WASHINGTON POST reporter Dan Zak subtitled his recent book, Almighty, this way: Courage, Resistance and Existential Peril in the Nuclear Age.

The difference between Zak and his peers in Generation X is he knows. During a recent visit to Knoxville, where a considerable portion of his book takes place, he was quick to admit that until he took up covering the story of the Transform Now Plowshares action he knew little about nuclear weapons.

His education came through the deep drilling he did for the book, starting with testimony in federal court in Knoxville. Little did he know when he came to Tennessee that digging into his story would take him to the South Pacific for a month on the Marshall Islands, exploring the effects of nuclear testing on the people and culture there.

Most Gen Xers, and Millennials who are coming of age, have no idea that nuclear weapons continue to cast a shadow over our lives and our planet. Even though presidential candidates for several election cycles have declared the nuclear threat the greatest single danger facing the country, the extent of misery and devastation that would result from a nuclear exchange remains beyond the imagination of most of us—younger people have never been made aware; older people push the fearful truth out of sight because it is so difficult to contemplate. We ignore the threat at our peril.

First, a lot of people die

Nuclear weapons are not just bigger bombs that will kill more people and flatten more buildings. Pictures of Hiroshima and Nagasaki, if you take time to look at them, are mind-boggling. Today's bombs and warheads are way bigger, way more devastating. Former
It is not flippant to say any who survivor might envy the dead in a post-nuclear exchange world.

If the paragraphs above have created disturbing images in your head, multiply them by hundreds, many hundreds, across the United States, and a similar number in Asia and Europe. A full-out nuclear exchange between the United States and Russia would involve more than 1,300 nuclear warheads from each side. Some would be targeted at remote military locations; some would fail to reach their targets. But hundreds would fall on heavily populated areas; all of our major cities would be gone, along with our capacity to communicate with electronics—no news broadcasts, no cell phone calls, no internet. If you survive, you are on your own.

If the one hundred largest cities in the United States were targeted, which is a predictable scenario, nearly 50 million people would die the first day. Every city larger than Birmingham, Alabama would be reduced to rubble. Across Russia, similar damage would be inflicted. This scenario imagines only a tenth of the missiles launched reach their intended targets.

That’s just the first day, weeks, months. A study made of the Hiroshima bomb in 1945 said, “Such a weapon has the power to turn everything into nothing.”

William Perry

“I conducted calculations demonstrating the deaths and the actual damage inflicted during a nuclear holocaust in an exchange between the United States and the Soviet Union. I got lots of numbers. But what the numbers amounted to was it would be an end of civilization.”

EXISTENTIAL

The word we have to come to terms with is existential. This is what separates tritium bombs from the overwhelming destructive power our military has at its disposal with conventional weapons. An all out conventional attack can ruin a city and put an enemy on its heels. Nuclear weapons can wipe out all life on the planet.

The effect of nuclear weapons, as noted by the International Court of Justice in 1996, extends beyond their immediate impact: “The destructive power of nuclear weapons cannot be contained in either space or time. They have the potential to destroy all civilization and the entire ecosystem of the planet.”

The court also said, in considering arguments about protection of the environment: “The Court recognizes that...the use of nuclear weapons could constitute a catastrophe for the environment. The Court also recognizes that the environment is not an abstraction but represents the living space, the quality of life and the very health of human beings, including generations unborn.”

Living in the southern hemisphere, largely nuclear free, will not prevent your death; it will just delay it.

Clouds of radioactive particles, debris and ash will encircle the globe; fallout would be dictated by wind and weather patterns. When the National Institutes of Health released maps showing the fallout from US nuclear tests at the Nevada Test Site, some exposures were predictable—people close to the Test Site were exposed more than people in distant areas. But there were exceptions—counties in Idaho and in New York state appeared dark green on the map. Because significant radiation plumes traveled in the upper atmosphere until they precipitated out—that’s right, rain—over distant sites. People who happened to be living there lost the fallout lottery.

A nuclear exchange will create similar clouds of deadly fallout, thousands of them. Some short-lived radionuclides—xenon, argon, iodine, cesium, strontium—would pose immediate risks—days, weeks, months, years, decades, centuries. Other longer-lived radionuclides—plutonium and highly enriched uranium—will pose longer risks. We’re talking longer than you can think—billions of years.

Pathways to the body will be...
important. Studies of radioactive iodine deposited on soil and vegetation during the Hanford Green Run (an intentional release of radiation by the government on an unsuspecting population in Washington State in 1949) found the cow-milk pathway was the primary method of exposure, and young girls whose families had a backyard cow or goat were the maximally exposed population. The “experiment” was designed to calibrate monitoring equipment so we could catch those rascally Russians if they tested H-bombs—the thyroid cancers that resulted in Washington and Idaho were just collateral damage. Longer-lived radionuclides, like enriched uranium, would do more damage if they were inhaled or ingested to take up residence in the body and pound cell walls with large, slow alpha particles.

The clouds of radiation will have another effect, though—one studied by scientists since the 1940’s—that will impact the capacity of the earth to sustain life. The massive conflagrations of soot and ash from mega-firestorms in cities around the globe following nuclear explosions will create a dense blanket of carbon particles in the stratosphere that is estimated to reduce the earth’s temperature from 20°C -35°C (36°F – 63°F) in the summer, disrupting growing patterns and eliminating most food production. An article in the Royal Swedish Academy of Sciences journal Ambio postulated that a post-nuclear cloud of soot could block as much as 99% of sunlight from reaching the Earth’s surface, with darkness persisting for many weeks.

Recent studies, with more sophisticated computer models, have examined the phenomena of environmental impacts from a nuclear exchange and concluded: Still catastrophic consequences. “The period of no food production needs to be extended by many years,” the authors concluded. A 2014 study acknowledges global cooling could trigger a global nuclear famine. Other theories examine the effects of a nuclear exchange on the ozone layer, predicting a depletion of 50% leading to a 200% increase in ultraviolet radiation. It is this scenario, confirmed again and again by studies even as computer modeling becomes more sophisticated, that presents the ultimate threat of nuclear weapons. As the Indian writer Arundhati Roy has noted, “It could all end in one afternoon.”

It would take longer, of course, but the die would be cast, irretrievably, in one afternoon, and the first wave of inconceivably devastating horror would be complete in one afternoon. The undoing of all history and culture would be only the first effect; the undoing of the future would follow, unfolding in the weeks and months to come.

The moral imperative
One need not be religious to recognize the clear moral imperative arising from the recognition of the existential threat of nuclear weapons. Ancient religious traditions connect humans to the Earth that sustains life, recognizing the inescapable dependency that relates us to the soil and water that surround us. In the Christian tradition the seminal story of creation not only describes how we got here, it sets forth the primary task of our being: to care for the earth and the creatures on it. Christians call it stewardship, recognizing a duty to care for and preserve the source of our being.

But self-preservation is not a uniquely Christian value. Recognition of the relationship of humans to the rest of the natural world—the earth and the other life forms, animal and vegetable, with which we share it—is central to most religions. This is not because it is a distinctly religious value, but because religions recognize it is an existential imperative.

Nuclear weapons threaten this relationship and our continued existence in a way nothing else does—more immediate than global climate change, and irreversible. To contemplate survival of an all-out nuclear exchange is to enter into a particularly despairing realm of the absurd—one US Secretary of Defense once suggested people prepare to dig a hole and cover themselves with cardboard. Perhaps he was simply ignorant. Or maybe he wanted to spare any unfortunate survivors a horrible task by pre-burying victims of the bomb. In any event, immediate survivors of a catastrophic exchange of nuclear bombs will escape sudden death to face a world in which two things are certain—the utter and complete despair arising from the horror of loss beyond all imagination, and their own eventual death as a consequence of the explosions.

The responsibility for preventing nuclear catastrophe can not be avoided; it belongs to us as human beings. It is inherent in our own existence.

The only thing we can do
The only way to confidently preserve the future is to abolish nuclear weapons, to put the genie back in the bottle. Cynics might say this is impossible, but they are wrong. History teaches us nuclear disarmament is possible—South Africa and Libya have done it. The effort does not rely on trust or good faith; it relies on “strict and effective international controls,” to quote the Nuclear Nonproliferation Treaty [NPT]. The United Nations has inspection and verification protocols that have proven effective. The reason the United States failed to find Saddam Hussein’s WMDs after the 2003 invasion is because UN directed efforts to eliminate the Iraqi leader’s weapons program were successful before the US invaded.

In recent years, the disingenuous nonproliferation efforts of the United States and the United Nations have proved less effective. North Korea has developed a nuclear capability, and while it is clear Iran has not pursued that capability, it could, and there is little we can do to stop it short of risking everything with a pre-emptive strike. Since the NPT entered into force in 1970, three other na-
tions have joined the “nuclear club.” Others have demonstrated the capacity to go nuclear, but have instead agreed to forestall development, relying instead on security agreements.

What is clear is this: as long as some states reserve the right to project power backed by thermonuclear weapons of mass destruction, other states will feel threatened. This is a powerful proliferation incentive.

What is also clear is this: the path to true security lies only in universal nuclear disarmament. This understanding is at the heart of Article VI of the Nonproliferation Treaty. It has been the policy and law of the United States since 1970, but we have yet to follow either the spirit of letter of that law.

Abolishing our nuclear weapons under strict and effective international control, in conjunction with similar efforts in other nuclear armed states, is the only guarantee that we will not destroy ourselves, the planet and the future.

**THE URGENCY OF NOW**

Perhaps the most difficult thing to consider is the urgency of now. Now, because this moment is the only moment we are sure of. As I write these words, I am acutely aware that they will not be read for a couple of weeks—the newsletter will be printed, then mailed. Or perhaps you will not read them ever.

Between now and then, it could happen. Either by accident or by design. An irrational act by North Korea or a calculated provocation in eastern Europe by the US or Russia; an act of terrorism in Pakistan or India or a pre-emptive strike by Israel in the MidEast—any of these could trigger an exchange of nuclear weapons that would almost inevitably escalate into full-scale devastation.

Or it could result from human error or a computer glitch. William Perry recounts several “near misses” that were due to misreadings of radar and failures of communications.

Whatever the reason, it could be that these words will never be read. Contemplating that is what it means to understand the urgency of now. To think of this every day would be maddening. The only antidote we have to that madness is to immerse ourselves in hope, and to work to abolish nuclear weapons.

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**OREPA to screen suppressed film Nuclear Savage**

**N O N E E D T O W A I T**

Halloween to see something frighteningly appalling! *Nuclear Savage*, a film by Adam Jonas Horowitz, documents the decision of the US government to conduct research on victims of US H-bomb tests in the South Pacific.

OREPA, with the help of the Nuclear Age Peace Foundation, will screen the film in Knoxville on Monday, October 24 at 6:30pm at St. James Episcopal Church, 1101 North Broadway. The screening is free and open to the public; popcorn and drinks will be served.

The film, originally made with funding support from PBS, tells the story of Secret Project 4.1, a government program to study human beings subjected to Beta and Gamma fallout from weapons tests. The “subjects” of the research, unsuspecting Marshall Islanders, were not informed of the studies and therefore were unable to consent to them.

Secret Project 4.1 was initiated by the US government on March 6 or 7, 1954, less than one week after the nuclear test known as Castle Bravo went awry, spewing radioactive materials over more than 230 Marshall Islanders as well as 28 US citizens.

*Nuclear Savage* has won numerous awards from film festivals, but PBS has declined to air the film, even after the director cut nearly 30 minutes in response to a request from the network. “PBS is funded by military industrial contractors and subcontractors from the National Labs,” Horowitz says by way of explanation. “They know where their bread is buttered.”

Filmmaker Horowitz first traveled to the Marshall Islands twenty years before he made the film. He was appalled at the conditions he found there, and returned after two decades to tell the story of the Marshall Islanders through interviews, previously unseen archival footage, and declassified US government documents. *Nuclear Savage* supports the Islanders’ calls for attention to their concerns and for justice.
Over and over, reader after reader went down a list of names, reading each one carefully. As the name echoed, the reader reached for the thin leather strap and pulled it. The bell tolled into the early morning mist directly across from the front entrance to the Y12 Nuclear Weapons Complex in Oak Ridge, Tennessee. And each time, someone rose to lift a peace crane from the table and take it to the makeshift fence, to tie it there.

It was August 6, 2016, and we gathered in Oak Ridge because the highly enriched uranium fuel for the Little Boy bomb that destroyed Hiroshima was produced here, at Y12, and the thermonuclear core of every H-bomb in the US stockpile ever was also made here, and even today they still manufacture thermonuclear cores for the W-76, Modification 1 Life Extension Program.

The bomb back then, in 1945, was described by Matsui Kazumi, Mayor of Hiroshima, in the 2016 Peace Declaration this way: "Slicing through the clear blue sky, a previously unknown ‘absolute evil’ is unleashed on Hiroshima, instantly searing the entire city. Koreans, Chinese, Southeast Asians, American prisoners of war, children, the elderly and other innocent people are slaughtered. By the end of the year, 140,000 are dead."

The truth we would rather not know is nevertheless terribly true: the nuclear weapons deployed around the world today pose an existential threat—if used, they will destroy life on the planet and render it uninhabitable.

Joining with Hibakusha

OREPA’s August events started August 4 with an evening with Dan Zak, Washington Post reporter whose book Almighty starts with the Transform Now Plowshares action that happened in Oak Ridge in 2012 and goes on to examine US nuclear policy today.

On August 6 we held the Names and Remembrance Ceremony that opens this article. That afternoon, we enjoyed a concert for peace at Bissell Park in Oak Ridge and then, under the withering sun, we marched two miles to the Y12 bomb plant where we tied a multicolored...
chain to the fence that fronts the weapons facility.

As we prepared to leave Y12, Beth Rosdatter crossed the road and took up a position blocking the entrance to the weapons plant. "I just didn't feel like I could go home and say I had done all I could," she said later. She was arrested and faces trial on December 2 in general sessions court in Oak Ridge on charges of obstructing a highway.

On August 9, we filled a field on the banks of the Tennessee River in Knoxville for a Peace Lantern ceremony marking the destruction of Nagasaki. Japanese dancers in kimonos led us in folk dances and we watched a shadow puppet re-enactment of the Nagasaki horror before launching our lanterns in the river.

All these events aimed to join our voices with the survivors of Hiroshima and Nagasaki who say, "For the future of humanity, we need to help each other live in peace and happiness with reverence for all life." and "To make the most of the life we've been given, please, everyone, shout loudly that we don't need nuclear weapons."

The call of Mayor Matsui in Hiroshima is a call to each of us: “Today, we renew our determination, offer heartfelt consolation to the souls of the A-bomb victims, and pledge to do everything in our power, working with the A-bombed city of Nagasaki and millions around the world, to abolish nuclear weapons and build lasting world peace.”

August events, from top, left to right: Joe Williams singing at the Peace Concert in Bissell Park; Kierra helps Michael Walli lead the march to Y12; Beth Rosdatter in conversation with security guards before her arrest for blocking the entrance to the bomb plant; The Emancipators at the Peace Concert; Kimono-clad dancers teach us all traditional Japanese folk dances at the Peace Lantern Ceremony on August 9; The Catalystica players entertain at the Peace Concert in Bissell Park; preparing to break free of the chains of nuclear addiction at the Y12 weapons plant.
Non-nuclear nations push for weapons ban

More than one hundred nations adopted a proposal in August calling for a conference in 2017 to establish a legal ban on nuclear weapons. They were opposed, of course, by the United States and other nuclear-armed states.

The proposal, now a recommendation to the United Nations, is the result of a series of meetings by the United Nations’ Open Ended Working Group on nuclear disarmament. The final report of the OEWG recommended negotiations in 2017 on “a legally binding instrument to prohibit nuclear weapons, leading toward their total elimination.”

Widely understood as an expression of ongoing frustration by non-nuclear weapons states at the failure of nuclear armed states to meet their almost fifty-year-old obligation under the Nuclear Nonproliferation Treaty to achieve nuclear disarmament, the recommendation was bolstered in late September when Austria announced it would put a formal resolution on the table in 2017 to convene negotiations on a legally binding instrument to prohibit nuclear weapons.

A trillion dollars for what?

The Future of Life Institute has created the Trillion Dollar Nuke app which allows users to decide how they would spend the trillions dollars the government plans to spend upgrading our nuclear stockpile over the next thirty years.

You can find mobile and desktop versions of the interactive app at http://bit.ly/2d6mX2L. Use it to visualize what a trillion dollars looks like, and then select from a broad menu to choose what you would spend $1 trillion on instead of nuclear weapons.

Once you’ve established your list—you can clean up Flint, Michigan’s water for $1.5 billion; you can buy 100 million school lunches for $235 million—you can “checkout” and post your list on social media. It’s a great way to stimulate others to think about government spending priorities and the madness of nuclear weapons modernization.

Public accountability at Y12 weapons plant. Not.

For more than thirty years, Frank Munger was the go-to source for information about Oak Ridge Operations; he wrote for the Knoxville News-Sentinel, and the Department of Energy was his beat.

His blog, Atomic City Underground, was read widely, reportedly by the Secretary of Energy on a regular basis.

Little did we know that Frank’s June 30th retirement would usher in a new age of non-coverage of the Department of Energy. But here we are, in the age of impunity, apparently, for three months later the newspaper has yet to replace Munger, and articles about Y12 Nuclear Weapons Complex since July 1? Zero.

Reading the weekly reports of the Defense Nuclear Facilities Safety Board, one learns of criticality safety issues in Building 9215—one of the aging facilities NNSA says it will continue to use for twenty more years without bringing it up to modern safety standards.

One also learns of equipment failures in Building 9212, the main bomb production facility at Y12, and operations that are halted so vent ducts, which accumulated enriched uranium beyond criticality safety mass limits, could be cleaned.

The September 2 weekly report noted at least four major systems were out of service, including Holden Gas Furnaces, the primary extraction system, the oxide conversion facility, and the denitrator.

An accident and solvent spill in August led to further delays in the Metal Production Improvement Program which is already more than three months behind schedule.

When the DNFSB reported in August that a portion of Building 9212 was “not being maintained in a manner that promotes worker safety and health, environmental protection or property preservation,” the finding went unreported. When a worker was exposed to ammonia vapors, not a word was reported. When a criticality safety alarm failed its test in Building 9212 in July, the public was left uninformed.

Many of the issues and incidents noted in the DNFSB reports are minor; taken together, though, they reveal a conduct of operations that has yet to place a satisfactory emphasis on worker safety and health protections.

UPF groundbreaking

According to the Defense Nuclear Facilities Safety Board, the UPF Project held a groundbreaking ceremony to mark the start of construction of the Construction Support Building. The CSB will be used in place of more typical construction trailers to support the building of the UPF and other buildings that are part of the UPF Project.

Confused? That’s the plan. The UPF Project is the heading used to describe the seven-building complex that will include the UPF; all of the buildings will be part of the mission to produce thermonuclear cores for H-bombs. The CSB is the first of the outbuildings to be built.

The Safety Board report indicates, if one reads between the lines, the NNSA has given itself permission to move forward with the subproject that includes installing utilities, demolishing existing facilities, and bringing a concrete batch plant on line to support the eventual construction of the UPF. The Army Corps of Engineers is overseeing the CSB project.

Who doesn’t love the B61 bomb?

Germans, for starters. And they have US nuclear weapons stationed on their soil, with more slated to come after the latest “modernization” of the B61.

Marion Keuper of Hamburg, Germany, will brief us on the German view of hosting weapons of mass destruction at St. James Episcopal Church on Monday, November 7 at 7:00pm. Her presentation is sponsored by the Episcopal Peace Fellowship.

Marion’s visit is an opportunity for OREPA members and others to learn more about our bombs in Germany and Europe. Learning about the B61 is especially relevant—it is the next bomb scheduled for “life extension upgrades” at the Y12 Nuclear Weapons Complex in Oak Ridge.

Marion has been active in anti-nuclear work in Germany for decades and has been featured at international conferences; she is traveling in the United States to raise awareness of US nuclear weapons and the risks they present to Germans and, in turn, to all of us. The program is free and open to the public.
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The vote on whether or not to adopt the resolution is expected in late October or early November, with a second, confirming vote in December.

Beatrice Finn, executive director of ICAN, the International Campaign to Abolish Nuclear Weapons, hailed Austria's announcement as a “major breakthrough in global efforts to rid the world of nuclear weapons.”

Nuclear Weapons and US elections

Both major party candidates for President of the United States have declared nuclear weapons the “single greatest threat” facing the nation. Neither, however, has put forward any substantive plan to address that threat effectively. Republican Donald Trump has spoken about using nuclear weapons almost casually. Democrat Hillary Clinton has said little publicly about plans for the US stockpile. In a private, leaked conversation, she said she would take a hard look at the proposed trillion dollar modernization of the stockpile planned by the National Nuclear Security Administration. She also seemed to criticize plans for a nuclear armed Long-Range Stand-Off cruise missile.

Consideration of public statements and past behavior suggests there is no reason to think either major-party candidate would champion nuclear disarmament or reduce US nuclear stockpiles.

Some arms control experts have expressed hope that a shift in power in the Senate might lead to budget constraints on weaponizers' ambitious modernization plans. Past history does not validate those hopes, and current polling does not indicate a Democratic Senate is likely.

International Court dismisses lawsuit

In April 2014, the Marshall Islands filed lawsuits in the International Court of Justice in the Hague arguing the world's nine nuclear-armed nations have failed to comply with their obligations to pursue global disarmament. Arguments were heard in 2015. On October 5, 2016, the ICJ dismissed the cases on the procedural grounds that there was not sufficient evidence of the existence of a dispute. The vote was evenly split among the justices, 8-8, and the tie was broken by the President of the Court.

Russia, the US, France, China, Israel and North Korea refused to participate in the ICJ proceedings, leaving the United Kingdom, India and Pakistan as the defendants. Clearing the jurisdiction and admissibility hurdle was the first challenge for the plaintiffs.

The decision by the court to dismiss the case cannot be appealed. Had the case gone forward, additional arguments would have been made before the court.

The Marshall Islands case asked the ICJ to find the United Kingdom in violation of its Nonproliferation Treaty obligations to pursue negotiations in good faith aimed at nuclear disarmament under strict and effective international control at an early date. That obligation entered into force in 1970.

Pakistan and India, neither of which is signatory to the NPT, were charged with being in violation of common humanitarian law; the Marshall Islands based its argument on the ICJ’s 1996 Advisory Opinion of the Use or Threat of Use of Nuclear Weapons.

At the same time that it filed suit in the World Court, the Marshall Islands also filed suit against the United States in federal court in San Francisco. The court dismissed the case in February, 2015. The Marshall Islands has appealed that dismissal; the appeal is still pending.