike on the Soviet Union. (These incidents are described more fully in the books by William Perry and Eric Schlosser on the reference list.) Several times Ellsberg mentions the incredible fact that, despite these experiences of near-catastrophe, the U.S. and Russia still maintain hundreds of nuclear missiles on hair trigger alert, ready to be launched on a few minutes notice.

And the news gets even worse. Rapid developments in nuclear weapons technology, including delivery systems which are faster and harder to detect, are increasing the risk of accidental war. In 2015 an international panel of retired military experts, chaired by a former Vice Chairman of the U.S. Joint Chiefs of Staff, found that "warning and decision times are getting shorter, and consequently the potential for catastrophic human error in nuclear control systems is growing larger."[2] This warning was echoed in a 2017 report by the United Nations Institute for Disarmament Research. The UN report noted that, in some earlier nuclear close calls, erroneous automatic warnings had been overridden by human judgment, and it cautioned that increased reliance on

[2] Global Zero Commission on Nuclear Risk Reduction, Gen. (Ret.) James Cartwright, Chair, "De-alerting and Stabilizing the World's Nuclear Force Postures," April 2015

automated systems "can lead to misplaced confidence while introducing new points of vulnerability."[3] This year, after Ellsberg's book appeared, the RAND Corporation issued a report on a conference of researchers and national security experts on the increasing application of artificial intelligence (AI) to military technology. The summary of the RAND report notes that "participants appeared to agree that advanced Artificial Intelligence could severely compromise nuclear strategic stability and thereby increase the risk of nuclear war."[4]

Another risk factor which Ellsberg mentions, but does not develop at length, is the danger of cyber hacking by hostile states or terrorist groups. A former commander of U.S. Strategic Forces has testified to being "very concerned with the possibility of a cyber-related attack on our nuclear command and control and on the weapons themselves."[5] A former head of the National Nuclear Security Administration has reported that NNSA's computers are under "constant attack" by both foreign governments and "fairly sophisticated non-state actors." A report to the Defense Department by its outside scientific advisors found that "DoD red teams, using cyber attack tools which can be downloaded from the internet, are very successful at defeating our systems." The Defense Science Board also noted that hackers have a built-in advantage, since the defense needs to secure every possible point of entry, while an attacker needs to find only one point of vulnerability.[6] In 2018, after Ellsberg's book was published, a report on nuclear cyber security was issued by Chatham House, the think tank sponsored by the Royal Institute for International Affairs in the United Kingdom. The Chatham House report noted that: "Nuclear weapons systems were first developed at a time when computer capabilities were in their infancy and little consideration was given to potential malicious cyber vulnerabilities. Many of the assumptions on which current nuclear strategies are based predate the current widespread use of digital technology in nuclear command, control and communications systems. There are a number of vulnerabilities and pathways through which a malicious actor may infiltrate a nuclear weapons system without a state's knowledge... At times of heightened tension, cyber attacks on nuclear weapons systems could cause an escalation which results in their use."[7]

The danger of accidental nuclear war further increased in February 2018 when the U.S. Administration released the new Nuclear Posture Review,[8] i.e. the declassified summary of the nation's nuclear strategy. Among other things, the

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[3] United Nations Institute for Disarmament Research, "Understanding Nuclear Weapons Risk," 2017www.unidir.org/files/publications/pdfs/understanding-nuclear-weapon-risks-en-676.pdf

[4] Edward Geist and Andrew Lohn, "How Might Artificial Intelligence Affect the Risk of Nuclear War?", RAND Corporation 2018

[5] https://www.armscontrol.org/act/2013_04/Study-Sees-Cyber-Risk-for-US-Arsenal

[6] Department of Defense, Defense Science Board, "Resilient Military Systems and the Advanced Cyber Threat," 2012

[7] Beyza Unal and Patricia Lewis, "Cybersecurity of Nuclear Weapons Systems: Threats, Vulnerabilities and Consequences," Chatham House 2018, available at www.chathamhouse.org

[8] 2018 Nuclear Posture Review, Office of the Secretary of Defense, February 2018

Review calls for the development of new low-yield nuclear weapons, intended to give the President more flexible options. This could lower the threshold at which nuclear weapons might actually be used, breaking a taboo which has lasted (despite the close calls) since 1945. The Review also raises the possibility of a nuclear response to a non-nuclear attack on military communications systems; experts have warned that this increases the risk of unintended escalation, because of the extensive entanglement of nuclear and non-nuclear communications networks.[9]

Ellsberg argues passionately that subjecting the human species to these risks is not only irrational, but also profoundly immoral. In discussing the ethical issues he asks how we ever came to accept the threatened killing of hundreds of millions of unarmed civilians as acceptable policy. In part he traces this development to the massive city bombing practiced by both sides in World War II, and he relates some horrific details about the incendiary bombing of Japan. He also notes that nuclear arsenals were rationalized as necessary to deter equally horrible threats from the other side; but he points out that most nuclear powers, including the United States, have repeatedly gone beyond deterrence and threatened to use nuclear weapons first.

One related issue which Ellsberg does not discuss is that of international humanitarian law (IHL), also known as the law of armed conflict. Although extensively violated during World War II, the principles of IHL were reaffirmed after the war. Both the UN and the International Court of Justice have declared these principles to be binding on all nations, and the U.S. Department of Defense professes to follow them. All four branches of the U.S. military have detailed manuals instructing commanders on compliance with the principles of humanitarian law; these include a prohibition against targeting civilians, and a ban on uncontrollable weapons which destroy military and civilian targets indiscriminately, or which cause lasting harm to the environment. As the International Red Cross and others have noted, it is difficult to see how any use of nuclear weapons could comply with these principles. In its manual on IHL, DoD argues that it could be lawful, for example, to use a small nuclear device against a military force crossing an uninhabited desert, or against a nuclear missile submarine in mid-ocean. But, obviously, these far-fetched hypotheticals bear no relation to the actual nuclear war plans of the US, Russia, or the other nuclear weapon states.

In fact, although Ellsberg does not discuss the point at length, his anxiety and indignation about nuclear weapons are shared by a large portion of the world's population, and a large majority of the world's nations. The Nuclear Nonproliferation Treaty, which became effective in 1970, reflected a two-part bargain: a majority of the world's countries agreed not to acquire these weapons,

[9] James M. Acton, "Escalation through Entanglement: How the Vulnerability of Command-and-Control Systems Raises the Risk of an Inadvertent Nuclear War," *International Security*, Vol. 43 Issue 1, Summer 2018, pp.56-99

in exchange for a pledge by the nuclear powers to end the arms race "at an early date" and to negotiate the elimination of their nuclear arsenals. When the original term of the Nonproliferation Treaty expired in 1995, many non-nuclear states initially resisted proposals to make it permanent, citing the lack of progress on disarmament. They were persuaded by the nuclear states' assurances that progress would quicken, now that the Cold War had ended. In 1996, the International Court of Justice ruled in a unanimous advisory opinion that under the treaty the nuclear powers had a binding 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".[10] Subsequently, at treaty review conferences in 2000 and 2010, the nuclear powers pledged to at least refrain from developing new nuclear weapons, and to reduce the role of nuclear arms in their national security policies.

However, as U.S.-Russian relations deteriorated, these pledges were violated by the nuclear arsenal modernizations which both countries began. The 2015 review conference under the Nonproliferation Treaty was acrimonious, with the non-nuclear weapons states venting their frustration over the lack of progress on disarmament, and the conference ended without an agreed final statement. In December 2016, the UN General Assembly passed a resolution calling on the nuclear powers to reduce the danger of war by taking nuclear missiles off high alert. The vote was 174 in favor, four opposed; the U.S. joined with Russia, Britain, and France to cast the only negative votes. In 2017, 122 of the world's non-nuclear weapon states adopted a Treaty on the Prohibition of Nuclear Weapons, declaring that any use of these weapons would be "abhorrent to the principles of humanity." All of the nuclear powers boycotted the proceedings, and announced that they would ignore the treaty. And in May of this year, in an unusual development largely ignored by U.S. media, the Secretary General of the UN publicly criticized the nuclear weapons states. It is very rare for a UN official to offer any public criticism of the P5 (that is, the US, Russia, China, Britain, and France, the permanent members of the Security Council and the original nuclear powers). The Secretary General called for urgent action on nuclear disarmament, saying: "The States that possess nuclear weapons have primary responsibility. They must prevent the use of nuclear weapons, reduce the danger of nuclear war, and lead efforts on non-proliferation and disarmament. This must start with their existing obligations, with concrete bench marks and time lines. And some of these are decades overdue."[11]

In his final chapter, "Dismantling the Doomsday Machine," Ellsberg argues that the only lasting assurance for human survival is the complete elimination of nuclear weapons. Recognizing, however, that current conditions will prevent this happening any time soon, he urges that the nuclear powers should at least take

[10] *Legality of the Threat or Use of Nuclear weapons,* International Court of Justice, Advisory Opinion of 8 July 1996, I.C.J. Reports 1996, p. 226, para 105(2)F. For more on this opinion see John Burroughs, *The Legality of Threat or Use of Nuclear Weapons,* Münster 1997

[11] Address by Secretary General António Guterres, May, 2018

their weapons off hair-trigger alert, and drastically reduce their number to the figure needed for a minimum deterrent. Although he does not discuss the point, this clearly would be a practicable option, because one major nuclear power- China- has already adopted it. Unlike the U.S. and Russia, China announced many years ago that it would never be the first to use nuclear weapons; the sole purpose of its arsenal would be to deter a nuclear attack on China, and the size of that arsenal - which is less than five percent of those maintained by either the U.S. or Russia - is calculated to be only enough to ensure a credible retaliatory capability. And China's nuclear missiles are not maintained on hair-trigger alert.

In order to achieve such a reduction in nuclear weapons, and ultimately to abolish them entirely, Ellsberg argues that governments must be forced to confront the scientific facts about nuclear winter. And, he believes, this in turn will not happen until the public becomes widely aware of the facts, and presses governments to act.

Papers in this forum often end with some sort of concluding summary. That, however, is not possible here, since the story is still ongoing, with an uncertain outcome. Perhaps the most appropriate closing would be to leave the last words to the retired military experts of the Cartwright Commission on nuclear risk reduction, whose report was cited earlier. After reviewing the history of past nuclear close calls, in which the world has come within minutes of accidental nuclear war, and after reviewing the increasing risk of accidental war through developments in weapons technology, they wrote that the world's nuclear powers "are counting on a perpetually perfect run of good luck for their survival. By any objective reckoning, this is tempting fate beyond reason."