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Rhetoric in Ukraine has reinforced the fallacy of limited nuclear exchange

By John Gower and Andrew Weber

Source: https://thebulletin.org/2022/10/rhetoric-in-ukraine-has-reinforced-the-fallacy-of-limited-nuclear-exchange/

A launch of the Russian Iskander-M, which can carry a tactical nuclear warhead, at the Kapustin Yar proving ground in March 2018. Photo credit: the websites (mil.ru, минобороны.рф) of the Ministry of Defence of the Russian Federation. Licensed under the Creative Commons Attribution 4.0.

Oct 21 – Since the end of the Cold War, Russia, the United States, France, and China have continued to possess and develop nuclear weapons below the strategic level of land-based and submarine-launched intercontinental-range ballistic missiles. The long-touted rationale for this was simple: non-strategic (or tactical) nuclear weapons are necessary to give the decision-maker more options and provide a credible proportionate deterrence response to the use of similar weapons by an adversary.

The rationale continues by implying that such nuclear weapons use would occupy a third and separate strategic conflict space between conventional war and all-out strategic nuclear exchange. It is necessary, it has been argued, to occupy that space to deter at all levels.

The profound implication of this line of reasoning is that this "limited nuclear exchange" space is both distinct and separate from conventional war below and nuclear Armageddon above, and that transitions between the spaces can be controlled. This is at best unproven conjecture.

For many years, opponents to the continued existence of such tactical weapons in nuclear arsenals—including these authors—have argued to the contrary. Rather than being controlled, these transitions are simultaneously enabled, increased in probability, and accelerated by the very existence of such weapons.

Russia's invasion of Ukraine, with Russian President Vladimir Putin's attendant and near-continuous rattling of his nuclear saber, has brought this argument—previously restricted to academic debates, policy desks, and war games—to stark reality.

His first threats, as the war unfolded, were largely—and rightly so—ignored by Western nuclear-armed nations: the US President did not want to "nuclearize" what is still a conventional conflict. Six months into the war and in the face of Russian conventional losses and retreats, Putin has doubled down and made more specific threats.

While some commentators interpret Putin's remarks as something less than an increased threat, that is not consistent with his other moves: non-elections in the seized regions, sabotage of the North Sea pipeline, increased use of indiscriminate drone attacks, the appointment of a proven hard man in charge, and a mass mobilization. Even if this rather apologist view turns out to be correct, getting the response rhetoric right is a vital element of preventing a dangerous escalation.

The only good news is that Putin does not yet appear to be making concrete steps to turn his bellicose rhetoric into preparations for nuclear weapon use, such as preparing to draw warheads from storage and mate them with their delivery systems.

According to current US and NATO countries' nuclear doctrines, the response to Putin's escalatory rhetoric should have been carefully calibrated proportional rhetoric: it should have reminded Putin that a transition by Russia from the conventional space to the less-than-strategic nuclear space would be met with a range of options that include a proportional nuclear response. Indeed, the rationale by those maintaining tactical nuclear weapons has long been that threats of massive retaliation are simply not credible.

But that's not what happened.

President Putin operates largely in an unchallenged one-man power space, which the UK's communications intelligence agency GCHQ opines is largely responsible for Russia's strategic failures, and therefore has little moderation on his choice of rhetoric. In contrast, any nuclear rhetoric by the United States and other NATO nuclear powers has been carefully calibrated instead. Thus, any variation from declaratory doctrine will not be accidental and deserves close scrutiny.

The stark assessment that tactical nuclear weapons may actually be used by Russia in Ukraine has clearly broken the "limited exchange" theory around the table of the US President's National Security Council. The National Security Advisor, Jake Sullivan, did not use proportional language, nor subsequently did President Biden.

On September 25, Sullivan stated: "We have communicated directly, privately and at very high levels to the Kremlin that any use of nuclear weapons will be met with catastrophic consequences for Russia, that the US and our allies will respond decisively, and we have been clear and specific about what that will entail." On October 6, during a fund-raiser in New York, President Biden said, "We have not faced the prospect of Armageddon since Kennedy and the Cuban missile crisis."

Words like "Armageddon" and "catastrophic" are dramatic, are not proportional, and certainly were carefully chosen.

With its choice of words, the National Security Council seems to have accepted that the transition into nuclear weapons use in the 21st century is something untried and that escalation control—far from assured—is nebulous and likely mythical, as James Acton, an analyst at the Carnegie Endowment for International Peace explained in a series of tweets following Biden's "Armageddon" comment.

Such declarations illustrate an understanding at the highest level of the need to deter any nuclear weapon employment with the threat of a catastrophic response.

Perhaps realizing the hollowness of the like-for-like limited exchange shibboleth, siren voices have begun to weave a parallel new construct, that Western countries (or NATO—largely undefined) could respond to the first use of a nuclear weapon in war since 1945 through a "devastating" conventional response. This novelty is meant to avoid the nuclear escalation their limited exchange theories were certain could be controlled. This is, however, its own equally dangerous fantasy.

A conventional response to Russian nuclear use would need to be so devastating that it would likely provoke further nuclear use. This is particularly true if this response involved, as General Petraeus suggested in an interview on October 2, "[the United States] leading a NATO, a collective effort, that would take out every Russian conventional force that we can see and identify on the battlefield in Ukraine and also in Crimea and every ship in the Black Sea." Such a second nuclear use in response would likely be aimed at those who destroyed his conventional forces – NATO – rather than be confined to Ukraine.

Indeed, if there were no nuclear response, the whole tapestry of nuclear deterrence across the world could unravel dangerously. This dilemma—how to respond to a limited nuclear use—has dogged every secret

wargame since the turning of the millennium. It enabled the continued possession of tactical nuclear weapons and mindsets long past their Cold War best-before date. Such narrative invented a "more acceptable" use of nuclear weapons as a brief nuclear excursion in a conventional war. The mindsets bred a generation of officers and officials who accepted this notion and integrated limited nuclear use and "off-ramps" into their rhetoric and war plans.
But this dilemma is based on false premises. The way to deter the transition to a likely uncontrolled nuclear escalation is to make it clear that a devastating response would ensue to any nuclear weapon employment. Clear blue water needs to be re-established and maintained between conventional conflict and any nuclear weapon attack.
The national security advisor to the president of the United States now clearly understands this, as does his president. Let's just hope that President Putin, despite his rhetoric, also understands it.
Hope alone is not a strategy. We must bolster hope with urgent action to remove these less-than-strategic weapons, whose existence has brought us to this febrile place and has been shown to be illusionary and dangerously destabilizing.

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Dirty Bombs and Primitive Nuclear Weapons

Dr. Frank Barnaby
Source: https://www.files.ethz.ch/isn/22204/dirtybombs.pdf

2005 – There are a number of types of nuclear terrorist attacks that a terrorist group may undertake. This briefing will examine two types: making and detonating a dirty bomb and the fabrication and use of a primitive nuclear weapon.

A dirty bomb
The simplest and most primitive terrorist nuclear device is a radiological weapon, commonly called a dirty bomb. A dirty bomb would consist of a conventional high explosive and a quantity of a radioactive material such as caesium-137. There are literally millions of radioactive sources used worldwide in medicine, industry and agriculture; many of them could be used to fabricate a dirty bomb. They are often not kept securely. Terrorists should be able to acquire radioactive material. Deaths and injuries caused by the blast effects of the conventional explosives and long-term cancers from radiation exposure would likely be minimal. The true impact of a dirty bomb would be the enormous social, psychological and economic disruption caused by radioactive contamination. It would cause considerable fear, panic and social disruption, exactly the effects terrorists wish to achieve. The explosion of a dirty bomb could result in the radioactive contamination of tens of square kilometres of a city requiring the area to be evacuated and decontaminated. This is likely to be very costly, perhaps 100s of millions of pounds, and take weeks or, most likely, many months to complete.

A primitive nuclear weapon
After the recent terrorist attacks on 11 September 2001 in New York and Washington the next rung on the terrorist ladder of escalation of violence may well be the fabrication and use of a nuclear weapon. A major concern is that as plutonium from civil nuclear programmes becomes more available worldwide, it is becoming increasingly possible for a terrorist group to steal, or otherwise illegally acquire, civil plutonium that could be used to fabricate a nuclear explosive device. The size of the nuclear explosion from such a crude device is impossible to predict. But even if it were only equivalent to the explosion of a few tens of tonnes of TNT it would completely devastate the centre of a large city. Even if the device, when detonated, did not produce a significant nuclear explosion, the explosion of the chemical high explosives would disperse the plutonium widely. This could render a large part of the city uninhabitable until decontaminated, a procedure which could take many months or years.

What can be done?
A number of recent events have clearly shown that nuclear materials and technology are becoming increasingly available to terrorists as well as states. Certain international measures to reduce the risk that terrorists will acquire dirty bombs and nuclear weapons could and should be taken.
- Improve the international safeguards system applied by the International Atomic Energy Agency (IAEA).
- Negotiate a treaty banning the further production of fissile materials for use in nuclear weapons.

- ❖ Stop reprocessing plutonium and manufacturing mixed-oxide (MOX) nuclear fuel.
- ❖ Fund research to find alternatives to radioactive materials for functions such as food sterilization and smoke detection.
- ❖ Expand the use of radiation detection systems.

To effectively counter nuclear terrorism it is important to prevent terrorists from acquiring fissile materials, plutonium and highly enriched uranium, to fabricate a primitive nuclear explosive and from acquiring significant quantities of radioisotopes, particularly **caesium-137, strontium-90, cobalt-60 and plutonium**, to build a dirty bomb. The protection of these radioactive materials is clearly of the utmost importance.

Dr. Frank Barnaby is a Nuclear Issues Consultant to Oxford Research Group (ORG), and has been on ORG's Council of Advisers since its inception. He is a nuclear physicist by training and worked at the Atomic Weapons Research Establishment, Aldermaston between1951-57. He was on the senior scientific staff of the Medical Research Council when a lecturer at University College London (1957-67). He was Executive Secretary of the Pugwash Conferences on Science and World Affairs in the late 1960s and Director of the Stockholm International Peace Research Institute from 1971-81. He was Guest Professor at the Free University, Amsterdam (1981-85) and Visiting Professor at the University of Minnesota in 1985. He is now a freelance defence analyst, and is a prolific author on military technology. In addition to the numerous Briefing Papers he has written for Oxford Research Group and other organisations, his books include: The Invisible Bomb (Tauris, 1989), The Gaia Peace Atlas (Pan, 1989), The Automated Battlefield (Sidgwick & Jackson, 1987), Star Wars (Fourth Estate, 1987), Future Warfare (Michael Joseph, 1986) and The Role and Control of Military Force in the 1990s.

RDD Isotope Fact Sheets

Source: https://remm.hhs.gov/rdd.htm

Isotope	Treatment & Countermeasures	More Information: Fact Sheets				
		HHS/CDC*	HHS/ATSDR**	EPA***	Argonne Natl. Lab	Wikipedia
Americium-241	View	View	View	View	View	View
Californium-252	View				View	View
Cesium-137	View	View	View	View	View	View
Cobalt-60	View	View	View	View	View	View
Iridium-192	View	View			View	View
Plutonium-238	View	View	View	View	View	View
Polonium-210	View	View			View	View
Radium-226	View		View	View	View	View
Strontium-90 (Sr-90/Y-90)	View	View	View	View	View	View

* HHS/Centers for Disease Control and Prevention ** HHS/Agency for Toxic Substances and Disease Registry
*** Environmental Protection Agency

Basic Radiological Properties of RDD Isotopes

Basic Radiological Properties of Nine Key Radionuclides for RDDs						
Isotope	Half-Life (years)	Specific Activity (Ci/g)	Decay Mode	Radiation Energy (MeV)		
				Alpha (α)	Beta (β)	Gamma (γ)
Americium-241	430	3.5	α	5.5	0.052	0.033
Californium-252	2.6	540	α (SF, EC)	5.9	0.0056	0.0012

Cesium-137	30	88	β, IT	-	0.19, 0.065	0.60
Cobalt-60	5.3	1,100	β	-	0.097	2.5
Iridium-192	0.2 (74 d)	9,200	β, EC	-	0.22	0.82
Plutonium-238	88	17	α	5.5	0.011	0.0018
Polonium-210	0.4 (140 d)	4,500	α	5.3	-	-
Radium-226	1,600	1.0	α	4.8	0.0036	0.0067
Strontium-90	29	140	β	-	0.20, 0.94	-

SF = spontaneous fission; IT = isomeric transition; EC = electron capture. A hyphen means not applicable. The radiation energies for cesium-137 include the contributions of barium-137 metastable (Ba-137m), and those for strontium-90 include the contributions of yttrium-90.

Adapted from Radiological Dispersal Device (PDF - 2.34 MB) Human Health Fact Sheet, Argonne National Laboratory, August 2005

Dirty Bomb

U.S. Department of Health & Human Services
REMM RADIATION EMERGENCY MEDICAL MANAGEMENT
Guidance on Diagnosis and Treatment for Healthcare Providers
• Understand Radiation
• Plan Ahead
• Practice Teamwork
• Work Safely

Review of Radioisotopes as Radiological Weapons

By Carl A. Curling and Alex Lodge
Source: https://apps.dtic.mil/sti/pdfs/AD1017501.pdf

Medical management of victims contaminated with radionuclides after a "dirty bomb" attack

By Alexis Rump, Benjamin Becker, Stefan Eder, Andreas Lamkowski, Michael Abend and Matthias Port
Military Medical Research **volume 5**, Article number: 27 (2018)
Source [full text]: https://mmrjournal.biomedcentral.com/articles/10.1186/s40779-018-0174-5

Abstract
A wide spectrum of scenarios may lead to radiation incidents and the liberation of radioactive material. In the case of a terrorist attack by a "dirty bomb", there is a risk of mechanical and thermal trauma, external irradiation, superficial contamination and incorporation of radioactive material. The first treatment priority must be given to the care of trauma patients with life-threatening injuries, as the health effects of radiation occur with latency. Radionuclide incorporation will lead to a longer-lasting irradiation from inside the body, associated with a higher risk of stochastic radiation effects (e.g., occurrence of tumors) in the long run. It must be expected that victims with potentially incorporated radionuclides will far outnumber trauma patients.

Item	Am-241	Cf-252	Co-60	Cs-137	I-131	Ir-192	Pu-238	Pu-239	Ra-226	Sr-90	U-235
Radiation emitted	α, γ	α, n	β, γ	β, γ	β, γ	β, γ	α	α	α, γ	β	α, γ
Physical half-life	432 a	2.65 a	5.3 a	30 a	8 d	73.8 d	87.7 a	24 10^3 a	1600 a	28.2 a	7 × 10^8 a
Effective half-life	45 a	2.5 a	1.6 a	109 d	7.5 d	–	50 a	50 a	44 a	4.6 a	15 d

"-" Not available; a: years; d: days

The elimination of radionuclides can be enhanced by the administration of decorporation agents such as (Ca) Diethylenetriaminepentaacetic acid (DTPA) or Prussian blue, reducing the radiological burden of the body. There is still no consensus whether decorporation treatment should be started immediately based only on a suspicion of radionuclide incorporation ("urgent approach") or if the results of internal dosimetry confirming the necessity of a treatment should be awaited, accepting the delay caused by the measurements and computations ("precautionary approach"). As the therapeutic effectiveness may be substantially decreased if treatment initiation is delayed only by several days, depending on the radionuclide, the physicochemical properties

of the compounds involved and the route of absorption, we favor an "urgent approach" from a medical point of view. In doubt, it seems justified to treat victims by precaution, as the adverse effects of the medication seem minimal. However, in the case of a high number of victims, an "urgent treatment approach" may require a large number of daily doses of antidotes, and therefore, adequate investments in preparedness and antidote stockpiling are necessary.

Radiological weapons: how real is the threat?

By Andy Oppenheimer
Source: https://rusi.org/publication/radiological-weapons-how-real-threat

2007 – After several months of US opposition to the recall of International Atomic Energy Agency (IAEA) - or other UN inspectors - into Iraq, the IAEA was readmitted at the end of May for a limited and heavily restricted mission: securing a small looted area (known as Location C) within the al-Tuwaitha facility 30 miles south of Baghdad.
More than 500 tonnes of natural uranium and 1.8 tonnes of low-enriched uranium were stored at al-Tuwaitha, plus smaller amounts of highly radioactive caesium-137, cobalt-60 and strontium-90. These materials were left over from Iraq's original nuclear weapons programme, conducted in the 1980s, and were sealed under IAEA safeguards after the 1991 Gulf War. The IAEA's new remit was limited to determining what was and is still missing and what it will take to recapture that material.
Although the IAEA reported on 16 July that it had accounted for most of the looted nuclear material, it could not account for at least 10kg of low-grade uranium, which may have been dispersed. US forces claimed to have recovered about 100 barrels and five radiological devices, possibly looted from the site.
As many as 400 looters a day have ransacked the al-Tuwaitha complex, regarded as the main site in Iraq's former nuclear weapons programme and covering an area of 48ha. Al-Tuwaitha housed several research reactors, plutonium processors and uranium enrichment facilities.
Seals placed at Iraqi nuclear sites by the IAEA during previous inspections had been broken. Metal containers of 300-400kg of natural and low-enriched uranium and uranium oxide (yellowcake - processed mined uranium) had been either stolen or tipped out, and the containers used for domestic purposes, such as for storing drinking water and food. Documents and laboratory equipment had also been taken. Some of the radioactive material was in powder form and could have been dispersed into the air through broken windows.
Another important looted site was the Baghdad Nuclear Research Facility, which houses the remains of the Osirak reactor bombed by Israel in 1981 and by the US in 1991, spent reactor fuel and radioactive isotopes including caesium-137 and cobalt-60: typical RDD materials.

The dirty bomb threat
Although the material looted in Iraq is unsuitable for making nuclear fission bombs, it will suit terrorists wanting to build RDDs. These devices comprise conventional high explosive (such as Semtex, which requires only small amounts for a massive explosion, is easy to handle and hard to detect) and either spent fuel from nuclear reactors (usually uranium or plutonium) or, more likely, medical radioisotopes used in industrial radiography, medical radiotherapy, industrial irradiators and thermo-electric generators. Such a radioisotope is caesium-137, a silvery metal isotope used commonly in medical radiotherapy. It emits powerful gamma radiation and has a half-life of three decades.
On detonation, a RDD would spew the radioactive material into the environment. The effects could range from deaths and injuries, including radiation sickness, in the immediate vicinity of the explosion to minimal immediate injuries and long-term risk of cancer in individuals in the contaminated area. In all cases extensive decontamination of the area would be necessary, which could take months. As with conventional bomb attacks, the emergency services may have to deal with secondary devices and multiple incidents.
Overall, it is the RDD's capacity to spread panic and chaos that makes it an effective terror weapon. Much depends on the amount and type of radioactive material used and the extent of, and conditions for, dispersal. In a computer simulation of a dirty bomb attack on New York, the detonation of 50g of caesium chloride in Lower Manhattan would spread radioactive fallout over 60 city blocks. An RDD explosion in Trafalgar Square, combining the same amount of caesium chloride with 4.5kg of conventional explosive, would produce a plume that, depending on wind direction, could reach Whitehall, Charing Cross and the City within minutes, and deposit radioactive particles onto suburbs 10 km away within half an hour.
Anyone 5km from the blast would face only a tiny increased risk of cancer (one in 1,000) as the background level would be largely unaffected. At 1km, radiation doses would rise to six times background level, increasing the risk of cancer by about one in 100. At 500m downwind from the blast, the risk of dying of cancer from this radiation exposure would be about one in 50, and at 200m radiation levels would be 80 times background level. Caesium-137 stays in the body for decades, concentrating in muscle where it irradiates muscle cells and

nearby organs. A dirty bomb could make victims more susceptible to a subsequent biological or chemical weapon, because exposure to large amounts of ionising radiation can suppress the immune system.

The Chechen dirty bomb incident

The only known example of a RDD being laid (but not detonated) was by Chechen separatists in December 1995, when they planted a combined dynamite-caesium-137 package in Moscow's Ismailovsky Park. Neither the Chechens who planted it nor the original source of the caesium have been identified. However, the Chechen separatists could have acquired the caesium-137 from myriad sources, such as the chemical, agrochemical, gas, and oil industries, or from any hospital in Russia. The incident has been passed off as a stunt apparently designed to show how vulnerable Moscow was to a dirty bomb attack.

Insecure radioactive sources

Radioactive material for such a bomb can be found in many countries, including the US, where radioactive waste material is located at more than 70 commercial nuclear power sites in 31 states and where business and research facilities are estimated to have misplaced almost 1,500 pieces of equipment containing radioactive materials in the past eight years. However, nuclear security is most lax in hundreds of installations and industrial sites in the former Soviet Union (FSU).

The Soviets were known to have produced tens of thousands of pieces of radioactive equipment for uses ranging from medical diagnostics to military communications. Many such devices were simply abandoned after the Soviet break-up in 1991. Some regions are so littered with radioactive detritus that published tourist guides caution travellers to watch out for them. About 40kg of weapons-grade material have been stolen over the last 10 years. To date, 280 confirmed cases of criminal trafficking of radioactive material have been confirmed. According to US nuclear officials, Chechen rebels have stolen radioactive metals over a period of 12 months, possibly including plutonium, caesium, strontium and low-enriched uranium, from the Volgodonskaya nuclear power station in the southern region of Rostov.

In the 1970s, Soviet scientists developed Project Gamma Kolos, in which scores of radioactive items were dispatched to the countryside, the aim being to expose plants to radiation and measure the growth effects. All the experiments used a lead-shielded canister containing enough caesium-137 to contaminate a small city. Any one container could give off in a small space more than 10,000 curies (a unit of radioacivity) - 10 times the output of a radiation therapy machine.

Between 100 and 1,000 items are missing, not counting stocks of caesium in loose storage in Russia. They would be ideal for terrorists as they are small, portable and possess a potent core of caesium chloride in the form of pellets or, more frequently, a fine powder. In a 10-month sweep of Georgia, the IAEA discovered five radiological items; four more have been found in Moldova.

Recent commitments from the Russian government to co-operate with the US in the retrieval of missing caesium items reflect a growing awareness that dirty bombs are a growing problem for Russia. At the first global conference hosted by the IAEA in Vienna, in March 2003, increased international funding to secure radioactive materials in the FSU was recommended.

Readiness for an RDD attack

The US (and British) governments have repeatedly highlighted the threat from dirty bombs after the attacks of 11 September 2001. Only since then has the US effort expanded to include non-fissile radioactive material such as caesium-137. Rather than as a response to the Chechen attempt, the interest first arose from intelligence reports that Al-Qaeda terrorists were exploring the use of radiological weapons. It grew with the discovery by US troops of detailed bomb-building instructions in Afghan caves used by Al-Qaeda forces; the arrest of a US citizen, Jose Padilla, in June 2002, suspected of planning a RDD attack; and, most recently, in June 2003, the arrest of a Thai national in Bangkok with a reportedly large quantity - 30kg - of caesium-137.

Following a series of unspecific warnings about a possible chemical, biological, radiological or nuclear attack, the UK government in June 2003 proposed to increase its powers in civil emergency situations. The Civil Contingencies Bill aims to create a single framework for civil emergencies. The legislation would grant extra emergency powers to enable the executive to make decisions without parliament's immediate approval and declare local states of emergency.

In the event of an RDD attack, first responders, aided by troops, would rescue casualties from the 'hot zone', the area closest to the incident. Decontamination would take place in a surrounding area, the 'warm zone', while a survivor rest centre and command-and-control vehicles would be in the 'cold zone'. The mass decontamination methods could include low-pressure water spray from fire hoses, portable showers and the use of large, purpose-built mobile units as well as fixed facilities away from the scene.

The US government is introducing the use of new, 'smart' radiation detectors at border checkpoints, ports, and airports. But because there are other ways for nuclear materials to get in, an extensive radiation detection system distributed throughout major cities may be the only sure way of detecting the movement of radioactive material or a radiological device.

Traditional radiation detectors - Geiger counters - do not identify specific radiation emitters. Every radioactive element gives off a certain unique pattern or 'signature' of energy, so the new gamma ray

detectors have been developed that use germanium and cadmium zinc telluride, providing the ability to discern isotopes in weapons - like uranium or plutonium - from a wide range of naturally occurring isotopes. The new detectors will therefore give security and law enforcement personnel a better way to screen out potentially false alarms, such as a shipping container that contains only minute amounts of caesium for medical experiments. Much depends, however, on whether the detectors will be distributed to first responders.
Some believe that the cost of decontamination could exceed the value of the contaminated property and that it cannot be assumed that people will be willing to return to previously contaminated areas. Even after an extensive cleanup, workers in Florida are still refusing to return to buildings that received anthrax-laden letters in October 2001. Also, some radiological materials bind chemically to surfaces, making a large-scale decontamination very difficult.
As radiological devices explode in the same way as conventional bombs, all explosions would have to be monitored immediately for radiation. The US National Nuclear Security Administration, which would respond to a radiological incident, plans to recruit more scientists to handle decontamination and evacuation, and to expand the ad-hoc Nuclear Emergency Search Teams to seek and destroy suspect devices.

Andy Oppenheimer is an expert in nuclear, biological and chemical weapons for Jane's Information Group.

West rejects Russia's 'dirty bomb' claim as Moscow activates counter-WMD forces

Source: https://www.politico.com/news/2022/10/24/russia-dirty-bomb-moscow-wmd-forces-00063115

Oct 24 – Western defense chiefs are rejecting Russian claims over the weekend that Ukraine is preparing to detonate a "dirty bomb" on its own territory, warning that Moscow may use the "false" accusation as a pretext to escalate the conflict.
The comments came as Russia put forces on alert on Monday to respond to a potential chemical, biological or nuclear weapons attack, according to the Russian Ministry of Defense.
The moves raised concerns that Russia would try to escalate the conflict. Some U.S. officials are concerned that Moscow could deploy a dirty bomb itself, a weapon improvised from radioactive nuclear waste material and conventional explosives, and then blame Ukraine for it, according to a Defense Department official.
But the Pentagon has seen no indications Moscow is immediately preparing to deploy a nuclear, chemical or biological weapon, including the use of its own dirty bomb, a senior military official told reporters Monday. The official, like others quoted for this story, asked for anonymity in order to discuss internal deliberations.
Russian Defense Minister Sergei Shoigu held a flurry of phone calls with his counterparts in the U.S., France, the U.K. and Turkey over the weekend to discuss the allegations, but the Western leaders rejected his claims, officials said.
Defense Secretary Lloyd Austin spoke with Shoigu twice by phone, once on Friday and again on Sunday. In the Sunday call, Austin "rejected any pretext for Russian escalation," according to a readout from Pentagon Press Secretary Brig. Gen. Pat Ryder.
Ukrainian President Volodymyr Zelenskyy echoed the sentiment, saying that Russia is the "source of everything dirty that can be imagined in this war."
On Monday, Russian chief of general staff Gen. Valery Gerasimov also spoke by phone with U.S. Joint Chiefs Chair Gen. Mark Milley, and separately with the U.K.'s Adm. Sir Antony Radakin, according to the Russian MoD.
The Russian ministry doubled down on the allegations on Monday, posting a video of Lt. Gen. Igor Kirillov, head of the Radiation, Chemical and Biological Defense Forces of the Russian Armed Forces, to Telegram. In the video, Kirillov briefed that Kyiv is planning a false-flag operation that would involve launching a dirty bomb or low-power nuclear warhead on its own soil.
"The detonation of a radiological explosive device will inevitably lead to radioactive contamination of the area over an area of up to several thousand square meters," Kirillov said at a briefing on threats to radiation safety, according to Russian media.
Another MoD Telegram post alleged without evidence that two organizations in Ukraine had been "directly ordered" to create the dirty bomb.
Russian forces activated a specialized unit to protect against a potential chemical, biological or nuclear weapons attack, the MoD posted on Telegram.
"The Ministry of Defence has arranged for countering possible provocations of Ukraine: the means and forces are alerted to operate amid radioactive contamination," according to the message.
The activation is "the kind of thing they would do pending imminent use of [weapons of mass destruction," Samuel Charap of the RAND Corp. said.
Statements from the MoD are "concerning," said a U.S. senior administration official.

The back-and-forth comes as Ukraine prepares for a fresh offensive to take back the southern city of Kherson, amid reports that Russia is setting conditions to withdraw from the strategic city. Russian forces are focused on reinforcing their defensive position around Kherson, the senior military official said.
Meanwhile, U.S. officials expect to see a shipment of Iranian surface-to-surface missiles to Russia for use in Ukraine "soon," according to a senior Defense Department official.

How a 'Dirty Bomb' Actually Compares to a Nuclear Weapon

Source: https://www.newsweek.com/dirty-bomb-nuclear-weapon-compared-1754249

Oct 24 – Russia recently warned that Ukraine could potentially use a "dirty bomb" on its own soil in an attempt to blame Moscow, prompting many questions on what this weapon is.
According to the Associated Press, Russian Defense Minister Sergei Shoigu spoke to his officials in the U.S. Britain and other Western nations and warned of "possible Ukrainian provocations involving a 'dirty bomb.'"
The remarks come as war between Russia and Ukraine continues. Ukraine has been executing counteroffensive war methods as it attempts to retake control of some regions, while Russian President Vladimir Putin recently annexed four areas in which he also declared martial law.
Amid the ongoing war between the two nations, many have expressed concerns about the potential use of nuclear weapons by Putin and the recent mention of a "dirty bomb" has prompted more concern.
According to the U.S. Nuclear Regulatory Commission (NRC) "A 'dirty bomb' is a type of 'radiological dispersal device' that combines a conventional explosive, such as dynamite, with radioactive material."

"Most RDDs [radiological dispersal devices] would not release enough radiation to kill people or cause severe illness—the conventional explosive itself would be more harmful to people than the radioactive material. However, an RDD explosion could create fear and panic, contaminate property and require potentially costly cleanup," the NRC said in a background document on "dirty bombs."

The NRC also states that a "dirty bomb" is not the same as a nuclear bomb because a nuclear bomb creates an explosion "that is millions of times more powerful than a dirty bomb." According to the NRC, a "dirty bomb" is not considered to be a weapon of mass destruction, like a nuclear bomb but is instead a "weapon of mass disruption," with its main goals being "contamination and anxiety."
Heather Williams, the director of the Project on Nuclear Issues and a senior fellow in the International Security Program at the Center for Strategic and International Studies (CSIS) spoke to *Newsweek* last week about the potential nuclear weapons that could be used amid the ongoing war between Russia and Ukraine.
"We're talking about tactical nuclear weapons used now. That's what the real concern is. These would be lower yield, shorter range, potentially battlefield used nuclear weapons," Williams told *Newsweek*.
Christopher Fettweis, a political science professor at Tulane University, also spoke to *Newsweek* on Sunday about the "dirty bomb" comments and said, "They're more theoretical than real."
"It would not make any sense for the Ukrainians to do something like that. Even to try to get public opinion against the Russians because why would anyone believe the Russians?" Fettweis added.
Shortly after the remarks by Russia, several other nations issued statements disputing the concerns.

Ukraine Symposium – Dirty Bombs and International Humanitarian Law

By Michael N. Schmitt

Source: https://lieber.westpoint.edu/dirty-bombs-international-humanitarian-law/

Oct 26 – On October 23, Russian Defense Minister Sergei Shoigu made separate calls to the Defense Ministers of France, Turkey, the United Kingdom, and the United States. In them, Shoigu claimed that Ukraine intended to conduct a false-flag operation with a "dirty bomb" in order to accuse Russia of using a weapon of mass destruction. Russian media has echoed the accusation. France, the United States, and the United Kingdom quickly released a joint statement in which they "made clear that we all reject Russia's transparently false allegations that Ukraine is preparing to use a dirty bomb on its own territory" and that they "remain committed to continue supporting Ukraine's efforts to defend its territory for as long as it takes."
But Russia continues to level the accusation, most recently in a letter to the United Nations that announces it will raise the matter in a closed Security Council session. In the letter, Russia's U.N.

Ambassador warns, "We will regard the use of the dirty bomb by the Kyiv regime as an act of nuclear terrorism." Ukraine's President Zelensky characterized the allegation as a sign that Moscow plans a tactical nuclear attack, using the false flag dirty bomb attack to shift the blame to Ukraine. In that regard, the U.S. State Department has warned, "There would be consequences for Russia whether it uses a dirty bomb or a nuclear bomb."

The premise that the claims could serve as a pretext for an escalation of Russian operations is consistent with recent Russian tactical nuclear weapons saber-rattling. But the Institute for the Study of War deemed it unlikely that Russia itself was preparing an imminent dirty bomb false flag attack. Instead, the organization believes Shoigu's assertion is a continuation of an information campaign in which "[t]he Kremlin has repeatedly claimed that Western states will help Ukraine conduct a false-flag WMD attack." According to the Institute, Shoigu's calls were "likely intended to intimidate Western states into cutting or limiting support for Ukraine as Russia faces continued military setbacks and the likely loss of western Kherson by the end of the year."

Hopefully, the Institute is correct regarding the likelihood of a dirty bomb attack. And most Western supporters of Ukraine appear to see the claims for what they are – pure disinformation. But the allegations do raise the question of the international humanitarian law (IHL) surrounding so-called "dirty bombs." This post teases loose those rules that would govern their use by either side…and those which would not.

Dirty Bombs

A fair degree of confusion surrounds the label "dirty bombs," a weapon that falls into the category of "radiological dispersal devices" (RDD). Dirty bombs combine conventional explosives like dynamite with radioactive material, such as that used at hospitals, research laboratories, and nuclear power stations. The explosive force of detonation disperses the radioactive material, which is typically reduced to powder or pellets. Such weapons are relatively easy to build.

The amount of radiation released would usually not be enough to prove lethal. As noted by the U.S. Nuclear Regulatory Commission (NRC), the immediate health effects of a dirty bomb would "likely be minimal," although those effects would be determined by: the degree of radiation that the body absorbs; the type of radiation (gamma, beta, or alpha); the individual's distance

from the source of the radiation; whether the radiation is absorbed by the skin, inhaled, or ingested; and how long the individual is exposed.
Similarly, the Centers for Disease Control concludes, "[o]nly people very close to the blast site would be exposed to enough radiation to cause immediate serious illness. However, the radioactive dust and smoke can spread farther away and could be dangerous to health if people breathe in the dust, eat contaminated food, or drink contaminated water." Usually, the explosive blast poses the most significant risk to individuals in the vicinity of detonation, although a very large bomb could cause considerable radiation illness, even multiple deaths.
Dirty bombs typically are not designed to cover large areas, for, as the NRC points out, as the "radioactive material spreads, it becomes less concentrated and less harmful." Similarly, the BBC explains, "if the particles are too fine or released into strong winds, they will scatter too widely to do much harm." The use of a dirty bomb could, however, contaminate property, thereby rendering the affected area unusable until decontaminated.
Instead, the key to a dirty bomb is its psychological impact from fear of being, or having been, exposed to radiation. In part, this is because radiation cannot be seen, smelled, tasted, or felt. Thus, the NRC concludes that a dirty bomb "is not a 'Weapon of Mass Destruction' but a 'Weapon of Mass Disruption,' where contamination and anxiety are the terrorists' major objectives." Simply put, they are terror weapons that have little conventional utility on the battlefield.
No State has developed the weapon for conventional use by its armed forces. Nor have terrorists successfully employed one despite some attempts to do so.

The Law
Dirty bombs implicate numerous IHL rules, although, as will be seen, it is important not to jump to conclusions regarding the applicability of certain rules.

Attacking Civilians and Civilian Objects
There is no question that if either Russia or Ukraine employs a dirty bomb directly against civilians or civilian objects, the operation will violate the treaty (Additional Protocol I, arts. 51(2) and 52(1)) and customary law (Customary IHL study, rules 1 and 7) prohibitions on attacking them, for these rules apply regardless of the means (weapon) or method (tactic) of warfare employed. Yet, in discussions with colleagues, the legal characterization of a theoretical Ukrainian false flag use has surfaced. The question is whether it would be an IHL violation for Ukraine to target its own people.
IHL targeting rules do not distinguish civilians based on nationality. But that does not mean that every killing of a civilian qualifies as an unlawful attack on civilians under IHL. Particularly relevant in this regard is the issue of motive. Dick Jackson and several of his colleagues explained that to qualify as an "attack" subject to the IHL rules governing them, there must be a *motive* to cause harm to the adversary or other persons in the *conduct of hostilities*. I would emphasize that this requires nexus to the conflict. That is the case here, for a Ukrainian false flag attack would be designed to affect Russian military operations by dramatically enhancing military support for Ukraine. Ukraine would not conduct the operation *but for* its impact on the ongoing hostilities.
Jackson and his colleagues also point to the legal issue of *control*, suggesting that "acts of violence directed at persons or objects under the dominion and control of a belligerent—to include persons who are hors de combat—do not qualify as attacks." But they are quick to note, and correctly so, that control over a person is not to be equated with control over *territory*. The former is exemplified by killing an individual in detention, and the latter by targeting individuals living in an area under the attacking party's control, as would be the case in Ukraine.
Accordingly, in my view, a theoretical attack by Ukrainian forces on Ukrainians in order to secure military support would be no less an attack on them than a Russian use of a dirty bomb against those same civilians. Those involved would also be committing murder under Ukrainian domestic law. Of course, if Russian forces conducted a dirty bomb attack in order to blame it on Ukraine as a pretext for escalation, the same result would hold. This is true regardless of whether the attack occurred in Ukrainian or Russian-controlled territory.

Proportionality and Precautions in Attack
Assuming solely for the sake of analysis that either side used a dirty bomb against a military objective, the rule of proportionality and the requirement to take precautions in attack would be

triggered (Additional Protocol I, arts. 51(5)(b), 57; Customary IHL study, rules 14 and 15). By the former, any resulting expected *incidental* damage to civilian objects or injury to civilians would have to be considered to assess whether it would be *excessive* relative to the anticipated concrete and direct military advantage of the strike. In the collateral damage calculation, I would include the fact that an object is rendered unusable due to being irradiated. Any civilian radiation sickness likewise would qualify as injury. And as with directly targeting them, the fact that *Ukrainian* nationals and objects would be the victims of incidental injury in a Ukrainian attack would not preclude their inclusion in the requisite proportionality calculation.

More problematic legally in a dirty bomb attack is the requirement to take precautions to minimize collateral damage, which would include those same radiation effects. Of particular note, there is a requirement to choose among means and methods of warfare to do so, as long as no potential military advantage is sacrificed (Additional Protocol I, art. 57(2)(a)(ii); Customary IHL study, rule 17; DoD Law of War Manual, § 5.11).

Because dirty bombs are merely radioactive material added to an explosive device, the only way such a bomb could meet the requirement is if the use of radioactive material enhanced the achievement of a valid *military* purpose. But because explosive force is the primary effect caused by such weapons, that is unlikely to be the case. And the fact that the weapon's use will cause civilian fear or serve as a pretext for future military operations does not qualify as military advantage for the purposes of the rule. Only if the area denial consequence of the radiation affected enemy military operations in a meaningful way could the use of a dirty bomb pass muster. Thus, in most conceivable scenarios, using a dirty bomb would violate the rule requiring precautions in attack.

Indiscriminate Attack

Depending on how the dirty bomb attack was conducted, it also could violate the prohibition on indiscriminate attacks (Additional Protocol I, art. 51(4); Customary IHL study, rule 11; DoD Law of War Manual, § 5.5). This rule prohibits attacks that are not directed at specific military objectives or combatants, as in not being aimed, and those that cannot be so directed. There is nothing in a dirty bomb that makes violation more likely on these bases.

Instead, it is more likely that a dirty bomb attack would be indiscriminate on the basis that it "employ[s] a method or means of combat the effects of which cannot be limited …; and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction" (Additional Protocol I, art. 51(4)(c)). Because a dirty bomb uses radioactive powder to disperse radiation, it is susceptible to wind. Should a bomb be large enough to release a significant amount of radiation that places civilians at risk in unpredictable winds, the attack would be indiscriminate, even if it targets a military objective. Although hypothetically possible, this would be unlikely because wind causes radiation to dissipate. Moreover, if the civilian effects could be reasonably estimated because, for instance, wind direction is known, the issue would be proportionality, not indiscriminate attack.

Terror Attack

In a reflection of customary law (Customary IHL study, rule 2), Article 51(2) of Additional Protocol I prohibits "acts or threats of violence the primary purpose of which is to spread terror among the civilian population" (see also DoD Law of War Manual, § 5.2.2). As there is only limited military utility in including radioactive material in a dirty bomb, it is a paradigmatic terror weapon. There is little rationale for its use by Russia (or Ukraine) beyond terrorizing the population, thereby satisfying the primary purpose requirement.

The fact that the ultimate purpose might be other than to spread terror among the civilian population would not deprive such a use of its terror attack status. For instance, although a Russian false flag attack might be designed to provide a basis for escalation, it could do so only because of the local terror and international shock the attack would generate. Similarly, even if the false Russian claims that Ukraine will use a dirty bomb in a false flag operation to further ostracize Russia were true (they obviously are not), the immediate purpose would be to cause fear and shock as the triggers for achieving that end.

Note that the prohibition extends to *threats* of violence designed to terrorize. I believe Russia has already violated this prohibition by raising the specter of dirty bomb attacks. There is no requirement that the party issuing the threat in question intends to carry it out. Thus, even if the Institute for the Study of War is correct that Russia does not intend to employ a dirty bomb, the

fact that it is working hard to create the impression that such an attack will occur ensures the requisite intent to terrorize is satisfied. Moreover, I would suggest that although the threat being issued is that of Ukrainian violence rather than Russian, this does not preclude a finding of a Russian violation. The effect of the claim remains the terrorization of the target civilian population.

Protection of the Natural Environment

The fact that dirty bombs involve the spread of radiation raises the issue of environmental impact. In my view, harm to the natural environment can qualify as collateral damage subject to the rule of proportionality and the requirement to take precautions in attack to minimize harm to civilian objects (see discussion above and my analysis in *Green War*). However, for Parties to Additional Protocol I, like Russia and Ukraine, the environment is subject to "special protection" under Articles 35(3) and 55 of Additional Protocol I.

The former provides that "[i]t is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." Although the latter provision sets forth identical criteria, it ties the prohibition to its impact on the civilian population's well-being:

Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population.

In most cases, the environmental consequences of a dirty bomb's use would not satisfy the three cumulative conditions. For instance, the term "longstanding," as used in the Protocol, refers to harm lasting decades (ICRC Commentary, §1452). That would not be the case in most dirty bomb attacks. And although the *Commentary* contains little guidance regarding the other two criteria, the 2022 U.S. Army Judge Advocate General's School *Operational Law Handbook* suggests the term widespread "probably means several hundred square kilometers." Again, this is unlikely in most cases for the reasons explained above. And also as explained, most effects would not merit being labeled "severe" in the plain meaning of the term.

Poison Weapons

Poison weapons have been prohibited since ancient times in armed conflict. In modern times, the prohibition has appeared in the Lieber Code (art. 70), 1899 and 1907 Hague Regulations (art. 23(a)). The ICRC properly characterizes it as customary law (Customary IHL study, rule 72), as did the International Court of Justice (ICJ) in its *Nuclear Weapons*Advisory Opinion (§80-82). And the DoD *Law of War Manual* prohibits their use (§ 6.8).

However, to violate the IHL prohibition on poisoning, the consequences of its use should be severe. For instance, the poisons encompassed in the prohibition are those "substances that cause death or disability with permanent effects when, even in small quantities, they are ingested, enter the lungs or bloodstream, or touch the skin," according to the DoD *Law of War Manual* (§ 6.8.1). Similarly, in the analogous context of war crimes (individual instead of State responsibility), Articles 8(2)(b)(xvii) and (e)(xiv) of the Rome Statute of the International Criminal Court prohibit employing poison weapons, but only if the "substance was such that it causes death or serious damage to health" (Elements 2).

The prohibition could encompass poisoning by radiation. Consider the 2006 poisoning of Alexander Litvinenko with polonium-210, which caused a lethal case of acute radiation syndrome, an act for which the European Court of Human Rights found Russia responsible in *Carter v. Russia*. It is certainly possible that a dirty bomb used during the war in Ukraine could be *intended* to *cause* harm of the requisite *severity*. But as such weapons generally are conceived, the primary harmful effect on persons is the explosion, and the type of harm suffered by individuals due to radiation exposure usually is not severe. Each case would have to be evaluated on its merits, but it cannot be said that a dirty bomb necessarily qualifies as a poison weapon.

Superfluous Injury and Unnecessary Suffering

The prohibition on using weapons causing superfluous injury and unnecessary suffering, which the ICJ labeled a "cardinal principle" of IHL in its *Nuclear Weapons* advisory opinion (§ 78), stretches back to the 1868 St. Petersburg Declaration. It subsequently appeared in the Hague Regulations of 1899 and 1907 [art. 23(e)] and 1977 Additional Protocol I (art. 35(2)). The ICRC

correctly considers it a customary rule (Customary IHL study, Rule 70), and it is included in the DoD *Law of War Manual* (§ 2.3). Employing a dirty bomb to deny the enemy use of an area would not violate the prohibition. But if used for the *purpose* of causing combatants suffering due to radiation poisoning that is additional to any harm caused them by the explosive effects of the weapon, the rule would be violated. Because dirty bombs would generally cause only low doses of radiation, it is unlikely that the weapons would be used for this reason. Instead, they are more likely to be employed to cause panic in the forces against which they are used. Unlike their use for the same purpose against civilians, terror attacks on combatants (or civilians directly participating in hostilities) are lawful.

Arms Control and Dirty Bombs

In 1979, the U.N. Committee (now Commission) on Disarmament agreed to include radiological weapons in the definition of "weapons of mass destruction." The Soviet Union and the United States were, at the time, negotiating a treaty to govern the development, production, stockpiling, and use of other than nuclear weapons that could disseminate radioactive material. Unfortunately, the effort proved unsuccessful; a post-9/11 attempt to revive the matter in the U.N. Commission on Disarmament likewise failed (see generally Herbach).

Moreover, despite frequently being confused with them, dirty bombs are not nuclear weapons. Nuclear weapons employ fission or fusion to create a massive explosion; dirty bombs do not. In addition to the explosion, the use of a nuclear weapon releases large amounts of radiation over vast areas as irradiated debris spreads and exposure to a nuclear weapon's radiation, unlike dirty bombs, can often cause severe illness and death. In that dirty bombs are not nuclear weapons, they are not encompassed in the prohibition on the use or threat of use in Article 1(d) of the Treaty on the 2017 Prohibition of Nuclear Weapons, to which neither Russia nor Ukraine are Party in any event.

Concluding Thoughts

It is very difficult to imagine circumstances in which any use of a dirty bomb would be lawful, for they are terror weapons, and IHL unequivocally bans violence, or threats of violence, designed to terrorize the civilian population. Moreover, because the attack would be unlikely to be directed at a military objective because that would diminish its presumptive intended psychological impact, the use of a dirty bomb would violate the rules prohibiting attacks on civilian and/or civilian objects. But it must be cautioned not to "over-charge" any Russian use of a dirty bomb, for doing so will detract from the otherwise clear IHL violations such use would entail. For instance, it is unlikely, albeit not impossible, that employing a dirty bomb would violate the special protection the environment enjoys under IHL or the prohibition on using poison. Additionally, although dirty bombs are sometimes confused with nuclear weapons in current public discourse, that is a mistake of law. Despite this cautionary note, it is evident that Russia has thrown out the IHL rule book. Yet again, it is using offensive lawfare in a condemnable manner.

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Poll: Americans, Japanese, and South Koreans don't support using nuclear weapons against North Korea

By David M. Allison and Stephen Herzog

Source: https://thebulletin.org/2022/10/poll-americans-japanese-and-south-koreans-dont-support-using-nuclear-weapons-against-north-korea/

Oct 25 – For months, evidence has accumulated that North Korea may be preparing its seventh nuclear explosive test. Continuous warnings by analysts and the media about this possibility are a sobering reminder that Pyongyang's continued pursuit of a larger nuclear arsenal remains a challenge for the Non-Proliferation Treaty and the nonproliferation regime. This continues to be the case even as the public and

leaders around the world have largely shifted their attention to the nuclear dimensions of the war in Ukraine.
Resumption of nuclear activity on the Korean Peninsula is hardly a work of speculative fiction. In December 2019, North Korean Supreme Leader Kim Jong-un announced an end to his self-imposed nuclear testing moratorium. Alongside this rhetoric, satellite imagery analysts now believe the tunnels at the Punggye-ri Nuclear Test Site were never actually destroyed in the lead-up to the Singapore Summit. Moreover, there are several reasons to believe that North Korea, which has tested six nuclear devices since 2006 and over a dozen ballistic missiles in the last month alone, may be considering a new nuclear test. These include signaling the regime's resolve to retain a nuclear arsenal, increasing its bargaining leverage with adversaries, and more tangibly, improving its capabilities to field deliverable nuclear weapons.
A North Korean test will almost inevitably draw a response from the United States and the two most likely targets of future aggression by Pyongyang: Japan and South Korea. Such a response would likely entail increased defense cooperation, joint military exercises, and reaffirmed alliance commitments. Washington has already provided security guarantees to its East Asian allies by extending its nuclear umbrella. This has included the so-called "tripwire" deployments of large contingents of US troops to Japan and South Korea. Yet, longstanding concerns that became prominent during the Trump administration about US willingness to defend these allies remain. Hoping to avoid the fate of Ukraine, some South Korean politicians have even increased their calls for indigenous nuclear proliferation to deter an invasion by the North. At the same time, the administrations of Joe Biden, Fumio Kushida, and Yoon Suk-yeol have all been clear about the ironclad nature of US nuclear umbrella pledges.
Regardless of what seems like an elite consensus on the nuclear umbrella, it's not clear that the US, Japanese, and South Korean populations would actually support the retaliatory strikes underpinning it. Americans have shown increasing skepticism of international commitments in recent years. Polling shows a majority of Japanese support nuclear disarmament and the Treaty on the Prohibition of Nuclear Weapons (TPNW), a legacy of Hiroshima and Nagasaki. South Koreans may reject any nuclear use on the Korean Peninsula because it would have major human and environmental consequences for their homeland.

Nuclear crises, extended deterrence, and public opinion.
Together with our colleague Jiyoung Ko, we investigated the potential disconnect between public and elite views on extended deterrence vis-à-vis North Korea. Our new survey research, recently published in the *Journal of Conflict Resolution*, speaks directly to this question.
We collected responses from 6,623 American, Japanese, and South Korean adults in an internet survey setting during a period of high tension with North Korea in 2018. The key demographics of our samples matched those of each respective country, allowing us to make inferences about the views of these national populations.
We asked participants—in English, Japanese, or Korean—how the United States should respond to hypothetical scenarios in which North Korea attacked Japan or South Korea. Then we showed them realistic emergency alert messages about a North Korean attack, modeled on the formats actually used by their governments. To determine how certain features of the attack affected preferences for retaliation, we randomly assigned respondents to different crisis scenarios. While all participants were informed of a North Korean attack on a civilian target, we varied:

- Whether the attack targeted Japan or South Korea;
- Whether the attack used conventional or nuclear weapons; and
- Whether or not US troops were among the casualties.

Simulated emergency alert messages

After the survey takers viewed an emergency alert message, we asked them about potential US responses. First, they were asked to select their preferred response(s) from a list of non-military and military options ranging from doing nothing to nuclear retaliation. The list included a realistic set of possible

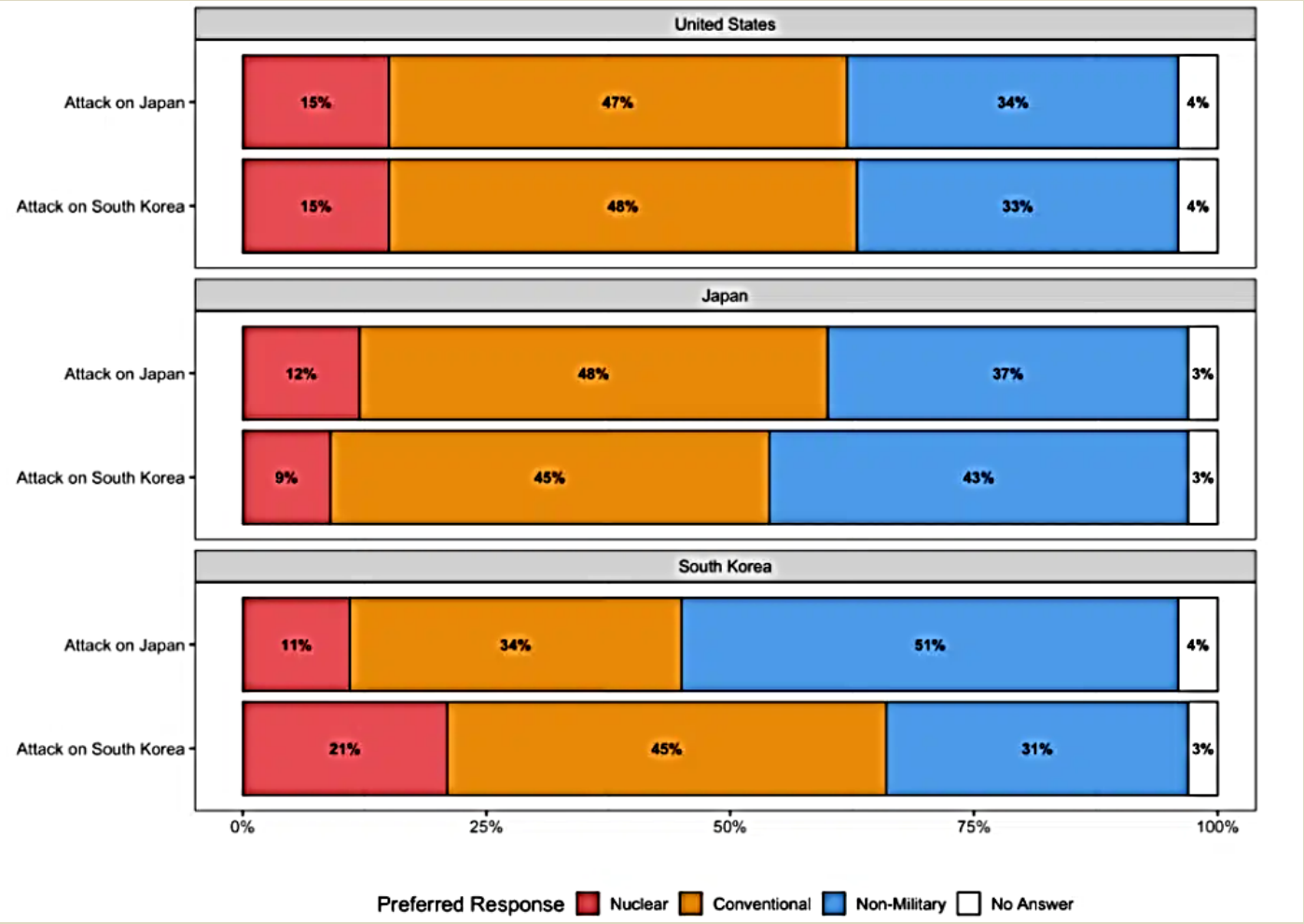
nuclear, conventional, and diplomatic responses to a North Korean attack. Then, we asked respondents to explain their choices before asking whether they would support nuclear use presented as a fait accompli: a US presidential decision to launch a nuclear strike against the Kim regime.

Low cross-national support for nuclear weapon use

Our central finding was extremely limited public support in all three countries for the use of nuclear weapons against North Korea. This result is durable regardless of whether North Korea attacks with nuclear or conventional missiles, strikes Japan or South Korea, kills forward-deployed US troops, or threatens subjects' homelands.

Previous survey-based studies have suggested much higher levels of support among Americans for nuclear strikes. But these studies simulated conflicts between the United States and non-nuclear adversaries, scenarios where nuclear use is unlikely to be considered. By contrast, our study of a North Korean nuclear crisis under the shadow of the nuclear umbrella represents a most-likely case for US nuclear strikes. It also introduces the retaliatory dynamics present in any conflict with a nuclear-armed adversary.

Publics' preferred responses to a North Korean attack



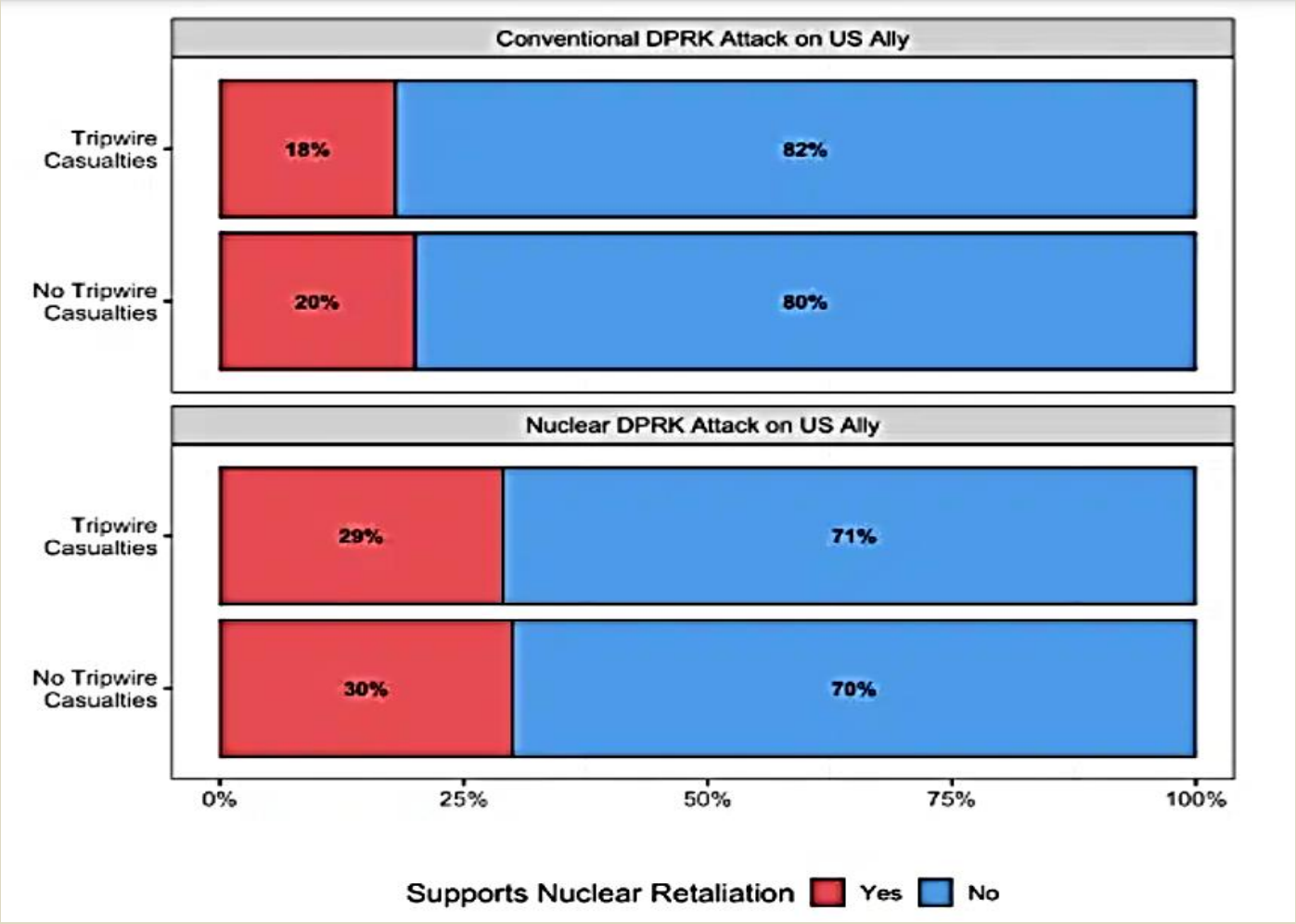
As our data show, members of the public who prefer a nuclear response to a North Korean attack represent a small minority of Americans, Japanese, and South Koreans. We do find that a North Korean first-use of nuclear weapons and a US presidential order for a nuclear response both increase support for the nuclear option. However, even in these scenarios, backing for the retaliatory strikes underpinning Washington's nuclear umbrella remains low.

This is not to say that affected publics would take a pacifist approach to North Korean escalation beyond its oftentimes harsh rhetoric. Previous polling published in the *Bulletin* indicated that a majority of Americans prefer a non-military solution to Pyongyang's testing of nuclear-capable missiles. Our work suggests that actual missile attacks on US allies would generate majority support for military action. As the graph shows, support for conventional military operations against North Korea is high. But one thing is clear: The overwhelming preference among the three publics is to avoid nuclear retaliation.

We asked respondents to select from 10 possible reasons why they preferred nuclear restraint. Fear of nuclear escalation and the belief that nuclear use is abhorrent were the most frequently cited. In the United States (60 percent) and South Korea (59 percent), the most prominent concern was fear of nuclear escalation. Among Japanese citizens (53 percent), this was the second most selected answer. The most common rationale in Japan (58 percent) was the nuclear taboo, the belief that no country should ever use nuclear weapons. This was the second most pervasive explanation in the United States (44 percent) and South Korea (51 percent).

We found no evidence that casualties among US troops placed as "tripwires" in Japan and South Korea increase American public support for nuclear retaliation against North Korea. Our research tested whether the US public would support a nuclear response *after* the president has ordered a nuclear strike. Presenting the strike as a fait accompli increased public support relative to respondents' independent preferences, but an overwhelming majority of Americans still reject nuclear use. This holds true even when the scenario specifically mentioned US military casualties. Taking the poll's margin of error into account, US troop deaths at the hands of the Kim regime do not statistically increase American public support for nuclear retaliation. Our finding thus calls into question the tripwire component of decades of US overseas basing strategies.

Tripwire casualties and US support for nuclear use after a presidential strike order



Policy implications

The North Korean nuclear threat is unlikely to dissipate in the near-term future. A seventh North Korean test may unfortunately occur in the coming weeks or months. Likewise, there appears to be no end in sight for the debate over whether Washington would—or should—live up to the retaliatory commitments of its nuclear umbrella. These discussions are hardly new, but decades-old theories of deterrence require rethinking in today's world of complex threats and alliances. Our finding of universally low public support for nuclear retaliation in response to an unprovoked North Korean attack on a civilian target should make American, Japanese, and South Korean officials pause for reflection.

Reassuringly, our results suggest leaders should not fear strong public pressure to use nuclear weapons in an escalating crisis during which North Korea attacks a US ally. While publics prefer responses that include a conventional military component, avoiding escalation to nuclear war is a majority preference in

all three countries. On the other hand, the inability of US military casualties to increase American public support for a nuclear response risks undermining long-held beliefs about using tripwires to reassure allies. As we concluded in our study: "Like the overall policy of extended nuclear deterrence it intends to bolster, the tripwire is a product of decades of elite consensus that may require reevaluation."

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Nuclear injustice: How Russia's invasion of Ukraine shows the staggering human cost of deterrence

By Franziska Stärk and Ulrich Kühn

Source: https://thebulletin.org/2022/10/nuclear-injustice-how-russias-invasion-of-ukraine-shows-the-staggering-human-cost-of-deterrence/

Crater left by the 1954 Castle Bravo nuclear weapons test on Bikini Atoll seen from space (Google, Maxar Technologies, Image Landsat / Copernicus, Data SIO, NOAA, US Navy, NGA, GEBCO).

Oct 26 – The global nuclear order—built on policies of nuclear deterrence, nonproliferation, and disarmament—is unjust. Russia's war against Ukraine proves that the distribution of the costs and benefits of nuclear deterrence is particularly discriminatory. The current situation is a painful reminder that nuclear weapons are to global security what fossil fuels are to a green economy: a costly legacy of past generations thwarting justice and sustainability efforts in the long-term.

It is time for nuclear scholars, policy makers, and the general public to (re)politicize the ongoing and future negative effects of this Nuclear Injustice and push for fundamental change in the role of nuclear weapons in the world. They can do so by making Nuclear Injustice front and center at all relevant conferences and actively engaging in the debate about the nuclear lessons learned from the war in Ukraine.

An unjust order in plain sight

Nuclear Injustice has a long and complex history, but the injustice has long been obvious. Cold War theorists knew that a relative stable deterrence relationship could paradoxically induce instability at lower levels of US-Soviet conflict. More realistically, superpower stability transferred instability to developing countries. The staggering human costs of past proxy wars in Vietnam, Afghanistan, Nicaragua, Korea, or Angola underscored that nuclear deterrence between the few came with a hefty price tag for the many. These populations experienced firsthand the injustices of a nuclear order built on hierarchical spheres of (in)security.

To maintain a safe, secure, and effective nuclear deterrent and thus enjoy the continued benefits of stability, nuclear-weapon states outsourced long-term human and environmental costs to other countries. Throughout the Cold War and shortly thereafter, their nuclear testing and uranium-mining activities affected indigenous and vulnerable groups in particular. The signing of the Partial Test Ban Treaty in 1963 and then the conclusion of the Comprehensive Nuclear-Test-Ban Treaty (CTBT) in 1995 sought to rectify part of this injustice. For the CTBT to finally enter into force, however, China and the United States, among others, have to ratify the treaty—which these countries continue to refuse to do. While the environmental and radiation impacts of nuclear-weapon states' testing legacies are increasingly well documented, the victims of testing are still waiting for justice.

In 1968, a milestone agreement sealed an unjust order by codifying unequal nonproliferation and disarmament commitments. Pushed forward by the superpowers, the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) established two forms of inequality. First, nuclear "have-nots" committed not to pursue nuclear weapons while accepting the nuclear-armed status of the "haves" (i.e., China, France, the Soviet Union, the United Kingdom, and the United States—the five permanent members of the UN Security Council, or P5). In return, they gained support and access to civil nuclear energy and received promises from the haves to pursue complete disarmament. Second, the NPT made fulfillment of member states' nonproliferation commitments a matter of individual safeguards, negotiated with and observed by the International Atomic Energy Agency. The NPT, however, left the issue of possible disarmament noncompliance mostly unattended. The indefinite extension of the treaty in 1995 finally cemented this unjust order, which holds today.

Ukraine and the consequences

Today, the consequences of Nuclear Injustice are again on full display in Ukraine. Back in February 2022, the world watched with horror as Russia shielded its blatant aggression by using nuclear threats. On February 24, 2022, Vladimir Putin warned "those who may be tempted to interfere […] from the outside. No matter who tries to stand in our way or all the more so create threats for our country and our people, they must know that Russia will respond immediately, and the consequences will be such as you have never seen in your entire history."

Deterring external military intervention, nuclear weapons are the de facto facilitators of Russia's aggression against and war crimes in Ukraine. Therewith, Russia is the first 21st century nuclear perpetrator under an unjust order, and Ukraine is the first 21st century victim of that order. The nuclear-weapon-free country could not deter Russian aggression, nor could the nuclear-armed West. Much of the justified furor in the West has to do with Moscow openly leveraging its nuclear arsenal to its own benefit. While supporting Ukraine against Russia has been rightfully termed a moral imperative by Western leaders, preventing direct confrontation with Moscow—which eventually could end in nuclear Armageddon—is nothing less. Advancing risky policies between these two objectives translates for Western leaders into accepting the limits and detriments of an unjust nuclear order—one that the West helped establish and maintain for decades.

In the past, US and NATO officials have repeatedly emphasized that nuclear weapons help keep the peace. Less than two years ago, NATO Secretary General Jens Stoltenberg stressed "in an uncertain world, [nuclear] weapons continue to play a vital role in preserving peace." So far, they are right. Even under severe conditions like the war in Ukraine, nuclear-armed states may threaten each other, deliver weapons to proxies, or impose economic sanctions; yet, their populations continue to enjoy what Kenneth Waltz once famously termed "nuclear peace." The terrifying destructiveness of the weapons in their possession deters them from going one step further, openly attacking each other.

Besides the concomitant risk of accidents and miscalculations, the case of Ukraine also demonstrates that this peace is distributed unequally. Like during the Cold War, it buys stability for some at the expense of others—this time the Ukrainians. The millions of refugees flowing into Central and Western Europe are a stark reminder to Europeans that instability is not necessarily an exclusive phenomenon of far-away regions. Perhaps less surprising, global solidarity is not a given, now that the consequences of historically grown Nuclear Injustices manifest themselves so prominently in Europe. Thirty-five states abstained from a resolution condemning the Russian invasion at the February 28, 2022 Special Session of the United Nations General Assembly—among them many African countries and both major and middle powers such as China, India, Nigeria, Pakistan, and South Africa. The combined population of all abstaining states was equivalent to 51 percent of the global population. The voting result of the mid-October resolution condemning Russia's "illegal so-called referendums" does not look much different. Aside from the United States and its allies, no other country has enacted sanctions

against Russia. Obviously, such policy choices do not take place in an ahistorical environment. Past injustices seem to matter.
The fallout from Russia's war against Ukraine already affects global nonproliferation efforts. The recently concluded Tenth Review Conference of the NPT failed because Russia blocked consensus over disagreements regarding Ukraine. Some have argued that the war could even trigger nuclear proliferation. Back in 1994, Ukraine transferred the roughly 4,400 Soviet-era nuclear weapons stationed on its territory to Russia because of Ukrainian accession to the NPT. In exchange, Kyiv received security guarantees from the three NPT depository states under the Budapest Memorandum—Russian being one of them. Even though Ukraine never had operational control over the warheads, other countries will take note of the consequences of that deal. Much will depend on the conclusions that others (Iran or perhaps some states in East Asia) will draw about an unjust, hierarchical security architecture, with nuclear deterrence as the main pillar.

An unjust future

From today's perspective, the future looks like a repetition of the past. Already before the war in Ukraine, nuclear modernization programs were underway in all P5 states. Together, they still possess more than 12,000 warheads. The new NATO-Russia antagonism and a looming superpower standoff between the United States and China will further decrease chances for significant reductions. Consequently, as political scientist and nuclear theorist Shampa Biswas writes, the NPT have-nots would remain in the "waiting-room of history"—waiting for the haves to deliver on their unfulfilled disarmament promises. Widening the aperture, nuclear deterrence and subsequent conventional and nuclear arms races would soak up urgently needed resources for tackling global challenges like climate change, malnutrition, and future pandemics. A resurgent bloc confrontation would seriously impede cooperative global action to deal with these challenges.
In essence, the repercussions of the war in Ukraine may contribute to a continuation or even aggravation of international injustice. Below the international level, this might affect the human dimension of justice and security even more profoundly. Staggering opportunity costs, both financial and political, could rob an entire generation of the chance to organize peace, security, and justice in more participatory and egalitarian ways. While the price tag of the current unjust nuclear order has been high for generations, it might become unaffordable for future generations.
From a system-level view, nuclear proliferation could, as Waltz wrote in 1981, theoretically cure international Nuclear Injustice. But rectifying systemic international injustice would do nothing to end the intergenerational injustice, which nuclear weapons cause and perpetuate. Reliance on nuclear weapons for security purposes would still be unfair to future generations. Thus far, a majority of NPT member states continues to believe that more nuclear-weapon states would also increase the likelihood of nuclear use. Despite the NPT's inherent injustices, this is what keeps them in the treaty.
And they are right. Even a "limited" regional nuclear war could kill millions or even billions, disrupt global climate, and lead to mass starvation. Nuclear winter would not stop at the borders of nuclear perpetrator states—the *entire* global population would bear the costs of catastrophic deterrence failure or accidents. Complicating the setting, it would most likely be *future* generations that would have to cope with the devastating consequences, which makes necessary action today appear to be a less pressing concern. After all, why should today's decision-makers—particularly in democracies, and nuclear-armed ones at that—care more about future voters than their current electorates?

An emerging research agenda

The past, ongoing, and future effects of Nuclear Injustice deserve much more attention from next-generation nuclear scholars. Both societal and intellectual resources to draw on already exist. The perpetuation of Nuclear Injustice shows strong parallels to the insufficient fight against climate change. Both center on the very real consequences of an inherited system that fails to incorporate the interests of future generations. At the same time, many Western societies experience a continued push towards more inclusivity, equal representation, and non-discriminatory conduct. Certain governments, among them Germany's, have started to embrace a "feminist foreign policy," which puts human security and equal rights at its core. Member states to the Treaty on the Prohibition of Nuclear Weapons (TPNW)—in force since 2021—have moved the issue of justice for the victims of nuclear use and testing high up on their political agenda. Despite its many flaws, the intellectual movement of "longtermism," at least its milder forms, has helped draw attention to mankind's common responsibility for future generations' survival and wellbeing. The potentially catastrophic effects of nuclear war have been regularly cited by prominent proponents of a longtermist perspective on dealing with the future.
Meanwhile, as the UN reported in 2004, "transitional justice theories" have focused on the "legacy of large-scale past abuses, in order to ensure accountability, serve justice and achieve reconciliation." Nuclear scholars have started to apply the transitional justice lens to past nuclear use and testing. Matthew Rendall has succinctly written about nuclear deterrence and intergenerational exploitation and came to very similar conclusions: "[T]he benefits of nuclear deterrence may last for only a century or two before it breaks down, while a nuclear war's survivors will have to deal with the consequences for thousands of years." Other scholars have repeatedly criticized the structural injustice of the NPT or unearthed archival evidence of often-ruthless US nonproliferation policies.

It is about time to connect the dots between the historical and socio-political injustices, ongoing transitional justice efforts, and a future of increasing intergenerational injustices. Nuclear Injustice is endemic to all three policy domains of the global nuclear order: deterrence, nonproliferation, and disarmament. It rests on an opportunistic, shortsighted, and self-serving security hierarchy that has underpinned global ordering since 1945. Undoubtedly, powerful status quo forces uphold this order. Still, critical historical junctures provide a chance for changing public discourse. The current crisis has the potential to shift perceptions about the costs of an unacceptable nuclear order.

Trying to soften the effects of Nuclear Injustice through "pragmatic" approaches short of nuclear disarmament will ultimately fail to rectify the systemic injustices that come with nuclear weapons possession, because their possession alone enables international, human, and intergenerational injustice. Reducing nuclear risks will therefore not be good enough. Neither will be diminishing the role of nuclear weapons in doctrinal terms. Taking concerns about Nuclear Injustice seriously can only lead to one logical conclusion: a sustainable and just security architecture is incompatible with nuclear weapons.

The Nuclear Injustice lens offers a critical framework for analysis to sharpen the arguments of scholars promoting nuclear disarmament. Even more, it can serve as a moral compass pointing toward the insufficiency of security efforts that neglect justice or outsource injustice costs to future generations. The inherent injustices of the current nuclear order deserve a much more prominent place on nuclear policy conferences' agendas. It is therefore on the next generation of nuclear scholars to start the process of its (re)politicization. How the current nuclear order will be discussed in response to the war in Ukraine will be decisive for shaping the future global security architecture, overcoming systemic inequities, preventing further intergenerational injustice, and arousing the public to push for fundamental change in the realm of nuclear weapons.

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Oliver Thränert

Russia as a Nuclear Power

Against the backdrop of its invasion of Ukraine, Russia continues to modernize its nuclear forces. Nuclear weapons remain a central part of Moscow's strategic arsenal, including as tools of coercion. While arms control initiatives are critical to mitigate the dangers associated with nuclear weapons, a credible nuclear deterrent on the part of NATO remains a prerequisite for their success.

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Pentagon's Strategy Won't Rule Out Nuclear Use Against Non-Nuclear Threats

Source: https://www.bloomberg.com/news/articles/2022-10-27/us-still-may-use-nuclear-weapons-against-non-nuclear-threats-pentagon-says

Oct 27 – The Pentagon's new National Defense Strategy rejected limits on using nuclear weapons long championed by arms control advocates and in the past by President Joe Biden.

Citing burgeoning threats from China and Russia, the Defense Department said in the document released Thursday that "by the 2030s the United States will, for the first time in its history face two major nuclear powers as strategic competitors and potential adversaries." In response, the US will "maintain a very high bar for nuclear employment" **without ruling out using the weapons in retaliation to a non-nuclear strategic threat to the homeland, US forces abroad or allies.**

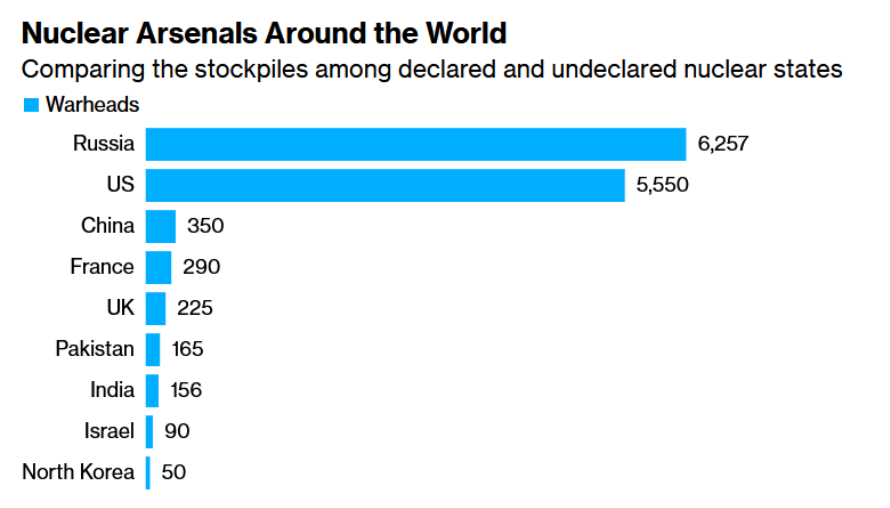
Biden pledged in his 2020 presidential campaign to declare that the US nuclear arsenal should be used only to deter or retaliate against a nuclear attack, a position blessed by progressive Democrats and reviled by defense hawks. The threat environment has changed dramatically since then, and the Pentagon strategy was forged in cooperation with the White House.

The nuclear report that's part of the broader strategy said the Biden administration reviewed its nuclear policy and concluded that "No First Use" and "Sole Purpose" policies "would result in an unacceptable level of risk in light of the range of non-nuclear capabilities being developed and fielded by competitors that could inflict strategic-level damage" to the US and allies.

Mackenzie Eaglen, a resident fellow at the American Enterprise Institute, said she was "struck by how strong their position is on nuclear modernization and policy, and how much national security continuity there is between administrations of different parties. They're willing to postpone their visionary policies in light of the harsh reality on nukes from China and Russia."
President Vladimir Putin and other Russian officials have openly raised the possibility of using nuclear weapons in their invasion of Ukraine. But on Thursday, Putin said Russia only gave "hints" in response to repeated US and European discussion of a possible nuclear conflict. "We don't need a nuclear strike on Ukraine -- there is no point, either military or political," Putin told an audience of foreign policy analysts outside Moscow. In the document, which was framed before the invasion, the Pentagon said Russia continues to "brandish its nuclear weapons in support of its revisionist security policy" while its modern arsenal is expected to grow further.

Nuclear Arsenals Around the World

Comparing the stockpiles among declared and undeclared nuclear states (Source: Arms Control Association)
NOTE: Israel doesn't acknowledge having nuclear weapons; North Korea tally is upper end of estimate of 40 to 50 warheads



Meanwhile, China remains the US's "most consequential strategic competitor for coming decades," Defense Secretary Lloyd Austin said in a letter presenting the new defense strategy. He cited China's "increasingly coercive actions to reshape the Indo-Pacific region and the international system to fit its authoritarian preferences," even as it rapidly modernizes and expands its military.
China wants to have at least 1,000 deliverable nuclear warheads by the end of the decade, the nuclear strategy document said, and could use them for "coercive purposes, including military provocations against US allies and partners in the region."

Hypersonic Weapons
The nuclear strategy document didn't spell out what non-nuclear threats could produce a US nuclear response, but current threats include hypersonic weapons possessed by Russia and China for which the US doesn't yet have a proven defense.
It did spell out, however, in the strongest terms, what would happen to another nuclear power, North Korea, if it launched a nuclear attack on the US, South Korea or Japan. That action "will result in the end of that regime," it said. US nuclear weapons continue to play a role in deterring North Korean attacks. The nuclear strategy affirmed modernization programs including the ongoing replacement of the aging US air-sea-land nuclear triad. Among them are the Navy's Columbia-class nuclear ICBM submarine, the ground-based Minuteman III ICBM replacement, the new air-launched Long-Range Standoff Weapon and F-35 fighter jets for Europe carrying nuclear weapons. The review confirmed previous reports that the Pentagon will retire the B83-1 gravity bomb and cancel the Sea-Launched Cruise Missile program. But it endorsed a controversial Trump-era naval weapon, the low-yield W76-2 submarine-launched nuclear warhead, which was described as providing "an important means to deter limited nuclear use." The broader strategy report also offered gently worded criticism of major US weapons programs, which often run years behind plans and billions of dollars over initial budgets. "Our current system is too slow and too focused on acquiring systems not designed to address the most critical challenges we now face," the Pentagon said. It called for more "open systems that can rapidly incorporate cutting-edge technology" while reducing problems of "obsolescence" and high costs. The Pentagon strategy documents were sent to Congress in classified form in March so they were considered during congressional approval of the fiscal 2023 defense budget.

Armageddon Is Closer Than You Think

By Paul Craig Roberts
Source: https://www.paulcraigroberts.org/2022/10/25/armageddon-is-closer-than-you-think/

Oct 25 – The world is facing catastrophe, and there is no awareness. For years I and Stephen Cohen, while he was still alive, advised that Washington's provocations of Russia, including those of its NATO puppet states, were misguided and counter-productive. Even prior to the fall of the Soviet Union,

Gorbachev was open for the Soviet Union to become a cooperating member of the West. The Russian population had a favorable attitude toward the West and looked forward to Russia's incorporation into the Western world.

The Reagan administration and Reagan's successor, the George H. W. Bush administration were open to this idea. President Bush's Secretary of State Jim Baker affirmed that he promised there would be no movement of NATO east to Soviet borders if Gorbachev permitted the reunification of Germany, which set the stage for the freedom of the Soviet Union's Eastern European empire.

The Clinton regime, under the influence of Neoconservatives, violated America's word on the grounds that it was verbal and not in writing and therefore did not count. The Clinton regime not only overthrew Yugoslavia and broke it into pieces while turning a historic part of Serbia over to Muslims, but also moved NATO to Russia's border. At the time with the Soviet collapse in 1991 Russia was too weak to do anything about it as the Yeltsin government was Washington's puppet.

At the Munich Security Conference in 2007, Putin, Yeltsin's successor, declared that Russia did not accept Washington's unipolar world in which Washington ruled, and that Russia would follow its, not Washington's interest. Putin's declaration of independence was more or less ignored at the time, because Washington was involved in its wars in the Middle East for Israel's benefit.

But as time passed Washington realized that Russia was off the reservation, and that something had to be done about it.

The Sochi Olympics provided an opportunity. The Kremlin thought that a successful Olympics held by Russia would boost Russia's standing with the West. Instead, US, UK, and German officials boycotted the Sochi Olympics, during the proceedings of which while Putin was inattentive the US overthrew the Russian-friendly government of Ukraine, formerly a part of Russia for centuries.

The Nazi, anti-Russian government that Washington installed in Ukraine began physically abusing the Russian population of former Russian provinces that Soviet rulers had incorporated into the Soviet Ukrainian province. Crimea, a part of Russia since the 1700s, was attached to Ukraine by Khrushchev in 1956, and the Donbass was attached to Ukraine by earlier Soviet rulers. At the time Ukraine and Russia were part of the same country, the Soviet Union.

Ukraine's independence was secured by Washington after the Soviet collapse in 1991 when President Gorbachev was arrested by hardline communist party members who thought, correctly in retrospect, that he was liberalizing too much too quickly and giving too much away to Washington without enforceable guarantees.

Crimea is the location of the Russian Black Sea Naval base under long-term Russian lease from Ukraine since Ukraine's independence. Putin was sufficiently alert to comprehend that the new American puppet government in Ukraine would cancel the lease, thus depriving Russia access to the Black Sea and through the sea to the Mediterranean.

The population of Crimea voted by 97% to be reunited with Russia, and so did the Russians who populate the Donbass. Putin accepted Crimea's request, but refused Donbass' request.

What was the reason for this decision by Putin, a decision that has led to the ever-widening war in Ukraine eight years later?

The best explanation is that Putin let Western propaganda make his decision. If Putin took back Donbass in addition to Crimea, which he had to take or lose Russia's warm water naval base, it would confirm Western propaganda's claim that Putin intended to restore the Soviet Empire. Why Putin thought Western propaganda should limit Russia's behavior in its own interest, instead of the West's interests, suggests a Putin who has one foot in the West and one foot in Russian nationalism.

The Donbass Russians were suffering horribly at the hands of the Ukrainian neo-Nazis that Washington had installed in Kiev. Putin understood that he had to do something. The something he decided on assumed Western good will that did not exist. Putin came up with the "Minsk Agreement," a scheme to keep Donbass in Ukraine, but protect the residents with some forms of autonomy, such as their own police force, that would protect the Russian population from neo-Nazi persecution.

Putin got Ukraine and the Donbass republics to sign the Minsk agreement, and he got Germany and France to guarantee the agreement. But Washington forbid Ukraine from complying with the agreement and France and Germany from enforcing it.

Putin wasted eight years trying to sell his agreement that obviously never had any prospect considering Washington's obvious intentions to use Ukraine to cause maximum trouble for Russia. Why was Putin unable to see this?

The danger with Putin's "limited military operation" and its go-slow policy is that it provides the West with time to gather its forces and to gain the initiative. Despite Putin's "red line," the US and Europe send weapons to Ukraine.

As there was no effective Russian response to provocations, despite declared "red lines," next training for Ukrainian troops was provided. Then intelligence and targeting information. Then longer distance weapons that can reach strategic Russian targets. Then the attack on the Crimea bridge, the Nord Stream Pipelines, and now a plot for a dirty bomb, to be used as an excuse for US intervention with troops deployed in Romania and the destruction of a dam that would destroy the Russian city of Kherson and leave elite Russian special forces soldiers isolated and subject to Ukrainian capture, which would be a tremendous propaganda victory for the West.

As matters now stand, we have a situation where Putin's method of warfare constrains his own forces and not his enemies. The latest indications are that Putin and the Russian high command are willing for t*he initiative to remain in the hands of their Western enemies.* The Kremlin reacts to the moves of its enemy. If Ukraine with US and UK help blow the Dniper Dam and flood Kherson, then, and only then, perhaps, maybe, Russia will blow the dam that will win them the war by cutting a large chunk of Ukraine off from Ukraine. Apparently, the Kremlin hasn't addressed the question why Russia accepts casualties and the appearance of humiliating defeats when Russia can easily win the war in one day.

Washington's provocations mount, and Putin's response is not a show of force but a plea for negotiations and offers to supply Russia's NATO enemies with energy. Little wonder Washington escalates the conflict.

The lack of decisive action by Russia has allowed Washington to put humanity on the road to Armageddon. Washington and its NATO puppets have lost their fear of Russia, and the provocations will continue. As Putin has not defended any Russian declared red lines, Washington believes he has none. Putin does not even defend Syria, a country he rescued from Washington's conquest, from Israeli attacks.

Patience is a virtue in a leader, but Putin's patience is seen by many in Washington as a lack of resolution. If this interpretation of Putin's patience turns out to be a mistake, Washington will cross a red line that will bring us into the Armageddon period of human history.

Paul Craig Roberts has had careers in scholarship and academia, journalism, public service, and business. He is chairman of The Institute for Political Economy.

Nuclear forces of Russia, China, US: Who has what at a glance

Source: https://unb.com.bd/category/World/nuclear-forces-of-russia-china-us-who-has-what-at-a-glance/103513

Oct 29 – Earlier this month, the Russian foreign ministry underscored that Moscow does not threaten anyone with nuclear weapons, but that it is Western powers who use nuclear rhetoric, trying to make it look like Russia is preparing to deliver strikes using weapons of mass destruction.

The US' new Nuclear Posture Review (NPR), which was recently published by the Pentagon and embedded into the country's National Defense Strategy (NDS), prioritises the modernisation of the US current nuclear arsenal, singling out Russia and China as the main potential adversaries. Here is a brief insight into the nuclear forces of Moscow, Beijing, and Washington:

Russia

The NPR says Russia has "up to 2,000" nuclear warheads and is pursuing several novel nuclear-capable systems "designed to hold the US homeland or allies and partners at risk, some of which are also not accountable under New START (Strategic Arms Reduction Treaty)."
This figure is in line with the Pentagon's previous estimates that Moscow purportedly possessed at least 5,977 nuclear warheads in 2019.
As part of the START data exchange, Russia indicated that as of September 1, 2019, it had 513 deployed strategic delivery vehicles with 1,426 warheads.
Russia's delivery vehicles include intercontinental ballistic missiles (ICBMs), such as the sophisticated Sarmat ICBM, as well as the Yars and Topol ICBMs; strategic bombers, including the modernised versions of the Tu-160 and the Tu-95, plus advanced nuclear-powered submarines of the Borei-class equipped with Bulava nuclear missiles.
Unlike the US, Russia has state-of-the-art hypersonic glide vehicles, including the Avangard and Kinzhal, which are also capable of carrying nuclear warheads.

China

China "likely intends to possess at least 1,000 deliverable warheads by the end of the decade," says NPR.
Currently, China is the only one of the five states officially possessing nuclear weapons under the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) that does not provide any information about its military forces, including the nuclear component.
The Pentagon believes that China possesses about 400 nuclear warheads that can be delivered by ICBMs, including the Dongfeng (DF)-4, DF-5A, DF-31, and DF-31A, as well as the latest DF-41 modification that was first showcased at a military parade in Beijing on October 1, 2019.
According to the London-based Institute for Strategic Studies think tank, China's nuclear delivery vehicles also include Type-094 and Type-096 nuclear-powered submarines as well as the H-6 and H-6K bombers plus the new-generation H-20 strategic bomber.
China also has the hypersonic medium-range DF-17 ICBM, which Beijing claims can carry nuclear warheads.

US

Right now, there are an estimated 1,350 nuclear warheads on at least 652 delivery vehicles in the US, including 400 Minuteman III ICBMs and 14 nuclear-capable Ohio-class Trident submarines.
According to information published on the US Department of Defense website, the modernisation of the Minuteman III missiles, which make up "the most responsive leg" of the US nuclear triad, is due to start in 2029.
Additional US nuclear delivery vehicles include strategic bombers such as the B-52H Stratofortress and the B-2A Spirit.
With Russia achieving hypersonic capability in late 2017 and China following suit in 2019, the US has yet to put hypersonic vehicles, including those capable of carrying nuclear warheads, in service.

Germany's nuclear weapons policy and the war: Money for nukes, words for disarmament

By Moritz Kütt
Source: https://thebulletin.org/2022/10/germanys-nuclear-weapons-policy-and-the-war-money-for-nukes-words-for-disarmament/

In March 2022, the German government decided to purchase 35 US F-35 aircraft at a price of $8.4 billion to replace Germany's aging "dual-capable" aircraft. Here, an F-35A aircraft carries a test article of the upgraded B61-12 nuclear gravity bomb at the Nellis US Air Force Base, Nevada in September 2021. Germany will use this combination to maintain its nuclear capability using US-owned bombs. (Photo: US Air Force/Zachary Rufus)

Oct 27 – With its nuclear weapons policy, Germany has tried to kill probably too many birds with one stone. The result has been a mix of partially disconnected, sometimes even contradictory individual policies and governmental actions. This was the case under the previous Merkel governments, remains the case since 2021 under the new Scholz cabinet, and has not changed significantly since the start of Russia's war against Ukraine.

However, there is one thing the war has laid bare: For policies that rely on nuclear weapons, Germany's material and financial support is strong. In contrast, support for disarmament is often limited to rhetoric.
Germany is a strong supporter of NATO's nuclear deterrence policy. The North Atlantic Alliance has kept its nuclear strategy flexible, meaning that the alliance could theoretically be the first party to use nuclear weapons in a conflict. Moreover, in addition to whatever coverage Germany gets from NATO, the United States has promised that it would come to the rescue of Germany with all its might, including nuclear weapons. Germany still hosts 15 US tactical nuclear weapons on its soil and provides dual-capable aircraft to deliver these weapons under the control of German pilots to potential targets.
At the same time, Germany sees itself as a leading actor in efforts at global nuclear disarmament. It is active in the Stockholm initiative, a group of 16 non-nuclear weapon countries that try to renew disarmament debates within the Nuclear Non-Proliferation Treaty (NPT), focusing on a "pragmatic and result-oriented nuclear disarmament agenda." And the country has recently been an observer to the first meeting of states that party to the Treaty on the Prohibition of Nuclear Weapons (TPNW, also known as the "ban treaty").

A turning point

In 2021, Germans ended a 16-year-long streak of conservative governments under Angela Merkel. A broad coalition of three parties from the left and the right formed a new government, consisting of the Social Democratic Party (SPD), the Free Democratic Party (FDP), and the Greens—technically known as "Alliance 90/The Greens." Because of the involvement of the Greens, many observers had hoped that disarmament would become a more prominent topic within the new government, because the party has roots in the 1980s peace movement. The last time it came to power, in 1998, the Greens' party platform argued strongly to replace NATO with a European peace order. Significantly more moderate in that regard today, subsequent Green party platforms still propose a Germany free of nuclear weapons, and in 2021 proposed accession to the TPNW.
Then came 2022. Only a few weeks after taking government, the new coalition had to face the Russian invasion of Ukraine. Then followed a succession of governmental decisions and changes—partly as a direct reaction to the war but also because of a broader trend toward policies that strengthen Germany's existing nuclear posture. This happened despite a conflicting trend toward government actions that promote a world free of nuclear weapons. It is not wonder that there has been much public debate in Germany on the issue of nuclear sharing and nuclear deterrence.

Government support for extended nuclear deterrence and nuclear sharing

Only three days after the start of the war, Chancellor Olaf Scholz (SPD) announced a "*Zeitenwende*" (turning point) in German defense policies. In a speech to the German parliament, he announced a special military investment budget of 100 billion euros (98 billion US dollars), and a stronger commitment of Germany to achieve NATO member states' goal of spending at least two percent of a country's gross domestic product for defense purposes.
In March 2022, after the war in Ukraine started, the government decided to purchase 35 US F-35 aircraft at a price of $8.4 billion to replace Germany's aging "dual-capable" aircraft. ("Dual-capable" means that these aircraft can transport US nuclear weapons.) This decision marked the end of a debate that lasted more than a decade, which, taken remarkably swiftly, suggests there was already an underlying leadership support for the sharing of nuclear weaponry across the political spectrum, despite surface impressions to the opposite.
Funding for these aircraft comes from the new special military investment budget. The request for purchase was confirmed by the US government in July.
Another step that demonstrates the German government support for nuclear sharing will be the first-ever national security strategy. The drafting process for the strategy was announced by the foreign minister in March 2022 and is still ongoing. As part of the strategy, the foreign minister plans to retain a credible nuclear deterrence through Germany's NATO membership. The strategy is expected to be made public early next year.
But while it funds new nuclear sharing capability, the German government also continues to assert—in words, if not in deeds—that it wants to eliminate nuclear weaponry.

Government efforts toward a world free of nuclear weapons

Germany, along with NATO allies, repeatedly criticized the ban treaty in previous years. But this changed too in 2022. In June, German diplomats observed the first meeting of states parties of the TPNW in Vienna, despite the initial criticism from other NATO members. But Germany nevertheless participated in the meeting—and was joined eventually by five other NATO—or soon-to-be NATO—members: Belgium, Norway, the Netherlands, Finland, and Sweden.
At the meeting, Germany announced its intention to provide support for victims of nuclear testing and environmental remediation of damages caused by nuclear testing explosions. The signatories of the ban treaty are required to take such actions by its members under so-called "positive obligations." Germany,

even though it is not a TPNW member, repeated this pledge again at the review conference of the NPT in August. As the government has not taken concrete steps in that regard yet, it is unclear if that was just rhetoric or if serious action will follow.
Like previous initiatives by Sweden, Canada, and Mexico, the new German government announced a new focus on a feminist foreign policy, which it defines as foreign policy "based on the conviction that gender equity and equal participation are preconditions for long-term peace and security." It is the government's goal, the policy says, to work for equal rights, equal representation, reduced injustice in resource distribution, and include a view on diversity in foreign policy. This marks an important shift even though it is too early to know if the new approach will have immediate as well as long-term implications for nuclear policy—if any.

A shifting public debate on Germany's nuclear policy

The war in Ukraine led to rapid, visible changes in debates about Germany's own security. As soon as the 100-billion-euro defense fund was announced, the discussion started on what should be funded with that money. In this debate, some voices say the Russian invasion of Ukraine results from a weak stance toward Russia. In this view, Germany's future security can only be maintained if the country commits to higher investments in military equipment and personnel. Often, however, there is no reflection on whether such investments might end up being counterproductive by fueling an international arms race. Voices of the opposing view—those critical of war and armaments in general—remained mostly quiet. There has been, so far, no indication of a large-scale response by a new German peace movement. There has been, however, frequent calls for a "Euro-deterrent," provided by the French strategic forces—most prominently voiced by Friedrich Merz, the leader of the Christian Democratic Union (CDU), the main right-wing opposition party in Germany. His party colleague and head of the conservative European People's Party in the European parliament, Manfred Weber, went further and even proposed that Germany fund the French *force de frappe*.
Such moves, if implemented, will come under fierce criticism from other members of the NPT. Whether or not it is legal also remains subject to debate. But the NPT Review Conference this summer has already shown that an increasing number of countries see nuclear sharing as problematic—with Germany finding itself on the defensive side. Similar attempts to change Germany's nuclear policy in the past have been seen as expert debates much disconnected from the public debate. But this might change this time. For instance, in a June 2022 poll, a majority of the interviewees expressed a supportive stance toward hosting US nuclear weapons in Germany. This is in stark contrast to previous years where a large majority of Germans in polls were in favor of removing these weapons from the country.

Follow the money

The words of the current foreign minister Annalena Baerbock, a Green Party leader and a key player in the current coalition, capture well the current state of nuclear policy in Germany: "disarmament and arms control as being complementary to deterrence and defense." *Complementarity*, however, does not necessarily mean that these two priorities are equal. Judging from the special military investment allocation—and if one tracks the money—there seems to be a clear preference toward nuclear deterrence over concerns for nuclear disarmament. Moreover, additional defense spending since the war started is significant, also reflecting its increased prominence in policy.
In contrast, there is no indication whether new financial support will come for issues related to nuclear disarmament. The public debate in Germany also shows that as the international security environment deteriorates, military options and new nuclear armaments are becoming more attractive among political leaders. There's no question that disarmament supporters in Germany should applaud the government for showing some support for the ban treaty—both as observers and as proponents of victim assistance. But this happened in the shadows of real-world armaments, including the purchase of new dual-capable aircraft for nuclear sharing. By its recent actions, the German government has *de facto* increased the relative role of nuclear weapons and fueled an ongoing arms race. Germany needs to do more if it wants to help achieve a world free of nuclear weapons. Positive steps can be taken even in times of ongoing conflict, but they need to be more than mere catchphrases.
As part of the new German government's coalition agreement, the three governing parties promised a "disarmament offensive." But given the recent government decisions, a lot remains to be done to make this promise a reality. Actions will speak louder than words.

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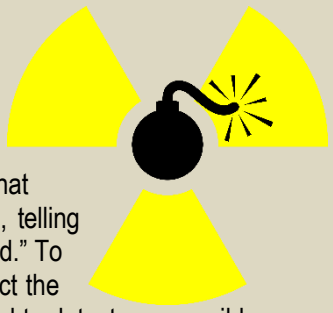
EDITOR'S COMMENT: A nuclear Germany is as dangerous as nuclear weapons. Remember the expression "goldfish memory?"

Russia says Ukraine is preparing a "dirty bomb." Is it true, and what does it mean?

By François Diaz-Maurin and Dan Drollette Jr

Source: https://thebulletin.org/2022/10/russia-says-ukraine-is-preparing-a-dirty-bomb-is-it-true-and-what-does-it-mean/



Oct 27 – On October 23, Russian Defense Minister Sergei Shoigu claimed that Ukraine was preparing to use a "dirty bomb"—a weapon that uses conventional explosives laced with radioactive material. In a series of phone calls to his counterparts in France, Turkey, the United Kingdom, and the United States, Shoigu said that he was "concerned about possible provocations by Kyiv involving the use of a dirty bomb."

Western officials quickly rejected the notion that Ukraine was preparing any such "false-flag operation" that would blame Russia. NATO's secretary-general, Jens Stoltenberg, denounced the Russian accusations, telling *Politico* in an interview that "The allegation that Ukraine is preparing to use dirty bombs in Ukraine is absurd." To dismiss any thoughts of wrongdoing, Ukraine requested that the IAEA, the UN's nuclear watchdog, inspect the two nuclear locations in Ukraine that were mentioned in Russia's accusations. The inspections are intended to detect any possible undeclared nuclear activities and materials.

Neutral bystanders also dismissed the likelihood and significance of a dirty bomb being used in Ukraine. Pavel Podvig, an independent expert on Russian nuclear forces, said on Twitter that any use of a dirty bomb in Ukraine would not change much on the ground, either militarily or politically. William Alberque, Director of Strategy, Technology and Arms Control at the International Institute for Strategic Studies, noted that there was little reason for Ukraine to resort to such an extreme when it was already winning on the battlefield, saying that Ukraine would not "risk everything by detonating a 'dirty bomb' to simulate a tactical nuclear weapon and blame it on Russia."

Officials and experts seemed to agree that the dirty bomb episode was a distraction by Russia, though its exact motives are unclear. On Monday, NATO's Stoltenberg warned on Twitter that "Russia must not use [this allegation] as a pretext for escalation."

To be sure, it would be easy enough to get the raw materials for such a bomb; earlier in the war, looters raided a radiation monitoring laboratory at Chernobyl, reported the peer-reviewed journal *Science*. The lab contained dangerous materials such as the powerful radioactive isotopes used to calibrate instruments—as well as intensely radioactive samples from the infamous Chernobyl reactor meltdown in 1986. These radioactive materials can be mixed with conventional explosives to form a dirty bomb, with potentially widespread contamination.

This is not the first time that there have been worries about dirty bombs—to varying degrees. The effects of a dirty bomb depend on many variables, from the type of radioactive materials used, to the amount of smoke and debris in the air, to the proximity to the blast. In any case, the amount of land area that would be affected by a dirty bomb is a lot less than that of a nuclear bomb: A dirty bomb could spread radiation only over a few square miles, while a full-blown nuclear bomb would spread radiation over hundreds of square miles. The differences are so extreme that the US Nuclear Regulatory Commission has written that "A dirty bomb is in no way similar to a nuclear weapon."

Which is not to say that there is no cause for alarm. There would have been long-term medical repercussions if, for example, the Boston Marathon bombing had involved a dirty bomb, as George M. Moore—scientist-in-residence at the James Martin Center for Nonproliferation Studies at the Middlebury Institute of International Studies at Monterey—noted in these pages in 2013: "If the Boston marathon had been attacked with dirty bombs, hospitals would have received contaminated victims and patients with radioactive material embedded in them. Protocols for dealing with these problems could have led to delays and further loss of life."

Perhaps the biggest take-away comes from a later *Bulletin* article written by Moore in 2019, in which he noted: "The typical realistic scenario for a dirty bomb is certainly serious, but many experts believe that the immediate danger to people would be minimal: It's the explosion of a dirty bomb that would kill or injure people. On the other hand, the cleanup costs of an incident and other economic losses might be enormous. As a example, remember the cleanup costs associated with the post-9/11 anthrax letters."

Despite its potential for harm, the scale of destruction from a dirty bomb is in no way comparable to the detonation of a tactical or strategic nuclear weapon. As Elisabeth Eaves noted in a 2016 *Bulletin* article: "Dirty bombs have more in common with nuclear medicine than nuclear war…"

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sustainability sciences (Ph.D., Universitat Autònoma de Barcelona, 2013, summa cum laude and "Extraordinary Ph.D." Award), and nuclear materials, geochemistry of radionuclides and nuclear security (postdoctoral training, Stanford University, 2017–2019).
Dan Drollette is the executive editor of the Bulletin of the Atomic Scientists. He is a science writer/editor and foreign correspondent who has filed stories from every continent except Antarctica. His stories have appeared in *Scientific American, International Wildlife, MIT's Technology Review, Natural History, Cosmos, Science, New Scientist,* and the *BBC Online*, among others. He was a TEDx speaker to Frankfurt am Main, Germany, and held a Fulbright Postgraduate Traveling Fellowship to Australia—where he lived for a total of four years. For three years, he edited CERN's on-line weekly magazine, in Geneva, Switzerland, where his office was 100 yards from the injection point of the Large Hadron Collider. Drollette is the author of "Gold Rush in the Jungle: The Race to Discover and Defend the Rarest Animals of Vietnam's "Lost World," published in April 2013, by Crown. He holds a BJ (Bachelor of Journalism) from the University of Missouri, and a master's in science writing from New York University's Science, Health and Environmental Reporting Program.

Blockchain Could Be Key to Nuclear Material Safeguards

By Marcus Borscz and Edward Obbard
Source: https://www.homelandsecuritynewswire.com/blockchain-could-be-key-nuclear-material-safeguards

Nov 01 – Did you know that many countries still rely on paper-based systems to keep track of transactions involving nuclear material? While that's not the case in Australia, the International Atomic Energy Agency (IAEA) is keen to improve the nuclear safeguards which track all fissile nuclear material which could potentially go into undeclared weapons programs and be used to make bombs.
The IAEA reports to the United Nations and assists member States in the peaceful, safe use of nuclear power while preventing the proliferation of nuclear weapons.
Currently, each member State of the IAEA has its own regulator which must fulfil reporting requirements regarding nuclear material. This reporting provides evidence that a country's nuclear activities match their stated intent, as well as assisting the IAEA to conduct inspections to verify this.
As more and more record keeping shifts into electronic systems, driven by the ongoing pressures of efficiency and fixed budget allocations in governments and at the IAEA, it becomes potentially easier to rewrite or modify past records when the physical archives are replaced.
This increases the need for auditability, combined with information security and efficiency. Continuous innovation in nuclear safeguards is essential to the mission of the IAEA, and the national regulators who contribute to its vital work.
Therefore, the upcoming IAEA Symposium on International Safeguards, which is held every four years, will bring together regulatory authorities, governments, the research and development community, and industry to identify challenges and opportunities under the rapidly evolving operating environment that we see today.
At the symposium in Vienna, Austria, we will present work that suggests using blockchain technology to share an immutable ledger of nuclear material accounting information among all member states, as well as with the IAEA itself, could make the falsification of electronic records in a diversion attempt significantly more difficult.
This proof-of-concept system, known as Shared Ledger Implementation of Nuclear Material Accounting and Control (SLINMAC) provides a secure platform for sharing confidential reports, and an authoritative, auditable shared ledger of all transactions. SLINMAC is designed to complement established reporting practices and improve the efficiency of transit matching for both domestic and international shipments of nuclear material.

Security Requirements for Nuclear Information
The IAEA's Security of Nuclear Information Implementing Guide states that: "Information security not only includes ensuring the confidentiality of information, but also includes ensuring the accuracy and completeness of the information (its integrity) and the accessibility or usability of the information on demand (its availability)."
A key advantage of blockchain technology is the excellent data integrity provided by the cryptographic linking of blocks together with self-referential hashes. Defrauding the ledger by editing a committed block breaks this chain and requires an impractical amount of computing power to rebuild with the fraudulent entries.
The decentralized nature of blockchain storage makes data immediately available and easily accessible. The blockchain is updated as soon as a transaction is accepted and multiple copies of the ledger are distributed amongst all nodes, which builds resilience into the network should it ever be compromised.
Although blockchain provides a strong system for tracking nuclear material where the digital record cannot be amended – a simple open blockchain does not offer confidentiality by default, since all parties can read the ledger hosted on their nodes.

This is a problem since certain information regarding nuclear security, or intellectual property used for clean energy or nuclear medicine, needs to be kept private for good reasons.
The solution is for information related to nuclear safeguards to be encrypted on the ledger, and during transit when uploaded to and downloaded from the blockchain.
Not only that, but encryption used must guarantee the long-term protection of data for the full lifetime of the underlying asset, which may extend into timescales of thousands of years for nuclear waste management. In this context the high integrity and availability of blockchain records really come to the fore.
The key advance of SLINMAC is to investigate how end-to-end encryption, which is essential for blockchain to fulfill nuclear security requirements, impacts the auditability of the system. SLINMAC uses a multicast encryption protocol, which allows for multiple organizations to decrypt the same piece of information and also verify each other's access. This is important when the same report must be distributed between nuclear facilities, the State regulatory authority and the IAEA.
The idea of using blockchain to track nuclear material is in an early stage of research and we welcome the opportunity to discuss SLINMAC at the symposium, as well as the more general concepts. This work builds on the first blockchain demo of a safeguards information system, called 'SLUMBAT', which we presented at the previous 2018 Safeguards Symposium, and which led to the SLAFKA project between UNSW, the Finnish national regular STUK, and the Stimson Centre in 2020.
Increased global nuclear energy is widely acknowledged by the IPCC as being important to meet decarbonization targets over the next 30 years and beyond. To accommodate the increasing number of safeguards transactions required for this to happen, the safeguards community will need new technology, like blockchain, to scale its efficiency, without compromising security and auditability
We believe that technology like SLINMAC can advance the level of confidence in the nuclear industry as a whole, while providing a new point of engagement for exciting technical cooperation between the nuclear safeguards, blockchain, and information security communities.
We want to ensure that nuclear energy is being produced in a safe way, and this is in part dependent on the security of information relating to nuclear material, combined with the transparency and auditability of the nuclear supply chain.
SLINMAC is showing part of what this future could look like.

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The social and psychological impact of radiological terrorism

By Igor Khripunov
Nonproliferation Review, Vol. 13, No 2, July 2006
Source: https://www.academia.edu/2385001/Phychological_Impact_of_Radiological_Terrorism?email_work_card=view-paper

The July 2005 terrorist attacks in London demonstrated the resilience of Western society in the face of low-level conventional terrorism. But the psychological damage from the London bombings would likely pale next to the severe, unpredictable, long-lasting effects of a radiological attack. One unique hazard of radiation exposure beyond the obvious physiological effects is that it is colorless, odorless, and tasteless, making it difficult for ordinary citizens to evaluate, quantify, and rationally understand the dangers confronting them. Radiological weapons stand out among the tools available to terrorists for their capacity to inflict far-reaching psychological damage to civilian populaces well beyond the immediate victims. A possible solution to mitigate the psychological consequences is to build a "resilience culture," an interlocking set of beliefs, attitudes, approaches, and behaviors that help people fare better in any disaster or extraordinary circumstance. The "all-hazards approach," which emphasizes the identifiable similarities among the "disaster triad" – that is, natural, accidentally man-made, and intentionally man-made disasters – extends to acts of terrorism and could help demystify the fears associated with radiological terrorist weapons

Professor Jeffrey Sachs*: "Here we are near the brink of nuclear war because the United States just can't keep its goddamn nose out of anyone's backyard, and we kept pushing for NATO enlargement."

* American economist, academic, public policy analyst, and former director of The Earth Institute at Columbia University,

Do not play with fire!

STOP!

Bombing Zaoporojie nuclear power plant

Nuclear Threats Against the Homeland: Impact and Preparation

By Tanya M. Scherr, Daniel Scherr & Richard Schoeberl

Source: https://www.domesticpreparedness.com/preparedness/nuclear-threats-against-the-homeland-impact-and-preparation/

Nov 02 – Although the threat of a nuclear attack or incident on U.S. soil is almost seven decades old, recent events renewed this concept over the past few months. From the rise in extremism across the globe, missile launches, rumors of detonations in North Korea, the ongoing conflict over Iran's nuclear program, and the Russian invasion of Ukraine, the threat and concern of nuclear weapons continue to increase. Although security experts have downplayed the likelihood that the war in Ukraine could lead to nuclear escalation between the U.S. and Russia, Putin's continued threats of using such weapons are concerning. The National Defense Strategy (October 27, 2022) emphasized the heightened threat posed by Russia, China, and other countries. The report admits that the scope and scale of homeland threats have profoundly changed, posing more dangerous challenges to U.S. safety and security. Much has occurred since the Joint Statement of the Leaders of the Five Nuclear-Weapon States on Preventing Nuclear War and Avoiding Arms Races in January 2022, where the parties stated:

> *We underline our desire to work with all states to create a security environment more conducive to progress on disarmament with the ultimate goal of a world without nuclear weapons with undiminished security for all.*

The proliferation of nuclear weapons and the materials to manufacture them certainly elevates the possibility of a nuclear weapon or modified device utilization as regional tensions and extremism rise.

Nuclear Threats – Then and Now

After the Russian invasion of Ukraine, the October 2022 White House National Security Strategy now lists China as a long-term threat and Russia, Iran, and North Korea as current, immediate threats in terms of nuclear power. Recent news from the Bulletin of the Atomic Scientists, Bloomberg, and others have projected casualty rates for nuclear attacks on multiple cities and scenarios. Research entities across the spectrum have posted potential impacts of nuclear war and the relative likelihood of large-scale and regional attacks. Emergency managers, officials, and leaders now have an abundance of information and questions on what is in place and what the next steps should be:

- Does this threat warrant its own plan?
- Do we incorporate the plan into the existing framework?
- What training is needed?
- How do we incorporate that training?
- What equipment and facilities are needed?
- How do we manage this process?

Considering all the information and questions surrounding the possibility of a nuclear strike, whether through conventional weapons or a modified device, it is important to understand the relative impact of these weapons today. The International Physicians for the Prevention of Nuclear War published a report in August 2022 on "Nuclear Famine." The authors outline a nuclear war's immediate and devastating impact on climate and food production, with multiple years without full growing seasons and the resulting shortage of available calories worldwide. With their projections, the authors provide a graphical representation of the relative size and number of nuclear weapons from 1945, with the first deployment of weapons in Hiroshima and Nagasaki, to today. Their chart notes approximately 2,060,000 kilotons (2,060 megatons) of nuclear weapons available in 2022 compared to the 1.5 kilotons in the bomb dropped on Hiroshima and 15 kilotons in the weapon deployed in Nagasaki. The Federation of American Scientists lists the overall inventory at about 12,700 warheads, with 5,977 in the Russian arsenal, 5,428 in the U.S., 350 in China, and the remaining 945 spread between six other countries.

The likelihood that a country will use one of the nearly 13,000 nuclear weapons varies significantly depending on the source and analyst(s) generating the statistics and reports. The Brookings Institute published the challenges of estimating the likelihood of a war based on various factors. For example, relying on traditional statistics and analysis is limited because nuclear weapons have only been used twice in anger. Projecting future results based on such an infrequent event is problematic, forcing analysis based on alternative models and interpretations.

Dirty bombs are another possible scenario. For example, Russian claimed that Ukrainian forces planned to use one of these devices in a false flag operation against Russia. Britain, France, and the U.S. issued a joint statement denying the operation and noted that such use would be a pretext for conflict escalation. Although the emergency preparedness community uses the all-hazards approach for community planning, and individual community emergency preparedness plans may list terrorism as one of their top threats, the plan may not specifically address nuclear explosions. Therefore, there are a few planning tools specific to this event.

Imagining a Nuclear Scenario – Planning Tools & Resources

The Department of Homeland Security Countering Weapons of Mass Destruction Office maintains various tools and publications regarding nuclear and other incidents. These include a Health and Safety Planning Guide for Planners, Safety Officers, and Supervisors for Protecting Responders Following a Nuclear Detonation and Technical Capability Standards for Radiological Detection. The safety planning guide includes information on the stages of a nuclear detonation and what to expect, along with zoned responses, impacts on the body after exposure to radiation, rules of thumb, and considerations for self-protection for responders. This guide builds from the National Incident Management System (NIMS), which includes personal protective equipment, training, and other requirements, and the Incident Command System, allowing for systematic incorporation into existing plans. The second publication on detection provides technical specifications for the operations listed in the guide.

The Centers for Disease Control and Prevention (CDC) has information on radiation emergencies on its website to educate the public. However, nothing can prevent the attack, and it is too late to prepare once a nuclear explosion is imminent. The critical focus at that point is to seek immediate shelter and consider emergency evacuation in high-risk areas such as near nuclear power plants. National awareness campaigns use the slogan: "Get Inside, Stay Inside, Stay Tuned." Communities should have multiple avenues of mass communication to alert the public to seek immediate shelter (e.g., weather sirens, digital billboards, and emergency alerts via text messaging, radio, and television broadcasting). Venues with large capacities (e.g., event halls, stadiums, hospitals, schools) should have established plans to shelter individuals inside for safety and prevent evacuation when possible. Any shelter is better than being outside and can help reduce the risk of exposure during the event. Communication is critical for ensuring that citizens understand the dangers of venturing outside before it is safe.

How the war in Ukraine will end is unclear, but some analysts say it could have a devastating impact on a global scale.

After a nuclear explosion and the immediate need to shelter in place, typical incident response activities should occur, such as establishing an incident command center or emergency operations center in a safe, sustainable location. In addition, decontamination capabilities (equipment, supplies, and personnel trained to use them) are a priority following a nuclear attack. Two guides illustrate considerations, planning factors, and available resources to design an effective nuclear detonation response plan and inform officials during an emergency – from nuclear fallout patterns to triaging exposed victims:

- Federal Emergency Management Agency (FEMA) Planning Guide for Response to a Nuclear Detonation
- Administration for Strategic Preparedness and Response (ASPR) A Decision Makers Guide: Medical Planning and Response for a Nuclear Detonation

Community leaders should understand the strengths and weaknesses of their communities' mass casualty capabilities and formulate strategies. As with any all-hazards approach, partnerships are critical. Mass transportation may be necessary, and local emergency medical services resources may not be able to support that initiative. Using school buses to transport the walking wounded can alleviate this resource strain. Like natural disasters, utilities, internet, and other items may be lost and require evaluation. Alternate communication methods are vital, as the internet and other standard communication lines may be inoperable. Battery-powered and hand-cranked National Oceanic and Atmospheric Administration (NOAA) radios apply in this instance. Additionally, text messaging may still work even if cell phones do not.

After World War II and the resulting nuclear arms race, the federal government created a National Fallout Shelter Program that eventually dissolved once a nuclear attack was no longer a looming threat. Considering the extensive and powerful nuclear weapon arsenals, communities should reassess these shelters, which are either no longer in use or possibly repurposed. The Civil Defense Museum published the location of each identified fallout shelter, which emergency planners can use to locate fallout shelters. They could inspect the site for its viability, mark the area for the public to identify it easily as a shelter, then educate the community on protective measures. These shelters can also be multipurpose for natural disasters and do not have to be explicitly labeled for nuclear threats. In areas where these shelters currently serve alternative purposes, planners may need to seek partnerships to ensure these locations will be available during emergencies.

According to a 2017 public health study, more than half of U.S. emergency medical workers have no training to treat radiation exposure victims. The same study indicated that a third of medical professionals would be unwilling to respond to a fallout zone and treat radiation victims. Intensifying these matters in the aftermath of a potential nuclear attack, radiation exposure treatments for burn victims would likely not be available in adequate quantities. Since radioactivity is not something readily identifiable through sight, taste, smell, or feeling, Geiger counters and pocket radiation cards are another consideration for emergency planning. Symptoms of radiation exposure vary based on exposure and can range from mild nausea and vomiting to death. Supplies of potassium iodide pills can help combat the effects of radiation exposure, utilizing the Food and Drug Administration (FDA) frequently asked questions for guidance and dosage in the event of radiological emergencies. The FDA also provides Directions for Making Potassium Iodide Solution for Use During a Nuclear Emergency. When preparing, planners should consider what materials to print (including those traditionally accessed via the internet), which resources to stockpile, and where to store the items.

Low-Probability, Yet High-Impact Threat

The prospect of a nuclear war or attack on the U.S. is possible and emergency managers should account for this scenario in operational plans. Though many security experts understand nuclear effects to a certain degree, nuclear weapons can fundamentally be unpredictable. When analyzing and forecasting the impacts, though, there are too many variables. A recent study conducted by the Center for Nuclear Studies at Columbia University concluded that the U.S. is not prepared for the consequences of any nuclear disaster, whether deliberate or accidental. Also, most large-city emergency management websites do not indicate ways to respond to a radioactive catastrophe.

The traditional all-hazards approach broadly covers different possibilities, but radiological attacks also have unique communication, response, and recovery challenges. Some geographic areas are more at-risk for this type of attack, and not every location needs to invest heavily in detection equipment and specific facilities. As noted previously, some areas already have shelters in place, but their feasibility may need assessment. As with any emergency, planners and managers need to understand the potential impacts, community needs, and priorities in the different stages of the incident.

With preparedness and response guides built on NIMS and Incident Command System (ICS), managers can easily incorporate this into existing plans. Managers can then decide how to implement training and planning activities into their existing rotations. The world has seen the proliferation of nuclear weapons over the past two decades. However, the risk presented by these weapons has reemerged, with Russian president Putin warning to use them against Ukraine. Although the likelihood of an attack in the U.S. is much more remote than other hazards emergency managers and first responders face, the potential impact is catastrophic and deserves consideration.

Tanya M. Scherr, Ph.D., CFE, holds a Ph.D. in Public Policy and Administration with a healthcare emergency preparedness focus. She is an associate professor in Healthcare Administration for the University of Arizona – Global Campus and has over 28 years of healthcare experience. Along with being a Certified Fraud Examiner since 2011, she is also a former firefighter-emergency medical technician and is still actively licensed in several states. In addition, she has held several executive and board of director positions for community nonprofits that focus on the arts, women's equality, and domestic violence and sexual assault.

Daniel Scherr holds a Ph.D. in Public Policy Administration with a terrorism, mediation, and peace focus. He is an assistant professor in Criminal Justice at the University of Tennessee Southern and program coordinator for the Cybersecurity Program. In addition, he is a Certified Fraud Examiner and Army veteran with two decades of experience in homeland security and operation.

Richard Schoeberl, Ph.D., has over 25 years of experience, including the Federal Bureau of Investigation (FBI) and the National Counterterrorism Center (NCTC). He served in various positions throughout his career, ranging from a supervisory special agent at the FBI's headquarters in Washington, D.C., to acting unit chief of the International Terrorism Operations Section at the NCTC. In addition to the FBI and NCTC, he is an author of numerous articles on terrorism and security and has served as a media contributor for Fox News, CNN, PBS, NPR, Al-Jazeera Television, Al Arabiva Television, and Al Hurra. He works with the international nonprofit organization Hope for Justice, combatting human trafficking, and additionally serves as a professor of Homeland Security at The University of Tennessee Southern.

Russia calls on 'Nuclear Five' to cease WMD provocations

Source: https://english.almayadeen.net/news/politics/russia-calls-on-nuclear-five-to-cease-wmd-provocations

Nov 02 – Over the past few months, Russian President Vladimir Putin and the Kremlin have repeatedly stressed that the use of nuclear warfare would amount to nothing but massive human and material losses.

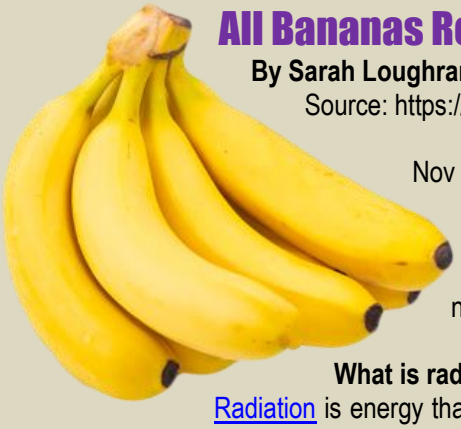
The Russian Foreign Ministry issued a statement on Wednesday urging the 'Nuclear five' states to cease provocations with the use of weapons of mass destruction (WMD).

"We urge other states of the 'nuclear five' to demonstrate in practice their willingness to work on solving this top-priority task and to give up the dangerous attempts to infringe on vital interests of each other while balancing on the brink of a direct armed conflict and encouraging provocations with weapons of mass destruction, which can lead to catastrophic consequences," the statement read.

This message is driven by Russia's postulate on the inadmissibility of nuclear warfare.

"Russia proceeds from the continued relevance of the existing arrangements and understandings in the field of cutting and limiting nuclear weapons, as well as reducing strategic risks and threat of international incidents and conflicts fraught with escalation to nuclear level. We fully reaffirm our commitment to the Joint statement of the leaders of the five nuclear-weapon states on preventing nuclear war and avoiding arms races of January 3, 2022," the Ministry stressed.

In the current geopolitical context, wherein Russia's national security happens to be the target of ongoing threats from the West, the main goal is to prevent the outbreak of a full-scale military clash among nuclear powers.
"Russia continues to advocate for a revamped, more robust architecture of international security based on ensuring predictability and global strategic stability, as well as on the principles of equal rights, indivisible security and mutual account of core interests of the parties," the Ministry concluded.
Since the start of the conflict, the US has been accusing Russia of plotting to use WMDs, but it never obtained concrete evidence to support that claim.
Over the past few months, Russian President Vladimir Putin and the Kremlin have repeatedly stressed that the use of nuclear warfare would amount to nothing but massive human and material losses.
"There can be no winners in a nuclear war and it must never be unleashed," said Putin on August 1 in an address to the Tenth Nuclear Proliferation Treaty (NPT) Review Conference.
Over the past few weeks, the Kremlin warned that based on intel it obtained from Russia's Defense Ministry, Kiev is planning to detonate a 'dirty bomb' on its territory and blame Russia for it.
On October 25, Kremlin Spokesperson Dmitry Peskov said denying Kiev's plans to create a "dirty bomb" is unacceptable considering the extent of the danger Moscow is referring to.



All Bananas Really Are Radioactive. An Expert Explains What That Means

By Sarah Loughran

Source: https://www.sciencealert.com/all-bananas-really-are-radioactive-an-expert-explains-what-that-means

Nov 04 – The simple mention of the word "radiation" often evokes fear in people. For others, it's fun to think a little exposure to radiation could turn you into the next superhero, just like the Hulk.
But is it true basically everything around us is radioactive, even the food we eat? You may have heard bananas are mildly radioactive, but what does that actually mean? And despite us not being superheroes, are human bodies also radioactive?

What is radiation?

Radiation is energy that travels from one point to another, either as waves or particles. We are exposed to radiation from various natural and artificial sources every day.
Cosmic radiation from the Sun and outer space, radiation from rocks and soil, as well as radioactivity in the air we breathe and in our food and water, are all sources of natural radiation.
Bananas are a common example of a natural radiation source. They contain high levels of potassium, and a small amount of this is radioactive. But there's no need to give up your banana smoothie – the amount of radiation is extremely small, and far less than the natural "background radiation" we are exposed to every day.
Artificial sources of radiation include medical treatments and X-rays, mobile phones and power lines. There is a common misconception that artificial sources of radiation are more dangerous than naturally occurring radiation. However, this just isn't true. There are no physical properties that make artificial radiation different or more damaging than natural radiation. The harmful effects are related to dose, and not where the exposure comes from.

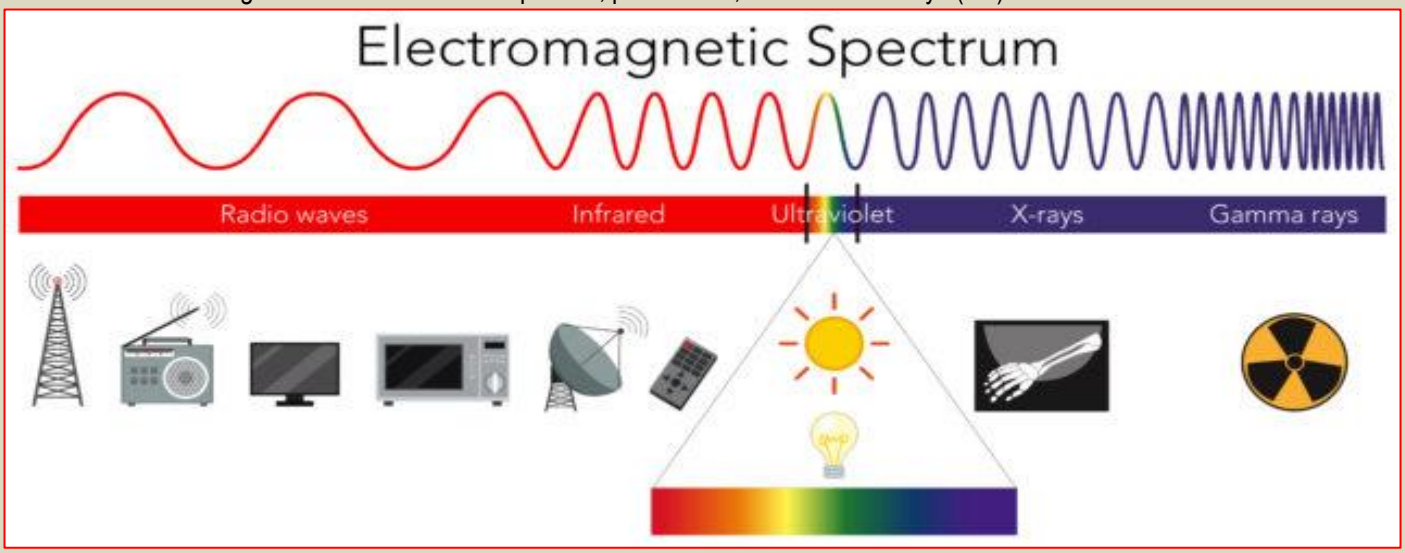
What is the difference between radiation and radioactivity?

The words "radiation" and "radioactivity" are often used interchangeably. Although the two are related, they are not quite the same thing.
Radioactivity refers to an unstable atom undergoing radioactive decay. Energy is released in the form of radiation as the atom tries to reach stability, or become non-radioactive.
The radioactivity of a material describes the rate at which it decays, and the process(es) by which it decays. So radioactivity can be thought of as the process by which elements and materials try to become stable, and radiation as the energy released as a result of this process.

Ionizing and non-ionizing radiation

Depending on the level of energy, radiation can be classified into two types.
Ionizing radiation has enough energy to remove an electron from an atom, which can change the chemical composition of a material. Examples of ionizing radiation include X-rays and radon (a radioactive gas found in rocks and soil).

Non-ionizing radiation has less energy but can still excite molecules and atoms, which causes them to vibrate faster. Common sources of non-ionizing radiation include mobile phones, power lines, and ultraviolet rays (UV) from the Sun.



The electromagnetic spectrum includes all types of electromagnetic radiation. (brgfx/Shutterstock)

Is all radiation dangerous? Not really

Radiation is not always dangerous – it depends on the type, the strength, and how long you are exposed to it.

As a general rule, the higher the energy level of the radiation, the more likely it is to cause harm. For example, we know that overexposure to *ionizing* radiation – say, from naturally occurring radon gas – can damage human tissues and DNA.

We also know that *non-ionizing* radiation, such as the UV rays from the Sun, can be harmful if the person is exposed to sufficiently high intensity levels, causing adverse health effects such as burns, cancer, or blindness.

Importantly, because these dangers are well known and understood, they can be protected against. International and national expert bodies provide guidelines to ensure the safety and radiation protection of people and the environment.

For ionizing radiation, this means keeping doses above the natural background radiation as low as reasonably achievable – for example, only using medical imaging on the part of the body required, keeping the dose low, and retaining copies of images to avoid repeat exams.

For non-ionizing radiation, it means keeping exposure below safety limits. For example, telecommunications equipment uses radiofrequency non-ionizing radiation and must operate within these safety limits.

Additionally, in the case of UV radiation from the Sun, we know to protect against exposure using sunscreen and clothing when levels reach 3 and above on the UV index.

Radiation in medicine

While there are clear risks involved when it comes to radiation exposure, it's also important to recognize the benefits. One common example of this is the use of radiation in modern medicine.

Medical imaging uses ionizing radiation techniques, such as X-rays and CT scans, as well as non-ionizing radiation techniques, such as ultrasound and magnetic resonance imaging (MRI).

These types of medical imaging techniques allow doctors to see what's happening inside the body and often lead to earlier and less invasive diagnoses. Medical imaging can also help to rule out serious illness.

Radiation can also help treat certain conditions – it can kill cancerous tissue, shrink a tumor or even be used to reduce pain.

So are our bodies also radioactive? The answer is yes, like everything around us, we are also a little bit radioactive. But this is not something we need to be worried about.

Our bodies were built to handle small amounts of radiation – that's why there is no danger from the amounts we are exposed to in our normal daily lives. Just don't expect this radiation to turn you into a superhero any time soon, because that definitely is science fiction.

Sarah Loughran, is Director of Radiation Research and Advice (ARPANSA), and Adjunct Associate Professor (UOW) @ the University of Wollongong.

Nuclear Weapons Use Will 'End' Kim Regime, US, South Korea Say

By Carla Babb

Source: https://www.homelandsecuritynewswire.com/dr20221105-nuclear-weapons-use-will-end-kim-regime-us-south-korea-say

Nov 05 – The United States and South Korean defense leaders are warning Pyongyang that any use of nuclear weapons by North Korean leader Kim Jong Un would be the "end" of his regime.

"[U.S. Defense] Secretary [Lloyd] Austin and I affirmed that any nuclear attack by the DPRK, including the use of tactical nuclear weapons, is unacceptable and will result in the end of the Kim Jong Un regime by the overwhelming and decisive response of the alliance," South Korean Minister of National Defense Lee Jong-sup told reporters Thursday at the Pentagon.

In a show of solidarity, the two defense leaders also announced that they were extending the ongoing joint military exercise Vigilant Storm beyond Friday when it was set to end.

"I've consulted with Minister Lee, and we've decided to extend Vigilant Storm, which is our long-scheduled combined training exercise, to further bolster our readiness and interoperability," Austin said during the joint press conference.

About 240 aircraft have participated in the exercise, along with thousands of U.S. and South Korean troops.

Pentagon spokesman Lieutenant Colonel Martin Meiners told VOA the air exercise would be extended to Saturday.

"We remain in close coordination with our ROK ally on any additional changes and the security environment on the Korean Peninsula. Our commitment to the defense of the ROK is ironclad," Meiners said, abbreviating South Korea's official name, the Republic of Korea.

North Korea continued its unprecedented pace of missile launches Thursday, firing six missiles, including an intercontinental ballistic missile (ICBM). It fired more than 20 missiles a day earlier.

A South Korean government source told CNN the ICBM launch Thursday failed. VOA has not been able to independently confirm the reporting.

The North Korean leader called the decision to extend Vigilant Storm a "terrible mistake."

"What they're in effect doing is showing Kim Jong Un that his strategy is failing. However, ironically, his failed strategy is also what is making him more desperate," David Maxwell, an Army veteran who was stationed in Japan and South Korea and is an analyst with the Foundation for the Defense of Democracies, told VOA.

South Korean and U.S. officials have for months warned that North Korea is in the final stages of preparations for what would be its seventh nuclear test since 2006, and its first since 2017. North Korea issued on Tuesday what was perceived as a veiled threat to use nuclear weapons.

Critics of U.S. policy on the peninsula have said the North's nuclear provocations, coupled with the recent missile launches, could be signs that U.S. and South Korean military muscle might not stop Pyongyang from trying to attack Seoul.

Austin disagrees. "I believe that they are deterred" from attacking South Korea, he said Thursday, "and I also believe they are deterred from employing a nuclear device."

Carla Babb is a *VOA* News Pentagon correspondent. *VOA*'s **Jeff Seldin** contributed to this report.

EDITOR'S COMMENT: Silly speculations! Kim Jong Un is a known psychopath who does not care about the people of his country. He will attack sooner or later, and he will survive even if he has to hide in the center of Earth. To write that the US and South Korea will end the regime is just a summer dream that at least South Korea will not survive to enjoy. So, better look for Plan B and C instead of Plan "Big Mouth".

Stratcom Commander Admiral Richard Strikes Again, Sees Ukraine as a 'Warmup' for the Big One—China

Source: https://larouchepub.com/pr/2022/20221105_stratcom.html

Nov 05 – The editorial board of the Wall Street Journal heartily endorses the latest, enthusiastic **"let's all gear up for nuclear war!"** cheerleading uttered by the commander of the U.S. Strategic Command, Adm. Charles Richard. In the middle of a strategic crisis now more dangerous than that of the Cuban Missile Crisis, Richard argued in his Nov. 3 speech to the Naval Submarine League's 2022 Annual Symposium & Industry Update, that the United States today needs to mobilize to produce new nuclear warfare capabilities the way "we got to the Moon by 1969."

As if Kennedy's mobilization of the nation to take the first steps in leaving Earth and start exploring our Solar System could be equated with mobilizing to better carry out "nuclear coercion" against Russia and China!

According to the Defense Department report on his speech, in Richard's view:

"This Ukraine crisis that we're in right now, this is just the warmup. The big one is coming. And it isn't going to be very long before we're going to get tested in ways that we haven't been tested [for] a long time. We have to do some rapid, fundamental changes in the way we approach the defense of this nation...

"As I assess our level of deterrence against China, the ship is slowly sinking. It is sinking slowly, but it is sinking, as fundamentally they are putting capability in the field faster than we are. As those curves keep going, it isn't going to matter how good our [operating plan] is or how good our commanders are, or how good our forces are—we're not going to have enough of them. And that is a very near-term problem."

Wall Street's journal highlighted his use of the word "near-term" in its editorial the next day, pointing to its message that "this is a more urgent vulnerability than most of the political class cares to recognize." The editorial board lobbied for building three Virginia-class fast-attack submarines a year, as a good start, "educating the public" about the need for a war production mobilization.

To get an idea of how he "thinks" (if it can be called "thinking"), Richard hearkened back to the days when the U.S. military "used to know how to move fast," in getting maintenance problems fixed and new construction going. He cited the example of the development of the AGM-28 Hound Dog nuclear cruise missile by 1960 as how things "used to be," enthusiastically describing that nuclear weapon as "so cool."

EDITOR'S COMMENT: Dangerous obsessed people in critical posts! He thinks that he will survive or that he will live 150 years on a burned planet. Not a moment to speak about negotiations, control of WMDs, and peace …

Choosing the right personal electronic dosimeter

By Adam Golightly

Source: https://cbnw.co.uk/choosing-the-right-personal-electronic-dosimeter/

Nov 03 – With more than 20 years' industry experience, Market Manager at Tracerco, Adam Golightly, explains that the key to protecting personnel, assets and the wider community is to ensure that the radiation monitoring technology selected is easy to deploy, and simple to both operate and manage by end users.

As radiation will always pose a major threat to human lives, choosing the most effective and robust radiation monitors is of the upmost importance. Personal Electronic Dosimeters (PEDs) – designed to monitor exposure of radiation and provide alarm warnings if present – play a prevalent role in critical sectors such as emergency services, military, nuclear, oil and gas, as well as medical and life sciences. Tracerco is recognised as one of the world's leading industrial technology companies specialising in a wide range of radiation monitoring equipment. One of the company's flagship product ranges – Personal Electronic Dosimeters – has been adopted by many clients across the globe operating in a wide range of critical industries.
With the capability to detect dose rate ranges of up to 1Sv/h, the handheld device, commonly worn on the chest pocket, a belt or lanyard, has an energy range of up to 3 MeV. An intrinsically safe version for use in hazardous areas is also available.
Tracerco is in a unique position as they are both a manufacturer and end user of their radiation monitoring equipment, so the design team receives firsthand feedback from engineers operating in the field. The technology has also been adapted based on extensive research with end users, such as first responders in emergency services, to ensure all needs are met to offer optimum operational functionality.

Designed with the end user in mind
The Tracerco™ PEDs have been designed to be the easiest – to both use and understand – personal radiation monitors available on the market. Everything on the device has been designed with the user in mind.
"To the best of our knowledge, our equipment has the largest Graphical User Interface (GUI) on the market which means that handlers can easily see information that appears on the screen of the device. Their co-workers in the field can also easily read alerts while in action." When in use, if a radiation threat is detected the intuitive device will sound an alarm and a textual message will appear on the large screen, prompting users of exactly how they should respond according to the level of risk present. "Workers may only use these devices infrequently. As such, it is important that they are as easy as possible to use – particularly when they are designed for use in situations presenting grave danger. And our device offers exactly that, requiring very little technical input."

Robust design with intuitive software
Designed to last, the PEDs have strong weather-, shock- and drop-proof housings and hold a serial non-volatile ten-year data retention. The Tracerco™ PEDs have over ten language options and are configurable with the company's specially developed DoseVision™ software.
Easily configured, the devices are linked to the software which enables set-up, data visualisation and for messages to be tailored in accordance with the industry, country standards and individual company procedures. Easy to manage, the software provides access to seamless and accurate dose records, which can be used for comprehensive incident reporting and further investigations.

Proven track record
Launching the PEDs in 2011, the company's technology has been widely adopted by major and high-profile emergency service providers across the globe and has been deployed across other critical industries. The equipment can be found in 50+ countries including the US, Italy, France, the Middle East, Australia and South Korea. Tracerco has developed a reputation for their ability to be agile and adapt to their clients' requirements.
Clients have reported that they find added value in working with a team that listens to their needs and, as such, Tracerco adapts their technology to suit, something which other players do not provide.

Next generation of radiation equipment
Innovation underpins everything Tracerco does. The business is fully committed to pushing the boundaries of knowledge and delivering world-class products and services. Tracerco's research and development team is continually adding value to its range of radiation monitoring equipment – taking into consideration technological and software advances, as well as market requirements to allow companies to operate more safely.

Full commitment
This commitment to bringing the latest technology to market is demonstrated following the company collaborating with UK-based training simulator designer, Argon Electronics, to introduce the PED+ SIM – a highly realistic training simulator – allowing training scenarios to be implemented in complete safety without the burden of using radiological sources.
Tracerco are absolutely dedicated to continue being in the forefront of innovation and bring to market solutions that are simple and easy to use, while offering invaluable real-time data. They pride themselves on understanding the real needs and challenges faced by their users in order to enhance their technology, with the greatest engineering minds collaborating to develop best-in-class solutions that are continually being advanced.

How Switzerland is preparing for nuclear escalation

By Sara Ibrahim and Sibilla Bondolfi

Source: https://www.swissinfo.ch/eng/how-switzerland-is-preparing-for-nuclear-escalation/48024472

Nov 09 – As the war in Ukraine escalates, Russian President Vladimir Putin has threatened to use his nuclear arsenal, fuelling fears across Europe. For its part, Switzerland is well prepared, but not even Swiss bunkers will be enough in the event of a large-scale nuclear war.

This content was published on November 9, 2022 - 09:00 November 9, 2022 - 09:00

The war in Ukraine continues unabated, with no end in sight. The Kremlin has responded harshly to the advance of Ukrainian troops into Russian-occupied territories, bombing cities and strategic infrastructure. Putin has repeatedly threatened the use of nuclear weapons to "defend the territorial integrity of our homeland", including Ukrainian territories he illegally annexed.

Most analysts agree that the risk of a Russian nuclear attack in Ukraine remains low. Besides not guaranteeing the achievement of the Kremlin's military objectives, the use of nuclear weapons could trigger a NATO response and would isolate Russia internationally. However, Moscow might decide to use such weapons – most likely smaller "tactical nuclear weapons" with low destructive power – as a last resort to stop the Ukrainian counteroffensive.

The danger of nuclear weapon use is therefore constantly increasing, says Stephen Herzog, a nuclear weapons expert at the Centre for Security Studies (CSS) at the federal technology institute ETH Zurich. "The effects of a nuclear war would be devastating for Ukraine, Europe and beyond. It is necessary to plan for the scenarios and be ready," he says.

How prepared is Switzerland?

Switzerland appears to be relatively well prepared for the consequences of a nuclear event in Ukraine. The government has improved its protection against nuclear, biological and chemical (NBC) threats and hazards since the 2011 accident at the Fukushima nuclear power plant in Japan.

"Over the past ten years Switzerland has reinforced its level of nuclear and radiological protection, which was already high, and is in a good position," says Anne Eckhardt, a biophysicist and chair of the NBC Commission of the Federal Office for Civil Protection (FOCP). Eckhardt also claims that Switzerland would have the capacity to provide medical assistance to people from areas affected by radiological accidents.

In a 2019 reportExternal link, the NBC Commission listed quality infrastructure as a particular Swiss strength. This includes the Spiez Laboratory, a national centre for the analysis of NBC threats.

But an international comparison shows that the network of bomb shelters scattered throughout the country, capable of accommodating the entire population in case of need, is Switzerland's real asset. The country has more than 360,000 of them, a unique case in Europe and the world.

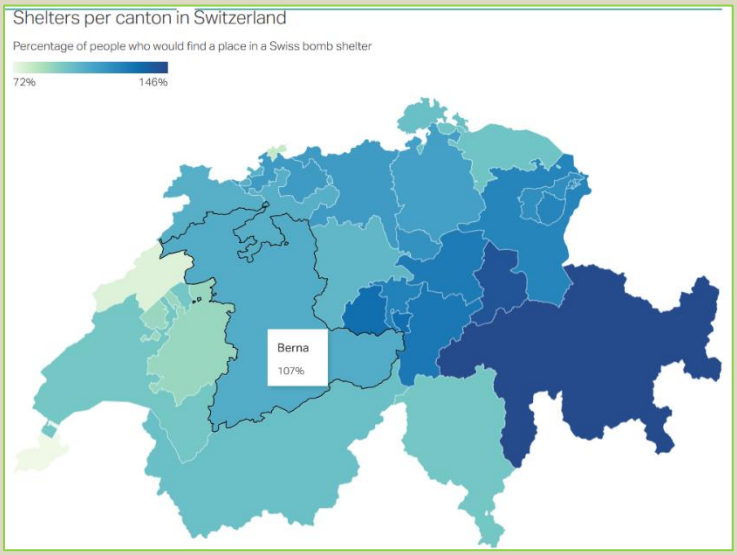
A familiar sight for all Swiss: the entrance to a nuclear shelter

"Although many European countries are developing or have civil or military nuclear response plans, they simply do not have Switzerland's shelter infrastructure," Herzog says. In countries like Romania and Slovakia that are closer to Ukraine and thus more exposed to the consequences of a nuclear war in the region, statistics on bomb shelters often include basements and garages. But these would be insufficient to protect the population in the event of a major nuclear accident, he explains. Sweden and Finland, on the other hand, could compete with Switzerland in terms of the number of shelters, but the coverage is significantly lower than in Switzerland.

A woman walks inside an access gallery of the Salina Turda, a former salt mine turned touristic attraction, now listed by emergency authorities as a potential civil defense shelter in Turda, central Romania. (The Associated Press)

Swiss model is not perfect

However, Switzerland could also do more. Not all cantons comply with the federal obligationExternal link to have a shelter within a 30-minute walk for every inhabitant: the worst-off are Geneva, Basel City and Neuchâtel. A recent FOCP report also pointed out the poor state of maintenance of the civil defence bunkers, noting 230 deficiencies in Swiss NBC protection.



The most serious deficiencies are related to both the inadequate division of tasks between the cantons and the federal government in the event of an emergency, and this division within the federal administration itself. The report also pointed out a lack of protective equipment.

◀ This is an interactive map you can click on

All this is aggravated by a shortage of NBC specialists who can promptly assess the situation and advise on the most appropriate measures to be taken. According to Eckhardt, with the abandonment of nuclear power generation, important skills are also being lost: many people with nuclear experience are retiring and it is difficult to replace them.

These shortages highlight another complication: very fast technological and scientific progress poses new challenges and threats that are more complex to predict and deal with than decades ago. Russia, for

instance, has modernised its nuclear arsenal, which now includes a wide range of tactical weapons (around 2,000), from nuclear artillery shells to half-tonne warheads.
"We have to take into account that ultimately no one is perfectly prepared, not even in Switzerland," says Eckhardt.

What would the consequences be?
So-called "tactical" nuclear weapons range in power from less than one kilotonne to 50 kilotonnes (the bomb dropped on Hiroshima in the Second World War had a power of 15 kilotonnes). If Russia were to use them, the consequences could vary greatly.
According to Andreas Bucher of the FOCP's communication office, the use of tactical nuclear weapons in Ukraine would not endanger the health of the Swiss population. Eckhardt agrees.
The radiation released by these weapons would probably be lower than what was produced by the Hiroshima bomb or the Chernobyl explosion. Specialist Walter Rüegg explained in an interview with the *Neue Zürcher Zeitung* newspaper that this is because tactical nuclear weapons contain little fissile material.
The FOCP therefore does not expect that it will be necessary to use the shelters if a nuclear weapon were to be used by Russia. At most, Bucher's office says, there could be bans on hunting, grazing and the consumption of certain foods. The government does not even envisage distributing iodine tablets, as they do not protect against all radioactive elements, but are mainly used when a serious accident occurs at a nuclear plant. (All Swiss residents living within 50 kilometres of a nuclear power plant receive iodine tablets from the government in case of an accident).
The explosion of a nuclear power plant in Ukraine worries the FOCP the most, as it would have far more critical radiation consequences for Switzerland than the use of a nuclear bomb.

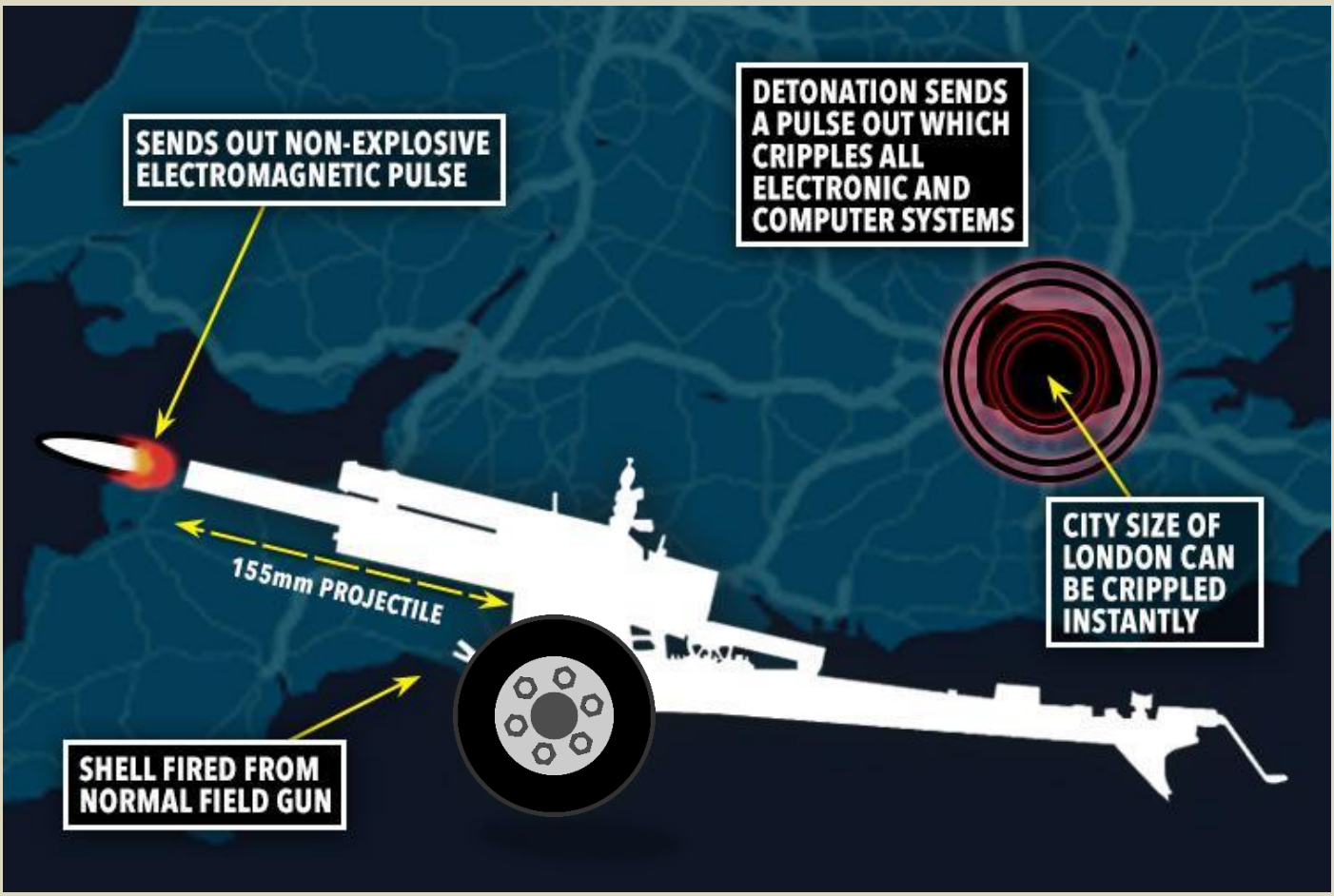
Prevention is better than cure
But if a bomb were to be used, there are many variables that would determine the degree of fallout from the event. These include weather conditions, the explosive yield of the weapons and the altitude of the detonations. Some scenarios indicate that the distance to the war zone and the network of shelters would protect Switzerland from radioactivity. "But in other scenarios, the Swiss population and agriculture could be affected," Herzog says. Moreover, if NATO member states bordering Switzerland (Germany, France, Italy) were to be directly affected by a bombing, the risks for the Swiss population would increase dramatically. Although this hypothesis remains highly unlikely, according to Herzog, the authorities must increase emergency preparedness at the national level.
Switzerland is already doing this. At the end of September, the government set up a federal strategic management staff to ensure a rapid response in case of a nuclear event. Measures like this are important but they are not enough, believes Wilfred Wan, an expert on weapons of mass destruction at the Stockholm International Peace Research Institute (SIPRI). "Even if some countries like Switzerland have bomb shelters or national emergency procedures, any state would be overwhelmed by the devastating consequences of nuclear weapons," says Wan. That is why it is important to talk about prevention rather than reaction, he says. A United Nations study indicated that neither individual states nor the international humanitarian system would be able to react promptly and rapidly to the wide range of possible effects related to the use of nuclear weapons. "Not to mention the potential impact on the environment and climate, agriculture, migration and other direct and indirect effects," Wan adds. Therefore, prevention of such an event, the UN report states, remains the only truly effective humanitarian and public health approach.

Sara Ibrahim writes about the impact of new technologies on society: are we aware of the revolution in progress and its consequences?
Sibilla Bondolfi studied law, then worked as a journalist at the newspapers NZZ and Zürcher Oberländer, and the magazines K-Tipp, Saldo, and Plädoyer.

Russia's EMP strike can render Ukraine's electronic devices, military infra useless: Report

Source: https://www.wionews.com/world/russias-emp-strike-can-render-ukraines-electronic-devices-useless-report-533253

Nov 11 – Russia's Spetsnaz special forces in Ukraine are in possession of a weapon that can knock out all electronic devices within a radius of six miles or more, said The Times, citing experts. The report added that Russian forces may be ready to use it as frustration over recent battlefield defeats mounts in their camp.
The electromagnetic pulse, or EMP, strike creates a mighty pulse of energy which short-circuits unprotected electronic devices like computers, satellites, radar receivers, radios, generators, and even traffic lights and can render Ukraine's military and civilian infrastructure useless at a stroke.



If Russia decides to launch such a strike, it may disable Ukraine's civilian infrastructure just when winter months are approaching. The electromagnetic strike may deal a hammer blow to Ukrainian forces' ability to defend the country.

Russia invaded Ukraine on February 24 this year. After initial months of sustained battlefield victories, the Russian forces have had to retreat in face of Ukrainian counter-offensive. Ukrainian forces have been able to recapture thousands of square miles of land.

An electromagnetic strike is carried out with the use of low-yield nuclear detonation in space. This creates an electromagnetic pulse that causes short-circuit in electronic devices. The radius of the site depends upon altitude of the blast. Higher the altitude, more is the damage radius.

On Friday, Kremlin said that though Russian forces had withdrawn from Ukrainian city of Kherson, it did not change the status of the region. Russia has previously declared that Kherson is part of the country.

Would Putin's Nuclear Bunker in Ural Mountains Save Him from Armageddon?

Source: https://www.newsweek.com/russia-nuclear-bunker-urals-putin-protection-1758555

Nov 10 – Mountain ranges are considered one of the best places to shelter from a nuclear attack. Several countries have a military refuge buried deep underneath mountains, including the U.S., which has Cheyenne Mountain Complex and Raven Rock Mountain Complex in Colorado and Pennsylvania, respectively.

Russian leader Vladimir Putin is also rumored to have a bunker deep within the Ural mountain range in Russia, underneath Mount Yamantau, as well as possibly several others in unknown locations. The Ural mountains are a long stretch of mountains spanning Russia from north to south, ending just north of the border with Kazakhstan. Mount Yamantau's military infrastructure could be seen being constructed in satellite images in 1995, but Russia refused to elaborate on what they were building when questioned by the U.S.

"It would not be surprising if Russia did have a facility like this, just as the U.S. does, and mountains are a logical place to put them," Seth Baum, executive director of the Global Catastrophic Risk Institute, told *Newsweek*.

The entrance to the Mount Yamantau complex is ringed in red (Image: SG)

With Putin's rhetoric towards nuclear war in response to the Ukraine conflict, would having a place to hide be one of the most valuable resources of a world leader?

"In the event of an intercontinental nuclear war—while mountainous terrain would offer limited 'blast protection,' not even a mountain range would save the Russian president from the long-term aftermath of nuclear destruction. There's no hiding from the planetary and ecological Armageddon that large-scale nuclear conflict would cause," Thom Davies, an associate professor in geography at the University of Nottingham in the U.K., told *Newsweek*.

Mountain ranges in general are considered good locations to build nuclear refuges. The high slopes and low valleys of a mountainous region aids in absorbing the heat and light from the fireball of a nuclear blast, as well as the initial radiation. Additionally, the ground itself will also absorb the radiation and blast, so being underground is preferable: radiation can be decreased by a factor of 10 in basements as compared to levels in above-ground floors. In the aftermath, however, hiding beneath a mountain cannot last forever, and the outside world may be unrecognizable and uninhabitable depending on the scale of the nuclear war.

The Cheyenne Mountain Complex, for example, is built beneath 2,000 feet of granite, with blast doors capable of withstanding a 30-megaton nuclear explosion as close as 1.2 miles. The base formerly hosted the United States Space Command and the North American Aerospace Defense Command, and is now under the jurisdiction of the U.S. Space Force.

However, there are some other places in the world that would be better to hide in, in terms of protection.

"The safest place in the world in the event of full-scale nuclear war would be isolated geographies like Antarctica or Pacific Islands like Easter Island, but even here - you can't outrun a so-called "nuclear winter"," Davies said.

In fact, during the Cold War, a huge U.S. nuclear base was secretly buried beneath Greenland, far into the Arctic Circle, as part of the so-called Project Iceworm.

However, Russia likely had laid the groundwork of bunkers and refuges in the Urals dating back to the Cold War and WWII, Davies said, making them a logical place for Putin's go-to shelter.

"The Russian president has access to a huge infrastructure of nuclear bunkers and military facilities dating back to the Cold War. It is likely that the Ural Mountains are one such place—and these mountains in particular have long played a strategic geopolitical role for Russia, stretching back to World War 2 when

industry was relocated East of the Urals from western parts of the Soviet Union during Operation Barbarossa. In fact, the region of the Urals was also host to the 1957 Kyshtym disaster, which was the world's third worst nuclear accident (after Fukushima and Chernobyl)," he said.
The Kyshtym disaster occurred on September 29, 1957, at a plutonium production site for nuclear weapons named Mayak. An underground tank of liquid nuclear waste exploded, contaminating 20,000 square miles of land inhabited by at least 270,000 people. The event was covered up by the Soviet government, with few people even within Russia knowing about the disaster until the 1980s.

●▶ **Read also: What's Going On in The Yamantau Mountain Complex? | Video1 | Video2**
Underground Facilities: Intelligence and Targeting Issues

Nuclear Notebook: The long view—Strategic arms control after the New START Treaty

By Jessica Rogers, Matt Korda, and Hans M. Kristensen
Source: https://thebulletin.org/premium/2022-11/nuclear-notebook-the-long-view-strategic-arms-control-after-the-new-start-treaty/

The Nuclear Notebook is researched and written by Hans M. Kristensen, director of the Nuclear Information Project with the Federation of American Scientists (FAS), and Matt Korda, a senior research associate with the project. This edition features unique contributions from FAS Impact Fellow and international lawyer Jessica Rogers. The Nuclear Notebook column has been published in the Bulletin of the Atomic Scientists *since 1987. This issue examines the topic of strategic arms control after the expiration of the New START Treaty in February 2026. We explore potential avenues for constructive engagement between the United States and Russia and consider how to optimally balance arms control options that are legally possible and politically feasible. This article is freely available in PDF format in the* Bulletin of the Atomic Scientists' *digital magazine (published by Taylor & Francis) at this link. To cite this article, please use the following citation, adapted to the appropriate citation style: Hans M. Kristensen & Matt Korda, The long view: Strategic arms control after the New START Treaty, 2022,* Bulletin of the Atomic Scientists*, 78:6, 346-367, DOI: https://doi.org/10.1080/00963402.2022.2133287*

Nov 09 – It is no secret that arms control is becoming a lost art. While the 1970s, 1980s, and 1990s were filled with strategic arms control talks, only one treaty limiting nuclear arsenals has entered into force over the past two decades: New START (the New Strategic Arms Reduction Treaty). Notwithstanding the innovations in its verification regime, the treaty relied heavily on the existing principles of the original START Treaty, together with many of the core players' experiences negotiating and ratifying it 20 years earlier.
Since then, however, Russia's Putin era and, with it, the growing distrust between Russia and the United States, as well as the retirement of Cold War and post-Cold War arms control experts, have stalled any progress. Other treaties such as the 1987 Intermediate-Range Nuclear Forces (INF Treaty) have been abandoned, and other nuclear-armed states remain outside arms limitation agreements. Despite new technologies and a new security architecture requiring more thought than ever before, substantive proposals and good faith negotiations have been replaced by empty talking points. Additionally, in recent years both the United States and Russia have engaged in unconstructive blaming and shaming efforts, which have further soured the arms control environment and lowered the political will for pursuing negotiations in good faith.
Unless both Russia and the United States soon advance proportional efforts to overcome these forces, it is only prudent to expect that February 4, 2026 will be the last day of bilateral strategic arms control (Albertson 2021, 78). As a first step, the United States and Russia, on August 25, 2022, submitted a statement to the Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons (NPT Review Conference) committing to "pursue negotiations in good faith on a successor framework to New START before its expiration in 2026, in order to achieve deeper, irreversible, and verifiable reductions in their nuclear arsenals" (2020 Review Conference of the Parties to the Treaty on the Non-Proliferation of Nuclear Weapons 2022). But that commitment so far appears to be blocked by the dispute over Russia's war in Ukraine.

Treaty history

1972/1979: Strategic Arms Limitation Talks (SALT I and II)

Nuclear arms limitation treaties emerged during a period of intense buildup of US and Soviet strategic nuclear forces. In the late 1960s, the United States realized that the Soviet Union was building up its intercontinental ballistic missile (ICBM) forces to reach parity with the United States and had also begun to construct a limited anti-ballistic missile (ABM) defense system around Moscow. Concerned that Russia might eventually be able to launch a first strike and then block US retaliation, President Lyndon Johnson

called for strategic arms limitations talks (SALT). The hope was that US-Soviet relations could be stabilized through limits on the development of both offensive and defensive strategic systems (US Department of State 2022).

By 1972, the Soviets were convinced that defensive systems had limitations, allowing the 1972 Anti-Ballistic Missile (ABM) Treaty and SALT I to be negotiated and enter into force. SALT I was considered an interim agreement that consisted of a simple freeze, not yet including on-site inspections. Its verification relied on national technical means, referring to intelligence satellites and related capabilities. However, the term was officially left undefined to protect intelligence methods and avoid offending Soviet sensibilities (Gottemoeller 2021, 2; Aftergood 2019).

In 1979, the United States and the Soviet Union completed the negotiation of SALT II which set a limit of 2,400 strategic nuclear delivery vehicles (including ICBMs, submarine-launched ballistic missiles (SLBMs), and heavy bombers), banned the construction of new ICBMs, and limited the number of multiple independently-targetable reentry vehicles (MIRVs) to 1,320. However, the treaty never entered into force due to the Soviet invasion of Afghanistan as well as some US senators' criticisms of the Soviet Union's crackdown on internal dissent, the Soviets' increasingly interventionist foreign policies, the treaty's verification process, and SALT II's failure to sufficiently limit Soviet MIRV technology that would allow missiles to carry multiple warheads (US Department of State n.d.; Cameron 2022). Nonetheless, both sides agreed to voluntarily observe the SALT II-negotiated limits in subsequent years (US Department of State n.d.).

As former US Secretary of Defense and former Director of the Central Intelligence Agency Robert Gates noted, the process itself was likely the most useful part of these talks: "For the first time, the two sides sat down and began a dialogue about their nuclear weapons and, implicitly, their nuclear strategies. Military and civilian leaders on both sides were able to take the measure of one another and, at the same time, engage their political leaders in an unprecedented way in learning about the balance of terror" (Gates 1996, 45).

1991: Strategic Arms Reduction Treaty (START)

Partially due to the further development of MIRV technology on both sides, the Americans and Soviets realized that strategic systems had to be reduced to prevent either side's out-deployment in warhead numbers. This realization led to the 1980s Strategic Arms Reduction Talks (START), which eventually became the first ratified treaty that required US and Russian reductions—rather than a mere freeze—of strategic nuclear weapons. The START Treaty, signed in 1991 with entry into force three years later, limited both countries to 1,600 strategic nuclear delivery vehicles and 6,000 warheads attributed to ICBMs, SLBMs, and heavy bombers, and included more detailed sub-limits. Once Russia believed that the benefits of on-site inspections outweighed their concerns over giving the United States reciprocal access, nothing was standing in the way of a verifiable arms control treaty to create more predictability. The detailed verification regime of START, including databases, notifications, and on-site inspections, allowed both sides to better calculate necessary deterrence investments while preventing an arms race (Gottemoeller 2021, 3).

The United States and Russia subsequently negotiated and signed START II in 1993, committing to additional reductions down to 3,000 to 3,500 strategic nuclear warheads on ICBMs, SLBMs, and heavy bombers by the end of 2007. Importantly, the treaty included a ban on multiple warheads on ICBMs. While the treaty never entered into force despite a decade-long bilateral effort, it strongly shaped the US Strategic Command's long-term force structure planning (Kristensen 2001, 12).

2002: the Moscow Treaty (SORT)

Under the Strategic Offensive Reductions Treaty (SORT), also called the Moscow Treaty, Russia and the United States agreed in 2002 to further reduce their nuclear arsenals to between 1,700 and 2,200 operationally deployed strategic warheads each by December 31, 2012—a nearly two-third reduction from the START I limits. While progressive in its numerical limits, SORT was a very simple treaty, with its text barely exceeding one page and not providing any separate verification measures. Instead, Russia and the United States decided they would continue to rely on START to provide verification until its expiration in December 2009 (US Department of State 2002).

2010: the New START Treaty

Finally, the New START Treaty (officially the "Treaty between the United States of America and the Russian Federation on Measures for the Further Reduction and Limitation of Strategic Offensive Arms") succeeded in further limiting the US- and Russian- deployed long-range nuclear forces down to 1,550 warheads and 700 delivery vehicles—the lowest in over 60 years. For that purpose, New START for the first time counted the actual number of warheads found on deployed ICBMs and SLBMs, rather than mathematically calculating numbers based on missile tests as in START. Since bombers do not carry nuclear weapons under normal circumstances, each deployed heavy bomber was attributed one warhead by default to make bombers accountable under the treaty (US Department of State 2010). Therefore, the warheads attributed to bombers do not reflect actual warhead loads—unlike for missiles. Delivery vehicles under New START encompass deployed ICBMs, SLBMs, and heavy bombers equipped to carry nuclear armaments. It was not until far into the negotiations that Russia and the United States determined these numbers, with Russia originally asking for more warheads while the United States requested more delivery vehicles to protect its advantage in that area (Gottemoeller 2021, 34).

In addition to the further reduction of these limits, New START created an entirely new limit of 800 deployed and non-deployed launchers. Although this concept was originally introduced by Russia, the United States later embraced the idea as it would, first, prevent Russia from building and storing unlimited numbers of mobile missile launchers since these would count toward the non-deployed limit, and, second, provide the United States with the flexibility to convert bombers to conventional use and overhaul submarines since these would not count under the deployed limits during those processes (Gottemoeller 2021, 83, 112).

Another aspect of New START's flexibility is the preserved "freedom to mix," where each side can decide the composition and structure of its strategic offensive forces if it stays below the total limits. Russia, being a great land power, could continue to rely primarily on ICBMs. On the contrary, the United States, being a sea power, was able to keep more SLBMs than Russia (Gottemoeller 2021, 32). The mix chosen by the United States included no more than 400 deployed ICBMs, no more than 240 deployed SLBMs, and no more than 60 deployed heavy bombers. Beyond an additional 100 non-deployed launchers, a significant number of excess launchers had to be denuclearized or destroyed. Because Russia had significantly fewer launchers than the United States, it did not have to reduce its deployed force. Most importantly, however, the New START Treaty created what has often been referred to as the "gold standard" of verification: procedures governing the conversion and elimination of strategic offensive arms, the establishment and operation of a database of treaty-required information, transparency measures, a commitment not to interfere with national technical means of verification, the exchange of telemetric information, the conduct of on-site inspection activities, and the operation of the Bilateral Consultative Commission (BCC) (US Department of State 2022). Innovations in New START's verification regime managed to address both sides' concerns about the old START treaty's verification regime while better balancing information and burden—a core military interest on both sides. First, it streamlined START's more burdensome verification regime into two types of verifications: one for deployed systems (Type One) and the other for non-deployed systems (Type Two). They largely encompassed the aspects of previously separate types of inspections—resulting in slightly longer but much less frequent (up to ten Type One and up to eight Type Two) short-notice on-site inspections annually. This solution fulfilled both militaries' interest in avoiding too frequent or overly intrusive inspections that could disrupt operational tempo for days (Gottemoeller 2021, 50). Second, it enabled real-time tracking of each other's forces by introducing unique identifying numbers for launchers and delivery vehicles, utilizing the existing serial numbers each country already used to track and account for its weapons. This gave inspectors a clear idea of the weapons they needed to find at each site (Gottemoeller 2021, 52). Third, New START addressed rising cost and accuracy concerns about the conversion and elimination of certain weapon systems. To allow satellites to confirm eliminations, for instance, it determined space and time requirements for displaying eliminated missiles and other treaty accountable items and established the right to request reciprocal inspections of such. To address US concerns about overcounting delivery vehicles under the previous treaty, New START also introduced simplified measures to confirm US conversion and elimination processes, particularly the conversion of all B-1 bombers to conventional-only platforms, the conversion of submarine tubes, and the total elimination of B-52 bombers (Gottemoeller 2021, 121–122). In the end, while Russia had originally urged for a simpler treaty like SORT, it has praised New START as the "gold standard" for verification (Alexander and Ferraro 2010). The treaty entered into force on February 5, 2011, and provided the parties with seven years to reduce their forces to these agreed-upon limits. Both sides successfully met the central limits by February 5, 2018, and have since stayed at or below them. Russia and the United States extended the originally 10-year treaty to its maximum 15-year length, now set to expire on February 4, 2026 (US Department of State 2022).

Table 1 compares the limits and verification mea- sures from SALT I to New START.

Table 1. A comparison of bilateral strategic arms control treaties, 1972–2010.

	SALT I (1972)	START (1991)	SORT (2002)	New START (2010)
Delivery vehicle limits	**Freeze** of strategic ballistic missile launchers (operational or under construction)	**1,600** strategic nuclear delivery vehicles	–	**800** deployed and non-deployed launchers (ICBMs, SLBMs, nuclear-equipped heavy bombers); within that, no more than 700 deployed
Warhead limits	–	**6,000** attributed to ICBMs, SLBMs, and heavy bombers • 4,900 attributed to ICBMs and SLBMs • 1,100 attributed to mobile ICBMs • 1,540 attributed to heavy ICBMs (Additional 3,600 metric tons throw weight limit)	**1,700–2,200** deployed strategic warheads	**1,550** deployed warheads (on deployed ICBMs and SLBMs, and one warhead for each deployed heavy bomber)
Verification	Reliance on national technical means (NTM)	Detailed and complex verification regime • Detailed definitions of the limited items • Database identifying the numbers, types, and locations of the limited items • NTM use provisions • Notifications • On-site inspections	–	Comprehensive but streamlined verification regime • Detailed definitions of the limited items • Database identifying the numbers, types, and locations of the limited items • NTM use provisions • Notifications • On-site inspections

Limits and Verification Measures from SALT I to New START.

Table 1

The New START Treaty remains in force through February 4, 2026. If no follow-on agreement is concluded before its expiration, then February 5, 2026, will be the first day since 1972 without substantive, verifiable limits on the world's two largest nuclear arsenals. In other words, anyone under the age of 54 will, for the first time, live in a world without strategic arms control.
Short of a new treaty, Russia and the United States would lose mutual predictability and trust. It would also mean that military planners would have to rely more on worst-case scenarios, subsequently accelerating defense spending that could result in an even more costly and unstable arms race.
Such a gloomy future is, of course, avoidable. The United States and Russia have several options available to maintain strategic limitations on their arsenals, including—in order of increasing resulting predictability but decreasing feasibility—continued adherence through mutual moratoria, the negotiation of a new non-ratified agreement, or the conclusion of an entirely new treaty.
We explore each one of these three options in this issue. But, to illustrate the urgency with which both countries should pursue them, we first offer a realistic scenario of how US and Russian arsenals could evolve if the current trends remain unchanged—that is, if the last bilateral arms control treaty still active is allowed to expire without a follow-on agreement.

The arms race in high gear

Up until now, both countries have meticulously planned their respective nuclear modernization programs based on the assumption that both countries will not exceed the force levels dictated by New START. Without bilateral arms control, however, this planning will be thrown into an era of unpredictability and distrust. Both sides would need to reassess their programs to accommodate more uncertain nuclear futures. This would likely result in worst-case scenario planning based on fewer data points and the uncertainty of future force levels—including those that would likely exceed New START levels. This could drive significant increases in both countries' arsenals, and ultimately lead to mutual accusations of arms racing and international accusations of NPT violations.
The United States and Russia each have significant numbers of additional nuclear warheads in storage that cannot be loaded on the launchers because of the New START limit of 1,550 deployed warheads. If New START fell away, these warheads could be uploaded in days, weeks, or months, depending on the type of launcher.
The United States has a significant upload capacity for its deployed missiles. Although all 400 of its deployed ICBMs currently only carry a single warhead, 200 of these use the Mk-12A reentry vehicle and are therefore capable of carrying up to three W78 warheads each. Moreover, the United States has an additional 50 "warm" ICBM silos which could be reloaded with missiles if necessary. If the 200 Mk-12A-equipped missiles were uploaded to three warheads each and the 50 reloaded missiles were also equipped with three warheads each, the ICBM force loading could potentially increase from 400 to 950 warheads. In the absence of treaty limitations, the United States could also upload each of its deployed Trident SLBMs with a full complement of eight warheads, rather than the current average of four to five. It could also reactivate the four launch tubes on each nuclear-powered ballistic missile submarine (SSBN)—56 in total—that were disabled under New START. This could potentially more than double the number of deployed US SLBM warheads from approximately 944 today to approximately 2,300 warheads.
Either of these actions would likely take months to complete, particularly given the complexities involved with uploading additional warheads on ICBMs. Moreover, ballistic missile submarines would have to return to port for uploading on a rotating schedule. However, deploying additional warheads to US bomber bases could be done very quickly, and the United States could potentially upload nearly 700 cruise missiles and bombs on B-52 and B-2 bombers.
Russia also has a significant upload capacity, especially for its ICBMs. Russia's 40 SS-18 Satan ICBMs can carry up to ten MIRVs; however, it is assumed that they have been downloaded to carry only five to meet the New START limitations. The incoming RS-28 Sarmat ICBM is also reportedly capable of carrying up to 10 MIRVs; however, it is assumed that these too will be downloaded upon their deployment if the New START force limits are retained. The SS-27 Yars is also assumed to have been downloaded from four MIRVs to three. As a result, without the limits imposed by New START, Russia's ICBM force could potentially increase from approximately 812 warheads to approximately 1,185 warheads.
Submarine-launched ballistic missiles on Russian Borei-class SSBNs are also thought to have been downloaded from an estimated six warheads to four to meet New START limits. Without these limitations, the number of deployed warheads on Russian SSBNs could rise from an estimated 576 to approximately 800. As in the US case, Russian bombers could be loaded relatively quickly with hundreds of nuclear weapons. The number is highly uncertain but assuming approximately 50 bombers are operational, the number of weapons could potentially be increased to nearly 600.
Table 2 considers how both US and Russian strategic nuclear forces could increase if New START is allowed to expire without a follow-on agreement in place. If both countries uploaded their delivery systems to accommodate the maximum number of possible warheads, both sets of arsenals would approximately double in size. The United States would have slightly more deployable strategic warheads but Russia would still have a significantly larger arsenal of operational nuclear weapons, given its sizable stockpile of nonstrategic nuclear warheads.

Table 2. A consideration of how nuclear arsenals could change after New START.

	Currently deployed under New START				Possible upload without follow-on treaty[a]			
	United States		Russia		United States		Russia	
	Launchers	Warheads	Launchers	Warheads	Launchers	Warheads	Launchers	Warheads
ICBMs	400	400	306	812	450[b]	950[c]	306	1,185
SLBMs[d]	220	944	128	576	220[e]	1,920[e]	128	640[f]
Bombers[g]	45	300	50	200	45	700[h]	50	600[h]
TOTAL	665	1,644	484	1,588	715	3,570	484	2,425

[a]This table is intended for illustrative purposes and is not intended as either a prediction or endorsement of potential future force postures. It also does not consider how the numbers of available launchers and warheads would change when ongoing modernization programs are eventually completed, as this is unlikely to occur before New START's expiry date in 2026. Following the completion of these programs, however, these numbers are certain to change as new systems with different upload capacities replace older systems.

[b]The United States currently deploys 400 ICBMs, but keeps an additional 50 ICBM silos in "warm" status for potential future upload.

[c]The Mk-12A reentry vehicles on 200 of the United States' Minuteman III ICBMs currently only carry a single W78 warhead each; however, they can carry up to three W78 warheads each.

[d]Approximately two SSBNs from each country are assumed to be undergoing maintenance at any given time, and are therefore not considered to be operationally deployed.

[e]Each Ohio-class SSBN was built with 24 missile launch tubes, but four tubes on each submarine have been deactivated to meet the limits of the New START treaty. After the treaty's expiration in 2026, these tubes could theoretically be reactivated and loaded with Trident II D5 SLBMs, each of which could carry up to eight warheads. This would increase the number of SLBM launchers to 288 and the number of warheads to 2,304 (assuming that two SSBNs are undergoing maintenance at any given time). However, this possibility is not reflected in the table because it is unlikely that the United States would choose to reconstitute the additional four launch tubes on each submarine given their imminent replacement with the next-generation Columbia-class.

[f]This assumes one Delta-IV and one Borei SSBN are out for maintenance. Upload capacities would change if two Delta-IVs or two Borei SSBNs are out.

[g]The New START counting rules artificially attribute one warhead to each deployed bomber, even though US bombers do not carry nuclear weapons under normal circumstances. To establish a more realistic number of deployed nuclear weapons for bombers, this Nuclear Notebook counts some nuclear weapons stored at bomber bases that can quickly be loaded onto the aircraft as "deployed."

[h]Warhead upload numbers are significant approximations and can vary depending on which bombers are deployed, as different bombers have different upload capacities.

Table 2

Table 2 presents a worst-case scenario for possible warhead uploads if New START is allowed to expire without any follow-on. Because of the relatively low estimated cost of a simple upload across the triad (about $100 million in one-time costs to the United States), this scenario is not impossible from a budgeting perspective (Congressional Budget Office 2020, 3).

In the longer term, both countries could theoretically go further and pursue costly larger expansions of their strategic nuclear forces, such as going back up to the START I level of 6,000 warheads each. Some voices in the United States have already raised doubts about the New START force limits because of China's nuclear buildup (Miller 2022). Depending on the desired degree of flexibility and the cost of new strategic delivery systems, such an expansion could cost the United States, for instance, between $88 billion to $439 billion in one-time acquisition costs, plus $4 billion to $28 billion in annual operation and sustainment costs (Congressional Budget Office 2020, 3). This does not even include research and development costs or the Department of Energy's costs to produce, sustain, or store more nuclear warheads. It is unclear what the costs of similar actions would be for Russia, but they are likely to also be very expensive.

Moreover, there are expected consequences beyond the offensive strategic nuclear forces that New START regulates. If the verification regime and data exchanges elapse, both countries are likely to enhance their intelligence capabilities to make up for the uncertainty regarding the other side's nuclear forces. Both countries are also likely to invest more into what they perceive will increase their overall military capabilities, such as conventional missile forces, nonstrategic nuclear forces, and missile defense (Congressional Budget Office 2020, 7–9). These would all come with significant additional costs.

Overall, today's technologies and the geopolitical situation would likely lead to a different style of arms racing than during the Cold War; however, it could similarly become unnecessarily costly and dangerous. Moreover, it could trigger reactions in other nuclear-armed states that might also decide to increase their nuclear forces and the role they play in their military strategies. The good news is that this future is certainly not inevitable—even without a formalized treaty structure beyond 2026. The following sections offer a series of options for both countries that would help prevent an escalation of the arms race. The estimated success of each option depends upon a variety of factors, including political will, legal complexities, and relative degrees of formalization. The following sections are listed in order of their projected feasibility, and thus begin with Plan C—the most feasible but least sustainable option—and end with Plan A —the most challenging yet most optimal outcome.

Plan C: continued adherence to New START's core provisions beyond 2026

One option would be for both countries to simply continue abiding by the core provisions of the treaty—even without the treaty being formally in effect. Such a "gentleman's agreement" could be made by the leaders of both the United States and Russia without legislative approval, as opposed to a formal treaty.

By agreeing to not exceed the New START limits, each side could continue its current strategic force structure planning and therefore avoid a costly expansion.
Such an agreement, however, also comes with challenges. Practically, the United States and Russia could certainly continue to adhere to the treaty limits—much as they did for a brief period of four months in the interim between START and New START. But without the legal structure of a treaty, the main verification benefits of New START—data exchanges, notifications, and inspections—could be lost due to the legal difficulties surrounding classified information. This could force both parties to rely exclusively on national technical means for verification, which would severely strain both the resources and capabilities of their respective intelligence communities.
We now examine the feasibility of this option.

Could bilateral data exchanges and notifications continue after 2026?
Without a treaty framework to enable the legal exchange of otherwise classified or restricted nuclear weapons data, both Russia and the United States would need to prepare legal avenues to allow them to continue sharing this information. According to former New START chief US negotiator, Rose Gottemoeller, the United States continued notifications as a goodwill gesture and was willing to continue data exchanges during the bridge period between START and New START (Gottemoeller 2022). Given this precedent, it should again be feasible for the United States to legally arrange for data exchanges and notifications. On the other side, Russia did not continue reciprocal notifications during the interim period, despite its promise to continue abiding by the treaty's limits. To that end, Russia will need to examine whether it might need to first amend its domestic laws concerning the sharing of classified nuclear information.

Could bilateral on-site inspections continue after 2026?
The question of on-site inspections continuing beyond the scope of a formalized treaty has been considered by Gottemoeller. In her book, *Negotiating the New START Treaty*, she notes that:
"The Russians also raised doubts about the legal status of such an agreement. According to them, they needed a full, legally-binding treaty, duly approved by their State Duma and Federation Council, in order to override their domestic law and permit foreign inspectors. According to the Russian state security law, no foreigners are allowed in sensitive nuclear facilities. A treaty can override that domestic law" (Gottemoeller 2021, 85–86).
The United States also has laws restricting the access of foreign nationals to sensitive military installations. These too could be overridden by an international treaty, as has been the case with New START.
It would theoretically be possible for both countries to change their domestic laws to enable on-site inspections to continue in the absence of a treaty framework. There is precedent for attempting this in the United States: In 2009, facing the possibility that START might expire without a follow-on treaty in place, Sen. Richard Lugar (R-IN) brought to the table a bill specifically designed to provide Russian inspectors with the ability to continue on-site inspections for seven months or until the entry into force of a new bilateral treaty—whichever came first (S.2727 2009). The bill was ultimately not passed, but its introduction to Congress suggests that a similar path could be considered again if necessary. Such a bill could specifically require the continued implementation of the expired treaty's verification protocol and annexes that contain highly detailed instructions for how on-site inspections are to be conducted, including requisite flight paths, aircraft call signs, customs exemptions, lodging, accommodations, and the according of diplomatic immunity upon each party's inspectors and aircrew, among other granular details.
In the absence of a follow-on treaty, rather than attempting to maintain all existing verification mechanisms, another option could be to reduce the scope of the verification regime altogether. While conventional wisdom holds that more verification is always better, recent scholarship indicates that this may not always be the case. In his doctoral dissertation, political scientist Andrew Reddie posits that "the most intrusive types of verification are not, as is currently believed, more likely to lead to compliance" (Reddie 2019). Instead, Reddie's analysis—based on more than 1,000 agreement-years of historical data—suggests that highly intrusive inspections could yield a statistically significant greater likelihood of noncompliance than less intrusive types of verification regimes. Reddie suggests that this phenomenon could be the result of a "surveillance bias," in which it is possible that "a hammer (representing a verification regime) will constantly search for and find a nail (noncompliance). Thus, those agreements that have a more stringent verification mechanism—a larger hammer—may have a higher probability of detecting non-compliance" (Reddie 2019).
If a reduction in the intrusiveness of the treaty's verification regime would not necessarily increase the likelihood of noncompliance, both parties could use the opportunity of New START's expiration to possibly reduce the invasiveness of future verification mechanisms. This would avoid unwanted challenges triggered by the loss of the treaty's inspection protocols once it expires while continuing to adhere to its core provisions and central limits. For example, the United States and Russia could place a hold on conducting Type One and Type Two inspections but continue to exchange compliance data and promise not to interfere with the other party's national technical means of verification.

Even though after New START expires there would be no legal requirement to comply with the treaty's core provisions, both countries would still likely have strong normative and geopolitical incentives to continue doing so. This is partially because of the risk—even without on-site inspections—that any increase would be detected and exposed by the other side's national technical means. Moreover, during the treaty's history, there have been several extended periods when Type One and Type Two inspections were suspended—most notably during the Covid-19 pandemic, when inspections were paused for nearly two years. During these periods there were no accusations of noncompliance by either side.

A reduction of the verification regime may not necessarily create a compliance problem, but it could create a political one. Historically, Congress has been more amenable to support and provide the resources to implement agreements with robust verification regimes, whereas agreements with relatively looser verification mechanisms, such as SORT or the US-Iran Joint Comprehensive Plan of Action (JCPOA), have faced fierce resistance. This challenge could be exacerbated by relying exclusively on national technical means for verification, which could potentially result in the intelligence community issuing ranged estimates of Russian warheads and delivery systems rather than knowing the exact numbers of warheads and launchers. Even though using a range in place of a definite number may not significantly affect the United States' deterrence calculations, it could produce a domestic political backlash. For instance, if the range's upper boundary ever came too close to the treaty's central limits, the public debate would most likely crystalize over such a high-end estimate and cast doubt about Russia's compliance. This challenge is evident in the current debate about how many non-strategic nuclear warheads Russia has. Because these warheads are not limited and declared under a treaty, the US Intelligence Community uses a range of 1,000–2,000 warheads, of which the Pentagon uses the higher number, even though the Department of State says it includes retired warheads (US Department of State 2022, 11).

Under such a "gentleman's agreement," any previously existing protocols to facilitate dispute resolution between the state parties would no longer be formally in effect. The Bilateral Consultative Commission (BCC)—the joint body authorized to resolve compliance questions, make technical changes to the treaty's protocol and annexes as new weapons are deployed, and mediate other treaty-related disputes—would be officially defunct upon New START's expiration. As a result, if one party accused the other of materially breaching the agreement, there would be no formal mechanism for mediating and resolving that dispute. This challenge could be mitigated by the establishment of a new mechanism that mirrors the current role of the BCC.

In effect, continuing to adhere to New START's core provisions would be an informal way of extending the treaty's benefits. While this informality would certainly create challenges, the tacit knowledge and practices learned through 15 years of successful New START implementation could help transition both parties into such a new framework. While this option may not be sustainable in the long term, it could be considered a short-term bridge between New START and a follow-on agreement. This could prove particularly useful in the interim period if a mutual political commitment to the treaty remains, but time runs out before a new agreement can be concluded.

Plan B: pursuing a new, non-ratified agreement

Another option for the United States and Russia to maintain a cap on their nuclear forces could be to conclude a follow-on executive agreement that would not require domestic legislative ratification but would still be binding under international law. Today, more than 90 percent of the United States' international agreements are not ratified treaties, but executive agreements concluded by the president (Bradley and Goldsmith 2018, 1278). In particular, several landmark agreements related to nuclear weapons have taken the form of executive agreements, including the 1991–1992 Presidential Nuclear Initiatives (PNIs) and the 2015 Joint Comprehensive Plan of Action (JCPOA)—informally known as the "Iran Agreement."

A distinctive advantage of pursuing an executive agreement over a treaty is that it would allow each country's head of state to bypass the approval requirements of their respective legislatures within the bounds of their constitutional authorities. This would be particularly valuable for the United States given the high degree of political polarization and low likelihood of bipartisan Senate approval.

The flip side of this advantage for the United States, however, is that bypassing Congress could create political backlash for a president. Congress could potentially block funding for a president to implement an executive agreement with Russia or even hold other presidential priorities at risk. In 1972, President Nixon submitted the "Interim Agreement on Certain Measures With Respect to the Limitation of Strategic Offensive Arms to Congress" for consideration to Congress not because he was legally required to do so but because it was politically prudent to do so (Nixon 1972).

Moreover, if such a non-ratified agreement included anything that could be construed to be a "further arms reduction," it could be challenged under the US Arms Control and Disarmament Act:

"No action shall be taken pursuant to this chapter or any other Act that would obligate the United States to reduce or limit the Armed Forces or armaments of the United States in a militarily significant manner, except pursuant to the treaty-making power of the President set forth in Article II, Section 2, Clause 2 of the Constitution or unless authorized by the enactment of further affirmative legislation by the Congress of the United States" (22 USC Ch. 35, Section 2573(b) 1961).

An executive agreement inherently has substantially less congressional buy-in than a treaty ratified with the advice and consent of the Senate. Such an agreement is likely to be associated directly with the president who concluded it and could therefore be subject to violation or withdrawal by a subsequent president wanting to distinguish themselves from their predecessor. The fate of the JCPOA between the United States and Iran exemplifies this dynamic. In 2018, against the advice of nonproliferation experts and many of his own advisors, President Donald Trump violated the agreement mainly because of its association with his predecessor, President Barack Obama, who signed the deal in 2015. This can be contrasted with the fate of New START, which was also negotiated under the Obama administration but remained relatively insulated from President Trump's pattern of withdrawing from treaties and agreements—partly because of New START's continued bipartisan support within Congress, particularly from those who voted in favor of the treaty in 2010.

Another obstacle to an executive agreement is Russia's historical insistence on having formally ratified treaties. For instance, Gottemoeller explained that Russia previously rejected a non-legally-binding bridging agreement after START, as it was afraid this would take away the necessary pressure needed to eventually reach a ratified treaty with the United States (Gottemoeller 2022). Russia's insistence on formally ratified treaties may also be motivated by its fear that a future US administration could easily pull out of a negotiated executive deal, as we just described. It is not known how flexible Russia might be today given the diminished likelihood that a two-thirds majority of the US Senate will vote to ratify an arms control treaty with Russia, particularly in the context of Putin's invasion of Ukraine.

Finally, and most importantly, to be verifiable, a new non-ratified agreement would require the same domestic legal adjustments as for an informal continued adherence to New START, as we discussed in the previous section. Otherwise, both parties might again need to rely exclusively on national technical means of verification, which would severely diminish the value of such an agreement and strain intelligence resources.

Plan A: negotiating a follow-on treaty

The ideal option for maintaining transparency, predictability, and mutual limitations of US and Russian nuclear arsenals would be the conclusion of a follow-on treaty to replace New START. That is also the least feasible option, especially as bilateral talks have been placed on hold since Russia invaded Ukraine. Nonetheless, a thorough consideration of each country's respective arms control priorities could yield some opportunities for common ground when negotiations eventually resume.

In June 2022, Assistant Secretary of State for Arms Control, Verification and Compliance, Mallory Stewart, described the United States' current arms control priorities vis-à-vis Russia as follows: "We want to sustain limits beyond 2026 on the Russian systems covered under new START; we want to limit the new kinds of nuclear systems Russia is developing; and we want to address all Russian nuclear weapons, including theater-range weapons" (Stewart 2022).

Priority one: maintaining strategic limits after New START

The United States' first priority—sustaining mutual limitations beyond 2026—is likely to be shared by Russia. Both countries are aware of each other's significant strategic upload capacities upon New START's expiration, such that each country could more than double their total deployed strategic war- heads in the absence of existing limitations (see "The arms race in high gear" section). However, neither side appears to have the political appetite or economic capacity to engage in a strategic arms buildup.

Russia's significant interest in preserving the bilateral arms control regime was on full display in the months and weeks leading up to New START's extension in 2021. As Andrey Baklitskiy wrote at the time for the *Carnegie Endowment for International Peace*:

"Both chambers of parliament voted on the extension in just one day, and passed it unanimously. Such speed and consensus—last seen over the annexation of Crimea back in 2014—shows how important arms control is to the Russian leadership. [. . .] Recently, it has become fashionable in Russia's expert circles to opine that traditional arms control is obsolete as a concept, and doesn't correspond to the reality of the modern world. This view partly stems from the fact that existing treaties have disappeared one after the other, while Moscow has not held talks on a new one for more than a decade. The energy the Russian state has put into supporting arms control efforts, along with the first progress made on this front, could now put an end to that trend" (Baklitskiy 2021).

Priority two: addressing Russia's "exotic" new nuclear systems

The United States' second priority—limiting Russia's newer nuclear systems—will pose a greater challenge than maintaining the existing limits beyond 2026, but not an insurmountable one. In March 2018, President Putin unveiled a suite of "exotic" new nuclear systems—including the RS-28 Sarmat ICBM, the Avangard hypersonic glide vehicle, the Burevestnik nuclear-powered cruise missile, the Kinzhal air-launched ballistic missile, and the Status-6 Poseidon nuclear torpedo—immediately prompting concerns from US lawmakers that these systems would not be covered by New START limitations (President of Russia 2018; Cotton 2019).

While some of these systems do pose arms control challenges, two of them—Sarmat and Avangard—appear to be covered by the treaty. The New START protocols have clear provisions for including "new

types" of strategic ICBMs within the framework of the treaty, and given that Sarmat has already been tested and is scheduled to be deployed by the end of 2022, Russia will have already provided many of the requisite prototype notifications to the United States (*Al Jazeera* 2022). In a similar vein, the United States' incoming LGM-35A Sentinel ICBM will also enter the treaty smoothly.

Additionally, Avangard is not a particularly complex case: the hypersonic glide vehicle is carried by treaty-accountable ICBMs and the system itself meets New START's definition of a "re-entry vehicle" under the description "that part of the front section that can survive reentry through the dense layers of the Earth's atmosphere and that is designed for delivering a weapon to a target or for testing such a delivery" (US Department of State 2010, 60(7)). As a result, any ICBMs deployed with the Avangard system are now counted toward the central limits for both launchers and warheads.

Both the United States and Russia seem to agree on how New START will consider these two systems. In 2019, Under Secretary of State for Arms Control and International Security, Andrea Thompson, stated in congressional testimony that: "We assess at least two of them, the Sarmat heavy ICBM and Avangard hypersonic system would count as existing types and be subject to New START at the appropriate point in their development cycle" (Thompson 2019). Six months later, the deputy director of the Russian Foreign Ministry's nonproliferation and arms control department, Vladimir Leontiev, stated at the Valdai Discussion Club:

"As far as new Russian systems are concerned, the situation is dual. There are two systems that clearly fall under the treaty. First, the Sarmat, which can be easily included in the treaty as a new type ICBM (inter-continental ballistic missile), for which there is a special procedure, from the creation of a prototype to its authorization for service. [. . .] There are no big problems with Avangard, either, because it is an optional warhead for an ICBM of the corresponding type, to which the treaty applies, too. [. . .] The Avangard will enter the Treaty very smoothly" (TASS 2019).

The statuses of the three other new Russian delivery systems—Burevestnik, Poseidon, and Kinzhal—are less obvious. Neither Burevestnik nor Poseidon are likely to be deployed before New START's expiration in February 2026; however, it is worth examining whether any of these would fall under the treaty's existing counting rules, given that these could form the basis for a potential follow-on agreement.

Article V of New START stipulates that: "When a Party believes that a new kind of strategic offensive arm is emerging, that Party shall have the right to raise the question of such a strategic offensive arm for consideration in the Bilateral Consultative Commission." The treaty's supplementary protocol specifies what constitutes a "new" kind of strategic offensive weapon:

"The term 'new type' means, for ICBMs or SLBMs, a type of ICBM or a type of SLBM, the technical characteristics of which differ from the technical characteristics of an ICBM or SLBM, respectively, of each type declared previously in at least one of the following respects: (a) Number of stages. (b) Type of propellant of any stage. (c) Either the length of the assembled missile without front section or the length of the first stage, by more than three percent. (d) Diameter of the first stage, by more than three percent" (US Department of State 2010, 46(42)).

It is unclear whether this definition applies to any of Burevestnik, Poseidon, or Kinzhal, given that none could be considered ICBMs or SLBMs. Burevestnik is a cruise missile, Poseidon is a type of underwater torpedo, and Kinzhal is an air-launched ballistic missile. Moreover, at least two of these systems do not travel on ballistic trajectories, placing them outside the treaty's definition of either an "intercontinental ballistic missile" or a "submarine-launched ballistic missile," regardless of their launch systems or strategic roles in Russia's nuclear arsenal.

However, in 2019, then-Under Secretary Thompson added during her congressional testimony that all three "meet the US criteria for what constitutes a 'new kind of strategic offensive arms' for purposes of New START" (Thompson 2019).

This interpretation is not likely to be shared by Russia. In December 2018, Russian officials sent a notice to the United States stating that they "find it inappropriate to characterize new weapons being developed by Russia that do not use ballistic trajectories of flight moving to a target as 'potential new kinds of Russian strategic offensive arms.' The arms presented by the President of the Russian Federation on March 1, 2018, have nothing to do with the strategic offensive arms categories covered by the Treaty" (Russian Federation 2018).

In its notice, Russia asserted that because none of the Burevestnik, Poseidon, and Kinzhal delivery systems are ICBMs, SLBMs, or heavy bombers, they fall outside the scope of the treaty. The statement also noted that "the Russian approach to the issue of criteria for defining new kinds of strategic offensive arms for the purposes of this Treaty is being worked at. The Russian Side is open for dialogue on this topic although it does not consider it as a priority taking into account pressing issues of the Treaty implementation discussed currently in the Bilateral Consultative Commission" (Russian Federation 2018).

The complex case for counting Kinzhal under the treaty framework depends entirely upon whether its carrier aircraft fits the treaty definition of an accountable "heavy bomber." The treaty's protocol states that an aircraft counts as a "heavy bomber" if it either (a) has a combat (meaning unrefueled) range of more than 8,000 kilometers (4,970 miles) or (b) is equipped for nuclear air-launched cruise missiles with a range exceeding 600 kilometers (370 miles) (US Department of State 2010, 23(80)). Given that Kinzhal is an air-launched ballistic missile, it does not satisfy the latter criterion. However, depending on how Russia intends to deploy the system, it could satisfy the former criterion.

Russia deploys Kinzhal on its specially-modified MiG-31IK Foxhound aircraft and has used the system in combat at least three times during its invasion of Ukraine (Kristensen and Korda 2022a; TASS 2022). The MiG-31IK's combat range is estimated to be approximately 1,250 kilometers (770 miles)—significantly below the 8,000-kilometer threshold (Federation of American Scientists 2000a). As Pranay Vaddi, now Special Assistant to the US President and Senior Director for Arms Control and Nonproliferation, wrote in 2019 for Lawfare: "In this case, Kinzhal would not be accountable under New START, and neither should it be. Because the MiG-31 has a very limited range, it is not, even when armed with Kinzhal, the kind of strategic weapon that New START was intended to limit. Rather, if Kinzhal is deployed on a MiG-31, it will likely fill a limited, theater-strike role" (Vaddi 2019).

However, news reports have indicated that Russia may also deploy Kinzhal on its longer-range Tu-22M3M Backfire bombers (TASS 2018; RIA Novosti 2018). The upgraded Tu-22M3Ms are currently not classified as "heavy bombers" under New START because they are estimated to have a combat range of approximately 7,000 kilometers (4,350 miles), which—if correct—remains below the 8,000-kilometer (4,971 miles) threshold (Federation of American Scientists 2000b). The United States raised concerns about the upgraded Tu-22M3M system to Russia in September 2018, to which Russia responded as follows:

"The Russian side indeed plans to carry out modernization of Tu-22M3 bomber to the modification Tu-22M3M. This modernization will prolong the service life of the aircraft, as well as improve its systems of maneuverability, navigation and use of air weapon systems. At the same time, the range of the bomber will be below 8000 km, and it will not be equipped for nuclear [air-launched cruise missiles] with range exceeding 600 km. Proceeding from the aforementioned facts, the technical characteristics of the Tu-22M3M aircraft in accordance with paragraph 23 (80) of Part One of the Protocol to the New START Treaty do not allow to classify it as a 'heavy bomber' and it will not fall under the limitations of the New START Treaty" (Russian Federation 2018).

While the combat range of the upgraded Tu-22M3M may remain below 8,000 kilometers, it appears that the modernized aircraft will likely have probes to facilitate mid-air refueling (Interfax 2018). This is a significant alteration of the aircraft that will allow it to potentially reach intercontinental ranges. For this reason, these probes had been previously removed from Russia's Tu-22M aircraft under the SALT II process, and the Soviet Union had made a politically binding declaration on July 31, 1991, that "it will not give the Tu-22M airplane the capability of operating at intercontinental distances in any manner, including by in-flight refueling" (Vance 1979; US Department of State 1991). However, this long-standing policy appears to now have been reversed, with defense sources telling Interfax in 2018 that: "The new refueling equipment will significantly increase Tu-22M3M's combat radius and range of operation. The range will be comparable with one of strategic bombers" (Interfax 2018).

While this may not technically trigger the reclassification of the Kinzhal/Tu-22M3M combination as a treaty-accountable "heavy bomber" given that the aircraft's unrefueled range is still likely to remain below the 8,000-kilometer threshold, the de facto transformation of a medium-range aircraft into an intercontinental-range aircraft could be enough for the United States to raise the matter at the BCC or in other bilateral forums. Moreover, in the context of negotiating a follow-on treaty, the United States could seek to close this potential loophole by addressing the fact that mid-flight refueling capabilities could theoretically turn a tactical bomber into a strategic one.

Priority three: addressing all Russian nuclear weapons

The United States' third priority—limiting all of Russia's nuclear weapons—likely poses the greatest challenge given the difficulty of verification and existing force asymmetry.

The United States is likely aware of the challenge, thus phrasing its goal to "address all Russian nuclear weapons" rather broadly. This could, for a start, be achieved through unverified data exchanges. Nonetheless, any negotiations that concern non-strategic nuclear warheads will be complicated by the asymmetry of Russia having up to 10 times more non-strategic nuclear warheads than the United States (1,912 compared to 200) (Kristensen and Korda 2022a, 2022b). Were Russia willing to include non-strategic nuclear weapons in a treaty, it would likely ask for US concessions in another area, although it has not specified so far what this might be. The Russian government did state, however, that a precondition for discussing non-strategic nuclear weapons is that the United States withdraws such weapons from Europe (Berestovaya 2021). Other areas of asymmetry Russia could try to pull into a negotiation package might concern US missile defenses and conventional weapons.

Exacerbated by existing political tensions and the current arms control deadlock between the two countries, this issue is not likely to be resolved anytime soon. Rather, an effort to include non-strategic nuclear weapons in an arms control treaty could require several years of negotiations and confidence-building—possibly spanning multiple presidential administrations.

Lessons learned and next steps

To address the challenges of building a follow-on framework, we now look at the lessons learned from previous arms control negotiations and identify strategies the United States might follow to eventually achieve a successful outcome.

Clarify national security interests and identify corresponding arms control tools

It is common wisdom that arms control is not an end in itself, but is instead a means to ensure national security. In this view, any future arms control negotiations need to be preceded by a thorough reevaluation of the national security interests they are meant to achieve. During the Cold War, arms control worked in tandem with deterrence and other elements of national power to manage strategic competition. When the Cold War ended, the role of arms control changed to a collaborative tool to manage, first, a controlled drawdown of excess strategic forces, then, deep cuts of nuclear forces, and eventually, elimination. With the pendulum swinging back to strategic competition, arms control may once again have to serve principally as a tool to manage strategic competition. It is therefore important to address expectations about what arms control can tangibly achieve in the coming years.

As noted above, US officials and leading nuclear scholars have repeatedly listed the following as problems that arms control should address: the loss of transparency with Russia, China's buildup, new weapons, risks of inadvertent or accidental escalation, and the deterioration of international norms. This section explores how the United States should prioritize these issues given the return to strategic competition, and which arms control tools it should rely on for each.

First, with the war in Ukraine and the generally growing risk of regional conflicts involving China or Russia, the United States' most pressing interest should be to minimize the risks of inadvertent or accidental escalation. The United States' time would likely not be wasted here as ensuring "nonevents" constitutes "a strong mutual interest among the United States, Russia, and China" (Talmadge 2022). Besides addressing the root cause by cooperating to reduce regional tensions, nuclear experts and US-Russia military-to-military dialogues have emphasized a series of measures to help prevent escalation and eventual nuclear use: (1) maintain communication lines; (2) hold consultations on military operations and doctrine (to include provisions that would prevent escalation and rule out the first nuclear strike); (3) increase regular contacts between the two militaries (expanded to mid-level and regional commanders), including detailed notifications about intentions, threat perceptions, and potentially ambiguous exercises and operations; and (4) observe each other's military exercises (Woolf 2021; Chalikyan 2021). Given Putin's escalatory language regarding Ukraine, these measures—which luckily do not require a formal treaty—cannot wait any further. In the short term, they would complement New START. In the intermediate term, they would provide some limited, but much-needed confidence should there be no immediate follow-on treaty. In the longer term, risk reduction efforts may "create opportunities for the parties to address and resolve those security concerns that are blocking the path to nuclear disarmament" (Woolf 2021).

Second, the United States should prioritize preventing the loss of transparency regarding Russian strategic nuclear weapons as these continue to comprise most nuclear weapons that can reach the US homeland. In the medium-term, these are still owned by Russia, not China. New START's verification and monitoring regime continues to be a highly suitable tool in this regard, because it allows the United States to track the numbers, types, sizes, locations, readiness, and movements of these weapons. This information helps avoid misunderstandings and worst-case planning assumptions that would otherwise fuel a new arms race. It would therefore be in the United States' best interest to continue a similar mutual verification and monitoring regime of offensive strategic nuclear forces. For non-strategic nuclear weapons, data declarations would likely be the most suitable transparency tool to address the United States' concerns for now. Issues surrounding intrusiveness and feasibility make a fully verifiable framework for these weapons rather difficult absent the necessary political will.

Third, given the US bipartisan concern with Russian treaty violations and the resulting deterioration of international norms, it is within US' interest to revitalize the latter. The value of any future arms control treaty or agreement diminishes if it becomes common practice to simply violate them or exit them on a whim. Therefore, to ensure that arms control negotiations are worth the effort and that their value does not disappear overnight, it will be essential to revive international norms surrounding nonproliferation. This could be achieved through bilateral and multilateral normative statements, use of doctrine and strategy dialogues, as well as various tools to increase exit costs—including treaty provisions and allied, or ideally multilateral, commitments to sanction noncompliant parties.

Finally, how do the traditional tools of arms control—limitations and reductions—hold up today? Deep numerical reductions are unlikely without Russian and Chinese participation, given the level of prior reductions, expectations of cheating, and especially the new geopolitical order with China's growing military power and nuclear arsenal. However, all three countries need to do their best to overcome these forces as soon as possible and fulfill their disarmament obligations under the NPT. Regarding non-strategic nuclear weapons that—unlike strategic weapons—do not pose a direct threat to each country's homeland, reductions would not solve the most pressing concern: escalation through first use in a regional, conventional conflict (such as in Ukraine). Any remaining nuclear warheads could still be used first and risk escalation. For this reason, it is important to realize that reductions themselves should be a longer-term interest, and need to be complemented by other arms control tools such as the ones mentioned earlier. More immediate concerns regarding non-strategic nuclear weapons would be better addressed through risk reduction tools, transparency measures, and the strengthening of international norms.

Despite the limitations of traditional arms control tools, however, the United States (and Russia) would continue to benefit from the force predictability if limits on launchers and warheads remained. Opponents of arms control have for a long time tried to argue that these limits lead to decreased deterrence because it makes the United States reduce its nuclear forces while Russia keeps proportionally investing more into

modernizing theirs (Trachtenberg 2021, 7). But changes in deterrence are largely the result of countries having different military doctrines rather than the treaties' provisions. For instance, Russia relies more on its nuclear arsenal given its conventional forces' inferiority. Today, given the ongoing modernization of the US nuclear triad and its higher number of strategic launchers and larger inventory of strategic nuclear warheads, the United States should feel confident that its deterrent will be preserved in respect to Russia under continued limits on launchers and warheads.

The key challenge is how China's growing nuclear arsenal will affect these numerical and qualitative assessments of the US-Russian balance. Is the credibility of the US nuclear deterrent reduced because of China's buildup? Will it undermine the US-Russian balance? If the United States increases its nuclear arsenal, will that cause either Russia or China to increase theirs even more? "The challenge will then be to redress Russia's and China's worst-case assessments that the capabilities the United States deploys to deter both countries could or would be used to defeat either one of them. If new approaches to arms control cannot be invented, the world is likely to see worsening security dilemmas, arms racing, and instability" (Dalton et al. 2022, 13).

Beyond that, future negotiators will likely want to focus on issues other than simple numerical reductions of launchers and warheads, such as the asymmetry in the nuclear production complexes—the roots of the nuclear warhead tree (Albertson 2022, 66). China, concerned about the survivability of its nuclear forces, may be reluctant to agree to fissile material production cut-offs. Because these concerns are partially driven by US missile defenses, it might, however, be open to combining this issue with a moratorium on the deployment of space-based missile defenses, the most plausible means for the United States to undermine China's nuclear deterrent (Acton, MacDonald, and Vaddi 2021, 51–52).

Build arms control expertise

To have any chance at preventing the loss of strategic arms control's benefits and develop remedies to safeguard strategic stability, the US government will need to make significant, long-term investments into rebuilding the relevant expertise.

One important factor that contributed to the arms control achievements in the mid-1980s to 1990s was the amount of expertise in the executive and legislative branches. Those who lived through the Cold War were naturally more concerned with, and educated on, nuclear weapons issues. Moreover, Congress still took its role in foreign policy seriously, and the Senate engaged in arms control through the bipartisan Arms Control Observer Group. For instance, Senate members of this group were tasked to consult with and advise US arms control negotiating teams, and "to monitor and report to the Senate on the progress and development of negotiations" (Roth 2014).

Today, however, most of these arms control experts in the executive branch and Senate have retired or in other ways moved on. Current staff has not been able to benefit from the direct experience and on-the-job training of the negotiating, ratification, implementation, and verification processes. The New START Treaty negotiations were the last to benefit from the contributions of the remaining experts and champions from this era (Albertson 2021, 78). The Senate, while still somewhat engaged in the New START negotiations through the National Security Working Group, has largely lost the expertise from the days of the more-engaged Senate Arms Control Observer Group—due to increased partisanship, diminished prestige, and the GOP's growing skepticism of legally binding international commitments (Roth 2014).

To regain the interest and expertise needed to think through today's arms control issues, the US government should (1) make significant staffing, training, and retention investments; and (2) increase cooperation and exchange between Congress and the executive branch again. The latter could be achieved possibly through a revitalized congressionally-appointed liaison group as former Sen. Sam Nunn and former Secretary of Energy Ernest Moniz previously proposed (Nunn and Moniz 2017).

Although much of the deep technical expertise needed to develop effective arms control tools will require access to classified information, these efforts can, to some degree, be pursued in concert with civil society. External funding provided by foundations and philanthropic organizations has traditionally played an instrumental role in hiring, training, and empowering future generations of arms control experts. Many of these experts typically rotate through government at some point during their careers, and they rely on their external networks to both brainstorm new arms control ideas and build support for them in the public discourse. To that end, increased funding for civil society could play a pivotal role in fostering the deep bench of political and technical experts needed to pursue successful arms control negotiations in the future.

Demonstrate Presidential leadership

It is likely that the chances of any follow-up agreement will be closely related to the degree of presidential lea-dership, support, and involvement in the negotiations, even if such an agreement is ratified in Congress and is not an executive agreement. It is essential to articulate national security objectives at the highest level as soon as possible in the process. If leaders are engaged throughout, the rest of the government will set it as a priority (Gottemoeller 2021, 172).

Rose Gottemoeller, the US lead negotiator of New START, assesses that the greatest asset to the treaty's negotiations was the willingness of both US President Barack Obama and Russia President Dmitry Medvedev to engage—and to use their knowledge about treaty issues. The opening of the New START

formal negotiations can arguably be attributed to a US-Russian presidential joint statement that laid out the subject and scope of the new agreement. Two months after the first round of meetings, another presidential joint understanding that contained limit ranges likely enabled the negotiators to operate at a relatively quick pace.
Moreover, there was great and important progress when President Obama and President Medvedev agreed on final warhead and delivery vehicle limits during a side meeting at the 2009 Climate Summit in Copenhagen (Gottemoeller 2021, 46, 89, 91). Throughout these and other arms control negotiations, Russian negotiators have in the past been more likely to consider concrete proposals when they came from a presidential level.
Finally, given the Russians' skills at slow-rolling, both presidents agreeing on the same timeline was vital to the relatively timely success of the New START negotiations.
Presidential backing, first, ignited the talks and, second, saved much time by allowing the negotiators to focus on the agreed-upon scope. In the context of a future follow-on agreement, it could be possible to negotiate a technical framework using interagency guidance before any public summit if the political environment is too challenging. It is clear that presidential leadership throughout the New START negotiations provided the delegations on both sides with the needed bureaucratic firepower to get things done quickly, and helped move negotiations along when they were seemingly stuck.

Understand the other side: Russia

On the Russian side, it is critical to understand the role that nuclear weapons play in their politics, military strategy, and—perhaps most importantly—its perception of itself as a nation (Williams 2016). Siegfried Hecker, former director of the Los Alamos National Laboratory, describes well the crucial role of such an understanding in a report describing his unprecedented visits to Russia's nuclear complex in 1992:
"We quickly discovered that the Russian view of its nuclear enterprise could not have been more radically different than the prevailing American view. Our Russian colleagues and the nuclear ministry viewed their nuclear weapons and nuclear complex as the crowning achievement of Soviet times and essential to Russia's political, scientific, and economic future. With Russia's conventional forces having atrophied, nuclear weapons were viewed as their guarantor of sovereignty, assuring Moscow a seat at the international table. Nuclear materials were seen as an economic resource and a national treasure. Nuclear experts and their scientific institutions were seen as an engine for the recovery of the national economy" (Hecker 2017, 6).
In the 30 years since these visits, Russia's view of its nuclear enterprise has not changed much, particularly considering the poor performance of its conventional forces in conflicts, epitomized by its current war against Ukraine. But perhaps surprisingly, this imbalance may be a boon for arms control given that Russia has typically viewed its participation in such negotiations as evidence of its "great power" status. Additionally, Russia may view a renewed arms control agreement as a pathway toward renegotiating the global geopolitical order on its own terms. As a result, Russia is likely to view arms control in a relatively positive light compared to other nuclear-armed states like China.
Although Russia is likely to be relatively amenable to the prospect of nuclear negotiations (as suggested by their quick extension of New START in 2021), they, like the United States, will not enter into agreements unless these serve their national security interests. Several key Russian security concerns may need to be addressed to ensure a successful follow-on agreement.
Chief among these concerns is the development of advanced US missile defenses. Russia has long regarded the limitation of anti-ballistic missiles as the "cornerstone of strategic stability," and has often explicitly characterized missile defense limits as a precondition to strategic arms control. In 2000, President Vladimir Putin noted that "the mutual reduction of strategic attack weapons . . . is possible only when the ABM Treaty continues to hold" (Woolf 2002). Additionally, throughout the New START negotiations, Russian negotiators attempted on several occasions to bring the issue of missile defense to the table—particularly following pressure from Putin, for whom missile defense was a priority issue (Gottemoeller 2021, 97).
Given the advancements in US defensive capabilities and Putin being back in the presidential seat today, it is likely that Russia will continue pressing the issue of US missile defenses. As Russia has historically been highly effective at drawing out negotiations, they may initially insist again on US concessions in this area—but they should hopefully recognize that it would not be worth jeopardizing strategic offensive arms control over the issue.
If Russia refuses to yield, however, the United States could again offer to place some limits on its missile defenses as part of a negotiation. At present, the US missile defense architecture appears to be an ever-evolving, open-ended project—rather than a clearly-defined effort to reach specific deterrence objectives. This has been recently underscored by increasingly blurred lines between theater and homeland defenses, as well as President Trump's assertion that US missile defense will continue to evolve to "detect and destroy any missile launched against the United States anywhere, anytime, anyplace" (Sonne 2019). These factors likely validate the concerns of Russian strategists who largely never believed previous US assurances about the limited nature of their defenses (Woolf 2002).
To that end, the United States could consider establishing clear goals and limitations for its missile defense architecture, clearly communicate them to Russia, and then assess which constraints would be acceptable

to unblock the path toward strategic arms control. Such constraints would not necessarily have to affect existing US capabilities but could involve placing a cap on interceptors at a higher level than what is currently deployed (Arbatov 2021). Given China's similar concerns about US defenses, such actions could potentially also help bring China to the negotiating table.

Finally, regarding one of the United States' core concerns—nonstrategic nuclear weapons—Russia has so far repeatedly posed preconditions to even begin talks that have been perceived as a pretext to avoid negotiations: the removal of US nuclear weapons from Europe and the elimination of NATO's nuclear-sharing arrangements and related infrastructure. While the Russian non-strategic nuclear weapons posture has been transitioning to a combination of assets in support of specific missions, the Russian military, political leadership, and elites still believe that Russia needs a larger non-strategic nuclear weapons force than does NATO. This is primarily because Russia sees its non-strategic nuclear weapons to some extent as compensation for the larger US strategic nuclear arsenal.

Because Russia is unlikely to agree to equal ceiling and intrusive verification measures, a phased approach starting with transparency measures would be more promising. However, Russia might be susceptible to an effort to put its 2020 political commitment to freeze its nuclear stockpile back on the table (Pomper et al. 2022, 46–47). In the longer term, to overcome Russia's perceived need to compensate for having less strategic nuclear weapons, actual reductions might need to wait for future negotiations including the United Kingdom, France, and China (against whom Russian non-strategic nuclear weapons could be used in a strategic way).

Understand the other side: China

The Chinese side is more difficult to understand. First, China has never engaged in nuclear arms control talks with the United States—unlike Russia, with which the United States has half a century of experience. Second, while China formally maintains a no-first-use policy, doctrinal debates are still ongoing about the limits of this policy (Leveringhaus 2022). To make matters worse, the security concerns related to the two country's growing competition have restricted opportunities for US-Chinese academic exchanges that would allow the United States to better understand China's goals and doctrine (Zhao 2021).

What seems clear, however, is that it would be almost impossible to include China in an immediate follow-on treaty to New START. First, the remaining time until February 2026 is not enough to include an entirely new negotiating partner with whom no such negotiating history or relations exist. Notably, it took the United States and Russia decades to get to their first verifiable arms control treaty. Second, Chinese officials have explicitly and repeatedly rejected joining arms limitation talks and previously suggested that they will join such negotiations only after the "huge gap" between their arsenal and the US and Russian nuclear arsenals has been closed. Until then, however, they have signaled that they stand ready to discuss "all issues related to strategic stability and nuclear risk reduction in the framework of P5, [the UN Security Council's five permanent members, including] China, Russia, US, UK, and France" (Ministry of Foreign Affairs of the People's Republic of China 2020).

China likely perceives time to be on its side and is probably waiting until it gains the needed leverage to become a more equal negotiating partner in this area. The projected increase in the size of the Chinese nuclear arsenal—perhaps with up to 1,000 warheads by 2030 (US Department of Defense 2021, 90) and potentially as many ICBMs as each of the United States and Russia—could potentially create new opportunities for arms control discussions around the end of this decade. But, even then, China is unlikely to agree to strategic arms control limits until it feels confident enough in its nuclear forces' continued survivability. Moreover, China has traditionally relied on secrecy and opacity to help safeguard its smaller nuclear arsenal (Riqiang 2016). It would have to accept some degree of transparency to join a verifiable arms control regime like the New START treaty.

Meanwhile, to make any progress, the United States should continue to explore the following questions: What are the lessons from previous nuclear dialogues with China that may form the basis for future joint efforts? A previous track 1.5 dialogue (a term of art to describe situations in which both official and non-official actors cooperate) with China clarified that China, seeking recognition for its prominent role in the new international order, is interested in discussing a "new paradigm of strategic stability—one not built around deterrent threats, especially nuclear blackmail—but broader ideals of cooperation and 'mutual respect' " (Santoro and Gromoll 2020, 11). The United States needs to therefore think about possible ways to make China feel this interest is being addressed while preserving its national security priorities.

Moreover, China's strategic stability concerns all center around the fear that the United States might be after "absolute security," looking to overcome mutual vulnerability. Therefore, the current and future US administrations should consider tools to build confidence in this area with China. Even if informal and on a track 1.5 basis, these could eventually lay the groundwork for a first treaty with China.

To lay the groundwork for cooperation with China, the United States should also explore the following questions: Is there any room for the United States and China to slowly start exchanging certain types of information about each other's strategic nuclear forces, in particular those types about which China might not feel as protective? What would the United States be prepared to offer China in exchange for limits on Chinese nuclear forces? Is a more creative French-style approach to negotiations needed—that offers to combine unrelated issues,

which in China's case would include tariffs, special economic zones, and other economic issues? How can the United States best leverage the P5 forum for risk reduction with China?

Make long-term investments

Because of the difficulty of achieving the United States' current objectives, especially the inclusion of China, in a follow-on treaty, it is advisable to develop and pursue a long-term strategy for achieving these goals. Given the current geopolitical context, a treaty covering Chinese strategic nuclear forces might not happen until the 2030s when China feels secure enough in its nuclear deterrent capability and negotiation leverage.

To be ready once the other side agrees to talk, the United States should start making the following long-term investments. First, it should develop its positions on priority demands and possible concessions it would be willing to make in negotiations with both Russia and China. Second, it should explore all possibilities for the national laboratories to engage in technical verification exchanges and preparations with both Russia and China to ensure technical details will be ready once circumstances are ripe for new treaties and agreements. Additionally, to increase cooperation with China that may lead to more cooperation in the area, the United States may consider offering early warning training to China which is intensively developing its early warning capability. Something similar was considered for Russia during the Cold War and would have the added benefit of reducing miscalculation risks. Finally, the United States should view even unfruitful negotiations as a means to build and maintain arms control negotiation expertise—as well as to uphold communication channels—until a treaty can be successfully negotiated and concluded.

Get the military's support

Having the military's support is key to both negotiations and ratification. First, the US Department of Defense is one of the most important US interagency stakeholders, and the interagency's support has proven crucial during negotiations. During the New START negotiations, Gottemoeller assesses the strong Pentagon support to be one of the core factors in the negotiations' success (Gottemoeller 2021, 96). Getting the two top military leaders together helped overcome institutional resistance in each military bureaucracy (Gottemoeller 2021, 70). US Chairman of the Joint Chiefs of Staff Admiral Mullen and Russian Gen. Makarov, by simply agreeing on the main issues and their priority, gave the Russian delegation's military members a high-level boost within the Russian Ministry of Defense for working the details (Gottemoeller 2021, 74).

Second, the military's support increases the chances of ratification. Many senators simply do not wish to be on the record for voting against the military.

The military's support is best achieved primarily by listening to and addressing its concerns. In the New START negotiations, for instance, the US military services were worried about the costs of elimination procedures and the operational interruptions due to inspections (Gottemoeller 2021, 63). The negotiators' focus and dedication toward this issue helped ensure their support. Moreover, involving the Chairman of the Joint Chiefs of Staff as much as possible throughout the negotiations can be key in this effort too as it will make the military feel like it partially owned the process.

Future arms control will have to solve several problems for the US military. First, old problems that are likely to resurface without a follow-on to the New START Treaty should not be discounted. These concern primarily the lack of constraints on Russian nuclear forces which would incentivize a new arms race and the costs of the additionally-needed intelligence collection and analysis in the absence of a verification mechanism. In fact, after the New START Treaty's executive extension in 2021, US Gen Hyten, who served as the vice chairman of the Joint Chiefs of Staff from 2019 to 2021, expressed his and other Department of Defense officials' support of the treaty especially because of its nuclear weapons limits and verification process (Vergun 2021).

Additionally, the amount of military backing is likely to increase with the number of new problems the negotiations manage to address. Gen. Hyten is one of many Department of Defense officials to reiterate that new Russian weapons and China's buildup are increasingly posing strategic problems for the US military (Vergun 2021). Addressing these issues in some form or another through future arms control approaches would likely help this US administration, or the next, get the necessary military support. Moreover, maintaining deterrence through a strong nuclear triad has historically been a strong military interest—although there is reasonable debate on what is needed in this regard. Overall, it is advisable to frame any future arms control approaches within a framework that seeks—and gets—the military's support.

Gain bipartisan support

To be sustainable, a follow-on agreement would need broad bipartisan support to remain insulated from politicization. This is particularly critical given the likelihood of political fluctuation in the House, Senate, and presidency over the coming years. New START's survival throughout the Trump administration's pattern of treaty withdrawals can be partially attributed to continued bipartisan support within Congress—including from senators who initially voted in favor of the treaty in 2010 and remained in Congress throughout that tumultuous period.

To that end, a follow-on agreement must address the concerns of both major political parties, the Democrats and Republicans. Chief among these are concerns over breakout potential and verification.

One prominent critique of New START is that it could incentivize warhead uploading in a crisis because both parties are permitted to retain an unlimited number of non-deployed strategic warheads (Smith 2020). As discussed earlier, both countries do indeed have a significant upload capacity and could more than double their number of deployed warheads if necessary.

However, a potential breakout scenario is likely to be more of a Russian concern than a US one: given that the United States has a larger number of empty launch spots on its missiles than Russia does, the United States has a significantly larger upload capacity. As a result, a potential breakout capacity should be more of a fear for Russia than for the United States, making the prospect of a Russian breakout unlikely.

Additionally, even though a significant upload would accelerate the arms race, it may not necessarily affect strategic stability between the United States and Russia. In 2012, a joint report by the Department of Defense and the Director of National Intelligence to Congress noted that: "The Russian Federation . . . would not be able to achieve a militarily significant advantage by any plausible expansion of its strategic nuclear forces, even in a cheating or breakout scenario under the New START Treaty, primarily because of the inherent survivability of the planned US strategic force structure, particularly the OHIO-class ballistic missile submarines, a number of which are at sea at any given time" (US Department of Defense 2012). This argument could potentially be used in the future to mitigate fears among US policy makers of a future breakout scenario. Another critique of New START centers around the treaty's verification regime—specifically, that a limited number of on-site inspections may not be enough to verify compliance with the treaty's central limits on deployed warheads. As explained by Bryan Smith, a senior fellow at the George Mason University's National Security Institute: "[E]ven if a US inspection revealed that a particular missile was loaded with a number larger than Russia had declared, there is no logical way to infer from this—or any such discrepancy—that the entire force had exceeded the 1,550 warhead limit. Conversely, neither could we logically conclude that the entire force complied with the 1,550 limit, even if the 20-30 percent lifetime sample inspections all confirmed that the observed warhead loadings matched their declarations." (Smith 2020)

Given Russia's pattern of violating arms control agreements, such concerns should be taken seriously. Yet, perfect verification—that is, accurate and exhaustive—is not necessary for the success of an agreement. Rather, the United States should be satisfied with ensuring Paul Nitze's definition of effective verification that "if the other side moves beyond the limits of the treaty in any militarily significant way, we would be able to detect such violations in time to respond effectively and thereby deny the other side the benefit of the violation" (Nitze 1988).

It is therefore possible for the United States to achieve effective verification of a treaty through limited on-site inspections. Ivan Oelrich, a former vice president of the Federation of American Scientists, comprehensively addressed the prospect of Russian cheating in 2010: "Say the Russians wanted to cheat by putting more warheads than allowed on, say, 10% of their missiles. [. . .] They would have to put the warheads on missiles and then lie on the data exchange and hope they don't get caught. So, if we pick our inspection sites randomly, then there is a 10% chance they will get caught in one inspection and a 90% chance they will get away without detection on that one inspection. But there is only an 81% chance of getting past two inspections, 73% chance away with three, and so on. If we do 10 inspections, there is a 2/3 chance we will catch a violation of only a 10% cheat, hardly odds that would appeal to a prospective cheater. There is a 90% chance we would catch a 20% cheat. Just in the first 10 inspections. Remember that inspections continue over the years and our confidence will increase over time, approaching near certainty that even small violations will be detected by the time the warhead limits are reached" (Oelrich 2010). As a result, to alleviate these broader political concerns over verification, the United States should aim to incorporate a sufficient number of on-site inspections into any follow-on agreement. A rough calculation to determine an acceptable number of inspections can be derived, as done above, by estimating the percentage of missiles where Russia will try to cheat and selecting a confidence percentage of acceptable risk. The formula is expressed as follows: 1-x = yz, where x is the desired confidence percentage, y is the likelihood of not catch- ing a cheating Russia during each independent inspection, and z is the number of necessary inspections. For example, if the United States suspects that Russia could try to cheat with 10 percent of its missiles, then it will need at least 21 inspections to achieve a 90 percent confidence rating that Russia is not cheating at that rate. It would need at least 28 inspections to achieve a 95 percent confidence rating, and at least 229 inspections to achieve a 99 percent confidence rating. The desired confidence rating, coupled with an educated assessment of Russia's capability and intent to cheat, will help determine how many on-site inspections would be sufficient to verify an agreement. However, these will need to again be carefully weighed with the military's operational costs and sensitivity concerns.

Due to the US Senate's concerns about Russian cheating and the return to great power competition since New START's negotiations, the right balance might end up requiring a higher confidence rating today.

Conclusion

Unless both Russia and the United States soon put in proportional efforts to overcome the political forces stalling meaningful dialogue, February 5, 2026, will be the first day since 1972 without substantive, verifiable limits on the world's two largest nuclear arsenals.

Russia and the United States would lose mutual predictability, and military planners would have to consider an increased worst-case scenario, starting with the possible upload of nearly double—or possibly more, in the case of the United States—the total number of warheads on strategic delivery vehicles. Both sides would inevitably accelerate defense spending, resulting in an even more costly and unstable arms race. To preserve bilateral arms control in these times of strategic competition, the United States and Russia should consider and prepare for several options, with trade-offs between feasibility and ambition: continued adherence through mutual moratoria the negotiation of a new non-ratified agreement, and the conclusion of an entirely new treaty. The first two options have the benefit of not requiring legislative approval. However, their value would depend on the amount of political will on both sides to legally enable continued verification and refrain from cheating or exiting the agreement. At the same time, the United States and Russia need to carefully examine and prioritize their underlying interests for the option of a follow-on treaty. Even if a follow-on treaty fails to be ready by February 2026, strategic arms control treaty history has demonstrated that there are reasonable options for bridging treaty-less periods.

The history of treaty negotiations informs the next steps for the US government: (1) re-evaluate the full box of arms control tools in the light of strategic competition, (2) make significant, long-term investments into rebuilding the relevant expertise, (3) understand Russian and Chinese strategic priorities, (4) ensure readiness to negotiate once Russia and eventually China agree to talk, (5) get the military's support, (6) ensure presidential leadership, and (7) gain bipartisan support. The best practices for each of these steps should help guide the next generation of arms control champions and ensure that the United States, Russia, and China can temper the most dangerous impulses of geopolitical competition and pursue their mutual security priorities through strategic arms control.

●▶ References are available at the source's URL.

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Putin's psychology and nuclear weapons: the fundamentalist mindset

By Charles B. Strozier and David M. Terman

Source: https://thebulletin.org/premium/2022-11/putins-psychology-and-nuclear-weapons-the-fundamentalist-mindset/

Nov 09 – Since the beginning of his war in Ukraine, Russian President Vladimir Putin has repeatedly threatened to use nuclear weapons. Those around him have also begun making nuclear threats. Such threats take us all into an unfamiliar political and psychological realm. The danger is not just large-scale destruction but the total collapse of human civilization. The possibility of using nuclear weapons introduces into what is an old-fashioned ground war in eastern Europe an apocalyptic image of the end of life as we know it.

Even at a regional level, Russian threats pose great dangers. Keep in mind that a bomb the size of the one dropped on Hiroshima would today be considered "small" and "tactical." If dropped on Kyiv, a city of nearly 3 million people, the suffering would be enormous. Nuclear weapons also bring with them the contamination of radiation that lasts for generations. The dread of radiation, furthermore, has assumed new meaning in the age of COVID-19: Both are tasteless, invisible, and potentially lethal. The environment

of fear created by a multi-year pandemic has arguably amplified fears of radiation. In both cases, the dread is real for policy makers, but the wider population largely experiences it as an unconscious fear of invisible malignant penetration.
Putin has taken maximum strategic advantage of both fears. As authors Robert Jay Lifton and Richard Falk have argued (1982), repeated threats to use nuclear weapons are themselves a form of weapons use, because such threats distort democratic institutions in fundamental ways. Given his autocratic power in Russia, Putin's talk must be taken seriously. His threats are not loose rhetoric. They have stymied Western responses to his wanton aggression in Ukraine. He has had his army kill civilians as it seizes territory in the Donbas region and beyond. The West doesn't dare impose a no-fly zone, or provide all the sophisticated weapons systems that Ukrainian President Volodymyr Zelensky has desperately requested. The West has provided palpable support for Ukraine but necessarily stopped short of a military response that would defeat Russian forces. The dread is that the actual defeat of the Russian forces would humiliate Putin personally. Backed into a corner, he could well unleash nuclear weapons. That is not an idle fear.

Putin's paranoid personality

As experts on psychology, we are especially concerned by Putin's paranoia and its relationship to what the psychoanalyst Heinz Kohut called the group self (Kohut 1985, 83, 175-176, 206-207, 241-247). The group self is a psychological structure shared by members of a group. It consists of common goals and ideals born of historical experience. The group self can describe the psychological relationship that develops between a paranoid, charismatic leader and his followers in moments of historical crisis.
We know something about Putin's psychology from his frequent speeches and press conferences since his rise to power in the 1990s. Putin seems to believe his propaganda that NATO was about to attack Russia and that its war was an act of defensive survival. He talks constantly of enemies surrounding his country. The West encroaches. Putin's behavior fits logically into what appears to be an enactment of his personality structure that is centered on a paranoid gestalt. Always grandiose to a fault, Putin appears in recent years to have surrounded himself with yes-men who applaud his vision for a recovery of Russia's imagined greatness and feed his fantasies of American and Western conspiratorial intentions. He has throttled the press and cut off dissent, which limits the marketplace of alternate ideas. He is the new Leader, the great one who alone possesses the ability to carve out an exalted history for Russia.
He also may have been affected by the pandemic. He seems to have responded with fear and dread to COVID. Those huge tables at which he interviews foreign visitors, and the extreme distance between him and even his own advisers, suggest his need for an exaggerated isolation from potentially contaminated others. Death anxiety appears to have amplified his psychological distress.

Putin's reading of Russian history

To help us understand Putin's worldview, Timothy Snyder, a noted Russian historian, has brought to our attention the significance of Ivan Ilyin's thought and work. Ilyin was a mid-20th century White Russian émigré who wrote numerous books describing a fascist political order in which Russia is historically innocent and surrounded by evil. In Ilyin's view, it is Russia's mission to safeguard civilization and the "good" by producing a great Leader who will save Russia and vanquish the evil other—the West.
This framework informs Putin's understanding of, and reaction to, his experience of Russia since the fall of the Soviet Union as one of being caught up in unrelenting and ongoing humiliation. His read of history is that the West has gloated over winning the Cold War and has successively plucked off many of the former Soviet republics as Western puppets. NATO has extended its reach to the border of Russia, while the United States has arrogantly and intolerably grabbed the world's wealth. This discourse of aggrievement roams into wild fantasies of Russia's right to its imperial ambitions in Ukraine. A profound humiliation set in at the sudden loss of the empire, aggravating the economic and social chaos of the 1990s. In time Russia recovered economically, but the humiliation lingered and became a deep wound that Putin has inflamed to his own political advantage. He regards Ukraine as a fake state that historically remains an integral part of the sacred "Mother Russia." As the Russian scholar Tatiana Stanovaya argued recently in the *New York Times*, Putin considers the Ukrainian language a mere dialect of Russian and imagines in the near future a "Russification" of the country that would include a purge of its elites, dethroning its national heroes, renaming the streets, and rewriting the history books (Stanovaya 2022). Putin lays out such ideas with an absolute certainty that is the coinage of paranoia.
Putin's demonization of the West connects with a deep strain in Russian history. His grandiose vision for a great Russian civilization obliterates Ukrainian identity on the way to vanquishing the decadent and evil West. It is an open question whether such views represent most Russians. In a psychological sense, it may not matter. Putin's vision perhaps speaks to unconscious aspirations that are more elusive. Historically, Russians have been content to be ruled autocratically by paranoid leaders as the empire has expanded steadily over the centuries—until its power and prestige suddenly collapsed at the end of the Cold War and the breakup of the Soviet Union.

Putin's grievances and the group self

Our concern is the relationship between the paranoid certainty of Putin and the dangerous comfort he provides for the tormented and confused group self of Russia. Putin calls forth an imagined vision of a

great past that is projected forward as millennialism—the yearning for an apocalyptic renewal. Putin's paranoid style of cognitive organization occurs in response to injuries to the pride, power, and ideals held by the group. His individual psychology responds perfectly to the sense of injury in a group yearning for firm answers during chaos. His own injured self-esteem matches the injured pride and honor of the group. Putin's grievances and those of a troubled Russia in the last few decades have become synergistic and have generated enormous rage.

There is an interesting and important symmetry or congruence between the individual and the group in this regard. The leader of groups that develop this psychological organization is usually paranoid. His (and most such leaders are men) individual development has been marked by childhood experiences of deep shame, humiliation, and often neglect. Such treatment leaves him prone to boundless narcissistic rage and a need to see any failure or weakness as the work of a malevolent other. It also results in a personality structure in which normal childhood grandiosity becomes exaggerated in adulthood: He is perfect and all-powerful. However, such a structure is fragile and easily threatened with collapse and dissolution with the experience of failure, frustration, or defeat.

The fundamentalist mindset

Paranoia and millennialism, in other words, share a common psychological basis in what we have written about as the "fundamentalist mindset" (Strozier et al. 2010). Too often scholars think of fundamentalism as restricted to certain types of attitudes within religion. Fundamentalists are thus rigid and literal in their interpretation of sacred texts, insist on imposing traditional values, and hold absolute beliefs about the truths of their God.

Our concern is to examine the phenomenon of fundamentalism psychologically and in the political and historical realm. Such a mindset involves thinking in rigid dualistic categories. A sense of the evil other lies at the heart of fundamentalism. The world is a dangerous place that is devoid of empathy. We are *not* all in it together. The evil can take a variety of forms to fit the historical moment. For Putin the West embodies degradation, corruption, and lustful impulses that threaten traditional Russian values, even though in holding these views he is out of sync with many Russians who are yearning for the very freedoms he disdains.

Putin's belief is that his true Russia represents the good that must deal with evil. Such a Manichean distinction reduces the struggle to a binary choice between an idealized good Russia and the bad West. It is in the nature of the fundamentalist mindset to totalize the difference between good and evil. Totalism, as Robert Jay Lifton has written, is the crucial psychological process of making something relatively manageable in the public space by creating great rivalries that spawn paranoia and violence and keep hatreds burning bright (Lifton 1961). Rage becomes chronic and ingrained. The "other," deemed evil in what emerges as a radical fundamentalist mindset, comes to embody the taint of sin. That other must be dispensed with, and in fact his elimination assumes something of an ethical obligation to achieve perfection in the world. To kill therefore is to heal, and in this context one could even say that killing makes one a savior. Violence becomes a moral imperative, lending what is typically an apocalyptic cause a profoundly important and powerful ethical dimension.

The fundamentalist mindset requires an apocalyptic mission of the group.[1]

The perfect world will be reborn in an imagined future created by the select few: the "remnant" in the Book of Revelation, the Nazis in Germany, the true Muslims for ISIS. The evil other must be exterminated to initiate the violent process of renewal. Injury to the group's sense of self—in the form of a loss of power, discrediting of its ideology, or economic or political deterioration—results in shame, humiliation, and rage in the group. The humiliation is intolerable. When an individual has this type of cognitive organization, he wreaks disturbing violence in the name of offended pride. Such reactions are typical of a cuckolded husband, a gang defending its territory, or a nation feeling encircled. The most dangerous form of paranoid violence, however, is the response to a feeling of heightened victimization by the "other." Feeling shamed and fearful that one's very essence is about to be destroyed, the paranoid leader attacks to ward off the imagined danger posed by the other and restore the integrity of the damaged self.

The paranoid leader is exquisitely sensitive to what he experiences as an injury or humiliation. That attitude lies at the heart of the violent potential within paranoia. In Putin's case, it seems to have motivated him to start a war without any apparent provocation.

Echoes of Nazi and Al Qaeda millennialism

We have seen this dynamic relation between a paranoid leader and his troubled followers before in history, but nowhere more powerfully than in Nazi Germany. In post-World War I Germany, a widespread humiliation gripped a war-torn people. Fighting on two fronts, the Germans prevailed gloriously in the East, where they soundly defeated the badly equipped Russian armies. In the Treaty of Brest-Litovsk in 1918, Lenin gave away vast stretches of land to secure peace so he could pursue the Bolshevik revolution. In the West, however, where it really mattered, the Germans lost the war decisively and were forced to sue for a peace that ended with harsh terms in the Treaty of Versailles.

Throughout the war and especially at the end, ordinary Germans were force-fed a diet of propaganda about their victories in the East, ignoring the defeats in the West. The result was a disoriented people, humiliated and discouraged, mired for years in an economic decline that plummeted into devastating depression in the late 1920s. Their leaders had deserted them. They were lost and bereft. They must have

been stabbed in the back. Only the certainty of a ranting paranoid leader brought a measure of hope. As David Redles has shown, the foot soldiers in the early days of the Nazi movement saw in Hitler an idealized figure who could bring meaning to a devastated people (Redles 2010). In Kohut's own terms, a disoriented and fragmented German postwar group self found, in the experience of their charismatic leader, a sufficient measure of cohesion to justify total obedience to a message that promised war, suffering, and death—but also hope in its apocalyptic dream of a thousand-year Reich (Kohut 1985, 171–217).

Echoes of Nazi millennialism can be heard in the writings and speeches of Osama bin Laden, the late head of Al Qaeda. Like Hitler, bin Laden was a charismatic leader who built a violent organization with the goal of destroying its enemies. Following in the ideological footsteps of Egyptian scholar and author Sayyid Qutb, bin Laden carefully crafted his persona. "Dressed in flowing robes and mounted on horseback," and "producer and director of his own theater of cruelty," bin Laden wrote explicitly about humiliation (Corbin 2003, 24; Stern and Berger 2015, 194). His 1996 and 1998 fatwas and his 2002 "letter to the American people" make references to two types of humiliation: that inflicted by the Mujahedeen (and Allah) on the Americans and their allies (the Crusaders), which is invoked as a glory, and that inflicted on the Muslim *ummah* (Arabic for "nation" or "community") by Americans and their allies, which is invoked as a traumatic wrong that must be righted through violent action. In his 1996 fatwa, bin Laden lists the causes and basis for Muslim humiliation, and in his 1998 fatwa he articulates, for the first time, the Jihadi movement's universal declaration of war.

Bin Laden writes in the 1996 fatwa, in which he uses the Arabic word for "humiliation" nine times, "Death is better than life in humiliation! Some scandals and shames will never be otherwise eradicated." Like the Nazis who longed for a unified Germany with one shared race and religion, and believed in a demonic conspiracy of Jews and their allies, bin Laden wanted a unified, pure Muslim *ummah* ruled by Sharia (God's law) and was convinced that a Zionist-Crusader alliance was working against the Muslim *ulama* (religious scholars) and the leaders of the Jihadi movement, chipping away at Al Qaeda's main issue: "the unification of the people under the divine law of Allah" (Bin Laden 1996).

To be humiliated is intolerable and must be avenged. The oppressed find redress by humiliating the oppressors. To be able to humiliate is power in itself and, for bin Laden, the ultimate experience of humiliation is reserved for the enemies of Allah—the sign of the ultimate victory. "In Afghanistan they have made vows to Allah that as long as they are alive, they will continue to carry arms against you until you are—Allah willing—expelled, defeated and humiliated."

Making room for retreat

Humiliation is at the heart of this intersection of paranoia and millennialism. The nature of Putin's apocalyptic vision, and of the war he has unleashed to realize it, makes defeat unacceptable. It would represent massive humiliation. His fundamentalist worldview is so extreme that it doesn't allow for compromise. The very goodness of the world, of himself, and, most significantly, of Russia are at stake. Defeat would shatter the foundations of his elaborate belief system, not to mention his self-structure. There is nothing more absolute for the fundamentalist leader than not retreating from a field of battle that has assumed apocalyptic meaning. Suicide is the only option, as Hitler came to feel while watching his dreams of the thousand-year Reich evaporate.

Putin has given himself a choice Hitler lacked. He need not accept defeat on the battlefield. This reversal contradicts the conventions of war long established in the West. Cornwallis admitted defeat when he found himself surrounded by Washington's army; Napoleon met his Waterloo; Robert E. Lee surrendered to Ulysses S. Grant at Appomattox; and the Japanese accepted the inevitable after the United States dropped two atomic bombs in August 1945. Surrender of defeated armies in the field has always been the nature of warfare, often reversing and undoing the apocalyptic fantasies of charismatic and paranoid leaders. But nuclear weapons radically change that calculation.

An awareness of the psychological vulnerabilities of Putin in the Ukraine war could help offset the possibility that he would actually use nuclear weapons. His aggression needs to be stopped, but Russia can't be humiliated or backed into a corner in the process. There may be hope, however, in the very grandiosity of Putin's imperial dreams. He imagines hegemony over a vast territory and influence on a geopolitical scale. Ukraine is only one piece of that larger vision. Russia must feel it has preserved a respected role in any final settlement, including the shared need to preserve human civilization.

The larger issue, of course, is the presence of nuclear weapons in the world. Their very existence alters the meaning of war, indeed of violence itself. Once-familiar conflicts between nations assume existential meanings when millennial fantasies about creating a utopia on Earth are woven into the fabric of geopolitical aspirations. There is no simple answer to this dilemma. At the very least, as humans we must recognize that the only rational and meaningful course of action is nuclear abolition. The *Bulletin*'s famous Doomsday Clock must have its hands turned back, rather than continually moved forward.

Endnotes

[1] There is a distinction between the violence of apocalyptic transformation, and the utopianism that yearns for the renewal of human potential. The apocalyptic narrative that requires violence for renewal should not be confused with the utopian dreams of social movements like antislavery in the 1830s, Gandhi's *satyagraha* of nonviolent resistance, the Civil Rights Movement from the mid-1950s to the mid-

1960s, or the contemporary yearning for saving the planet from the ravages of global warming. Wetic need our dreams. Utopias are essential in motivating social action.

●▶ **References are available at the source's URL.**

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EDITOR'S COMMENT: It would be pretty much interesting to read a similar analysis by the same authors about US President Biden.

Decontamination of radionuclides from skin: an overview

By Anissa Tazrart, Philippe Bérard, Alexandra Leiterer, and Florence Ménétrier
Health Phys. 2013 Aug;105(2):201-7.
Source: https://pubmed.ncbi.nlm.nih.gov/23799505/

Abstract

The accident in Fukushima has emphasized the need to increase the capacity of health protection for exposed workers, first responders, and the general public in a major accident situation with release of radioactivity. Skin contamination is one of the most probable risks following major nuclear or radiological incidents, but this risk also exists, and incidents can happen in industry, research laboratories, or in nuclear medicine departments. The aim of this paper is to provide an overview of the products currently used after skin contamination in order to highlight the needs and ways to improve the medical management of victims. From this review, it can be observed that the current use of these radiological decontamination products is essentially based on empiricism. In addition, some of these products are harsh and irritating, even toxic, possibly damaging the skin barrier. In some emergency situations in which clean water is in short supply, most of the current products cannot be used. Research on the mechanisms of action of decontaminating products is needed to develop a decontamination strategy.

What Would Happen If a Nuclear Bomb Was Used in Ukraine?

By Clare Roth (Fulbright Young Journalist in Germany)
Source: https://www.homelandsecuritynewswire.com/dr20221114-what-would-happen-if-a-nuclear-bomb-was-used-in-ukraine

Nov 14 – When we think about the war in Ukraine and the nuclear threat that it poses, we often think of two scenarios: an accident at a Ukrainian nuclear plant or the fallout from nuclear weapons.
In the first article of this series, we looked at accidents at Japan's Fukushima nuclear power plant in 2011, and at Ukraine's Chernobyl power plant in 1986, analzying the impact those accidents had on the surrounding populations. And we compared those accidents and to what might happen in the event of fallout from an accident at the Zaporizhzhia nuclear power plant, which has been central to the ongoing conflict in Ukraine.
In this second article, we will look into the short and long-term health effects that the bombings at Hiroshima and Nagasaki had on surrounding populations in 1945.
Experts use the study of those bombings at the end of World War II to understand what might happen if a nuclear weapon were detonated today.

Nuclear Fallout Depends on the Type of Weapon
Nuclear fallout is hard to predict because it is highly dependent on how and where a weapon is used.
Weapons that detonate at high altitudes produce different effects than weapons that detonate on or in the ground, said Dylan Spaulding, a senior scientist in the Global Security Program at the US-based Union of Concerned Scientists (UCS).
"In the latter case, that's when you have to worry about fallout, because you are basically radioactively activating Earth," said Spaulding. "Whereas an airburst doesn't necessarily have the same fallout worries."

Spaulding said that different weapons can be detonated for different strategic reasons. The detonation of a weapon in the air can kill many people at once, with less of a long-term impact on radiation in the surrounding population and environment.

The detonation of a weapon near the surface of the Earth could both kill many people at once and taint the environment and food supply for years. This can be illustrated by the US bombings of Nagasaki and Hiroshima at the end of WWII and the 1986 Chernobyl accident in Ukraine. The attacks killed between 60-80,000 people in Nagasaki and between 70-135,000 people in Hiroshima in the months that followed. The bombings released about 40 times less radiation into the environment than the 1986 Chernobyl accident, but killed hundreds of thousands more people in the immediate aftermath.

Today, people can safely live in Nagasaki and Hiroshima without fear of lingering radiation, but the Chernobyl exclusion zone remains radioactive and uninhabitable. Other effects of the 1945 bombings include an abnormally high increase in leukemia among people in surrounding areas, particularly among children. Other cancers increased, but in lower numbers.

Further long-term impacts of the radiation included increased instances of small head size, slower physical growth, and mental disability among children still in the womb when the explosions occurred some studies have suggested. This generally wasn't the case for children conceived after the bombings, as other research has shown.

Nuclear Weapons Are Potentially More Lethal Now

Weapons experts distinguish between tactical and strategic nuclear weapons.

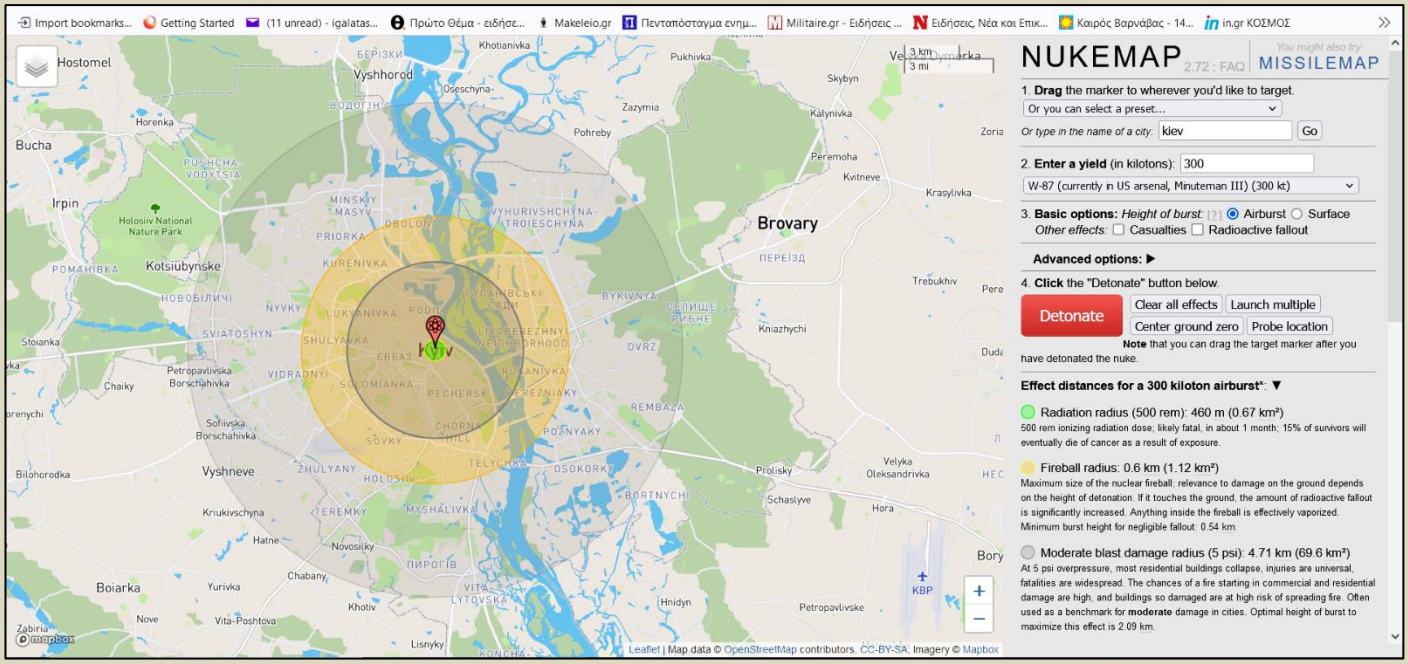
Generally, they say that tactical weapons travel short distances and can win battles, and that strategic weapons travel farther and can win wars.

The bombs used at Hiroshima and Nagasaki were considered strategic weapons at the time — the type that win wars rather than those that only win battles.

But Spaulding said that nuclear weapons have intensified to such a degree in the decades since that some of today's tactical nuclear weapons could be more intense than the strategic ones used to end WWII.

"Many of the weapons in modern nuclear arsenals are many, many times more powerful than what was used in Hiroshima and Nagasaki," Spaulding said. "In terms of yield, as much as 80 times more powerful."

So, it's hard to use the historical bombings of Nagasaki and Hiroshima as an exact guide to what might happen today but they are an indication.



Damaged Food Supply Could Kill Billions

There are, however, attempts to simulate what nuclear fallout would look like after a contemporary bombing.

Alex Wellerstein, a historian of science and nuclear weapons at the Stevens Institute of Technology in New Jersey created a website called NUKEMAP to do just that. It compares the fallout from bombs detonated in the sky with those detonated on the ground.

Then, a study published in the journal *Nature* in August offered some projections of what would happen to the environment, population and global food supply if Russia and the US waged a weeklong nuclear war using strategic nuclear weapons.

The authors of the study estimated that there would be 360 million immediate fatalities from the use of the weapons themselves, and over five billion people would be left without food for two years after such a

nuclear war — that is around 60% of the world's population. The disruption to the food supply would be caused by massive amounts of soot emitted by fires ignited by explosions.
Researchers also attempted to model what destruction would look like in other scenarios. For example, a weeklong nuclear war in 2025 between India and Pakistan. The South Asian neighbors own far fewer nuclear weapons than the US and Russia, but the authors still predicted around 164 million fatalities and over 2.5 billion people without food for two years after such a war.
Alan Robock, a professor of environmental sciences at Rutgers University in the US, was one of the authors of the *Nature* study.
In earlier research, Robock estimated that the bombings at Hiroshima and Nagasaki had emitted around 0.5 teragrams of smoke. In the more recent study, he and others estimated that a US-Russia scenario would create around 150 teragrams of smoke and the India-Pakistan scenario would produce 16-47 teragrams of smoke.
Robock said the paper made predictions based on the impact of strategic weapons, "which simply means those that came from a long way away."
"Any use of nuclear weapons can escalate into a full nuclear war between NATO and Russia, and would produce a nuclear winter," Robock told DW. "Almost all war games played with military officers result in this once nuclear weapons are used. There is not much chance that a nuclear war can be stopped once started. Panic, fear, miscommunication, and bad information would result in commanders using the weapons they have."

What the new posture review says—and does not say—about the future of nuclear weapons

By Victor Gilinsky
Source: https://thebulletin.org/2022/11/what-the-new-posture-review-says-and-does-not-say-about-the-future-of-nuclear-weapons/

A test version of the new B61-12 guided nuclear bomb to be deployed in Europe as part of a modernization program. Photo from a video by Air Force Staff Sgt. Cody Griffith.

Nov 14 – On October 27, the Biden administration released an unclassified version of its Nuclear Posture Review (NPR), a Congressionally mandated document, prepared by the Defense Department, that describes administration policy on the role of US nuclear forces. Compared with the previous version

released by the Trump administration in 2018, it has a less aggressive air and tightens the range of possibilities for use of US nuclear weapons. But there is a lot of overlap. The main threats remain China, Russia, North Korea, and Iran. And US nuclear forces are described as intended for deterring nuclear (and conventional) strategic attacks on the United States and on its "allies and partners," and to prevail if it comes to war. Various analysts have already dissected the NPR in detail. But there remain unanswered basic questions: Who exactly are the allies and partners to whom the United States is extending nuclear protection? And why is the nation extending nuclear guarantees to deter conventional attacks on these allies and partners?

Allies and partners

"Allies" would seem to be a definite category, but there is no specific listing in the NPR. Nor is the Defense Department web page of much help, as it only gives "examples" of US alliances—the 29 NATO members and Australia, New Zealand, and Morocco [sic]. Japan and South Korea apparently fall into the category of non-NATO allies, which includes about a dozen countries. Are they all covered by the US umbrella? The NPR doesn't tell us.

The NPR is even cloudier when it comes to "partners." The Defense Department blurs the distinction between allies and partners, saying only that partnerships are less formal than alliances. The protected partner category surely includes Israel, even though it has its own formidable nuclear force (something the US government does not acknowledge publicly), and probably Saudi Arabia. Both have been distinctly unhelpful lately in respect to the war in Ukraine, which suggests that US protection does not carry reciprocal obligations. The Department has described Colombia as the United States' "closest partner in Latin America," so it must be included. The Defense Department has also referred to a "major partnership with India." It says it has 76 partnerships, with two or three added each year. Are all of them covered by nuclear guarantees? Not likely, but the unclassified NPR doesn't say. Perhaps it's a floating category with the United States deciding who is in or out at any time. In any case, the US public does not know which countries are covered by US nuclear guarantees and that is a problem because it may conceivably lead the United States to a nuclear war and become a target.

Nuclear response to conventional attack

Protecting countries without nuclear weapons against nuclear attack is understandable. (Less clear is why the United States would provide guarantees to countries that have their own nuclear weapons.) But why would the United States agree to protect, with its own nuclear weapons, such countries against conventional attack, and possibly put the United States in the position of being the first country to break the taboo on nuclear weapon use? The idea of responding to a conventional attack with US nuclear forces stems from the Cold War era when Western Europe had to defend itself against numerically superior Soviet forces. It made no sense even then, not least because West Germany, which the United States was defending, didn't want to become a nuclear battlefield. Robert McNamara told me, years after he had been Defense Secretary, that despite it being US doctrine to do so, he was determined not to use nuclear weapons against any Soviet conventional attack. (I asked whether he told George Bundy and President Kennedy about it. "No," he said, "they would have thought me weak," which tells us a lot about nuclear weapon decision-making.) The NPR makes clear that the reason we still stick to this doctrine, which presumes a US first use of nuclear weapons, when the principal reason for it has evaporated, is that allies and partners demand it: "US extended nuclear deterrence is foundational to this approach, and Allies and partners can be confident that the United States is willing and able to deter the range of strategic threats they face whether in crisis or conflict." In a way, the Trump administration's 2018 NPR is more straightforward on this point: "conventional forces alone are inadequate to assure many allies who rightly place enormous value on US extended nuclear deterrence for their security." It suggests the allies-and-partners tail is wagging the US dog. But this is music to the ears of the nuclear weapons establishment, which uses it to ensure generous funding: "Modernizing the US Nuclear Triad and regional capabilities are fundamental elements of US extended deterrence commitments. Only if the United States can deter strategic attack against the Homeland can Allies and partners be confident that US regional extended deterrence commitments are credible." In short, to credibly meet the demands of allies and partners, the United States must protect itself so effectively that it can use its nuclear forces to protect them with impunity. That calls for a lot of hardware. The Defense Department's NPR Fact Sheet gives the following explanation for the importance of this arrangement: "The US global alliance and partnership network is a military center of gravity." This alludes to Prussian general and military theorist Carl von Clausewitz's "*Schwerpunkt*" ("center of gravity") concept describing the US military doctrine. The Department describes it as "the source of power that provides moral or physical strength, freedom of action, or will to act." In other words—in the Department's view, apparently endorsed by the White House—nuclear weapons tie together the global network that gives the United States its worldwide power, including economic power. That power is the benefit for nuclear underwriting of the risk for "allies and partners."

Civilian control

This putative central role in the global network puts the nuclear weapons establishment in so strong a position that it is almost beyond political control. Of course, civilians can still tinker at the edges, move

some funding from here to there, but to go beyond that—for example, to adopt a "no first use" policy—would, in this way of thinking, threaten America's role as the leader of the global network. Because deterrence is all in the mind of the adversary, nuclear practitioners must avoid any hint of uncertainty about the United States' willingness to use force. Prudence is easily conflated with weakness. Nothing is more dangerous to an American national security official than the imputation of weakness—as McNamara's confidence to me illustrates. The need to constantly allay the concerns of allies and partners by demonstrating "credibility" of the willingness to use force biases nuclear decision-making in a dangerous direction.

Future risk

Can the United States, Russia, and a rising China continually hone their nuclear forces, with new generations of their analysts constantly looking for ways to exploit the forces for political advantage, and not slip up with lethal consequences? Perhaps they can, but for how long? Humanity was lucky to survive the Cold War. We are past that, but the weapons still enforce their logic on the users. As national life-and-death decisions may have to be made in minutes, each nuclear weapon country turns over the power to do so to its national leader. Such a leader may assess the situation quite differently than would, say, a professor of deterrence. President Putin gave us all a lesson on this with his war in Ukraine. At bottom, the problem lies in the very existence of nuclear weapons. There is no getting away from this problem.

The NPR claims the United States is pursuing "a world free of nuclear weapons," yet everything in it points in the opposite direction, toward keeping things as they are. The abolition of nuclear weapons is an unrealistic goal for now, but so is the notion that the present state of affairs can continue indefinitely. The goal of abolition is always going to be unrealistic unless we start talking about it.

Victor Gilinsky is a physicist and was a commissioner of the US Nuclear Regulatory Commission during the Ford, Carter, and Reagan administrations.

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SURGICAL CLINICS OF NORTH AMERICA

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Nuclear Terrorism: Triage and Medical Management of Radiation and Combined-Injury Casualties

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Even a limited nuclear war could devastate the world's oceans: Here's what our modeling shows

By Tyler Rohr, Cheryl Harrison, Kim Scherrer and Ryan Heneghan

Source: https://phys.org/news/2022-11-limited-nuclear-war-devastate-world.html

Between 1946 and 1958 the United States carried out a series of nuclear weapons tests on Bikini Island in the Pacific. Credit: Wikipedia

Nov 17 – The US and Russia have recently agreed to hold talks on the New START Treaty, the only accord left regulating the two largest nuclear arsenals in the world. While this is undoubtedly good news, we must not allow it to lull us into complacency. Global events this year, most notably in Ukraine, have raised fears of a nuclear conflict to levels not seen since the cold war. There are more than 10,000 nuclear warheads remaining in the world, and the Kremlin's language regarding weapons of mass destruction has became increasingly threatening in 2022.

Beyond the horrible fates of victims in the strike zones, a large-scale nuclear exchange would profoundly alter the climate system as we know it, while more limited scenarios could have a devastating impact. An ever-growing body of work has shown that even a local nuclear conflict could usher in a climate catastrophe. As marine scientists, we have considered what this could specifically mean for the world's oceans.

Global famine and climate breakdown

In 1982, a group of scientists including Carl Sagan began to raise the alarm on a climate apocalypse that could follow nuclear war. Using simple computer simulations and historic volcanic eruptions as natural analogs, they showed how smoke that lofted into the stratosphere from urban firestorms could block out the sun for years.

They found that this "nuclear winter", as it came to be called, could trigger catastrophic famine far from the location of the war. Ronald Reagan and Mikhail Gorbachev, leaders of the United States and Soviet Union in the 1980s, both cited this work when they declared that a nuclear war could not be won.
The contemporary threat has prompted a new era of research into the potential climate impact of a nuclear war. Using the latest computational tools, we have investigated what the consequences would be for all life on Earth. In our most recent research, we show that a nuclear conflict would massively disrupt the climate system and cause global famine. It could also dramatically disturb the ocean and its ecosystems for decades and potentially thousands of years after a conflict.

How a nuclear war could ice over the Baltic Sea

We explored the scenario of a nuclear war between the US and Russia that results in 150 billion tons of soot from burning cities reaching the upper atmosphere. We found that the low light and rapid cooling would cause large physical changes to the ocean, including a dramatic expansion of Artic sea ice. Critically, this ice would grow to block normally ice-free coastal regions essential for fishing, aquaculture, and shipping all across Europe.
Three years after such a war, arctic sea ice expands by 50%, icing over the Baltic sea year-round and closing major ports such as Copenhagen and St. Petersburg. Even in the scenario of a more limited conflict between India and Pakistan, 27 to 47 billion tons of soot would be ejected into the upper atmosphere, and the resulting cooling would severely compromise shipping through northern Europe.
Worse, the sudden drop in light and ocean temperatures would decimate marine algae, which are the foundation of the marine food web, creating a years-long ocean famine. While the whole ocean would be affected, the worst effects would be concentrated at higher latitudes, including all of Europe and especially in the Baltic states, where ocean light is already in short supply.
The waters in the Arctic and North Atlantic would bear the brunt, likely triggering the collapse of the entire ecosystem. Although fisheries are currently a relatively small sector of the European economy, there might be added pressure to look toward the sea for food should land-based agricultural systems collapse, leaving the continent with few options for food security.

A changed ocean

We expected that a reduction in sunlight and lower temperatures would cause more sea ice and less algae in the oceans. However, we were shocked that our model ocean remained materially transformed for decades after a war, long after temperature and light conditions returned to their pre-war state. Sea ice would settle into to a new expanded state where it would likely remain for hundreds of years.
Ten years after the conflicts, global marine productivity recovers, and even overshoots its initial state. This occurs because enduring changes to ocean circulation push nutrients up to the surface from depth. Once the soot clears and light recovers, phytoplankton can use these nutrients to grow rapidly.
Unfortunately, such "good news" never reaches Europe, as marine productivity remains compromised in the Arctic and north Atlantic relative to the rest of the world. This occurs because the new environmental state favors a different, larger, type of marine algae that can actually strip nutrients from the surface ocean once they die and sink, counteracting the physical surplus.
Why would the ocean be so slow to recover from a nuclear conflict? Water heats and cools very slowly, and the ocean is strongly stratified with different water masses layered on top of each other. This gives the ocean a much longer "memory" than the atmosphere. Once disturbed, many changes are either not reversible on human timescales or are unlikely to return to their initial state.
These findings add a new perspective on just how much humanity can affect the Earth system. While we are grappling with the fact that our greenhouse gas emissions can reshape the climate in a blink of geological time, it is worth remembering that nuclear arsenals remain large enough to fundamentally shift the Earth system in the blink of an eye.

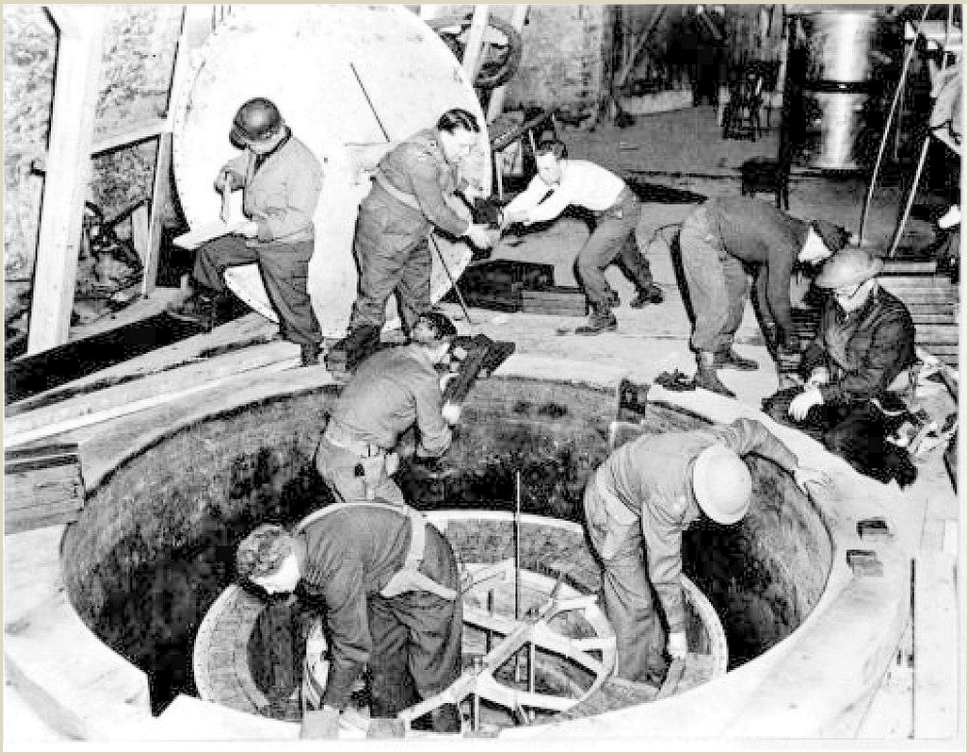
The long and the short of it

Given these stark insights, there is a moral imperative to ask what could and should be done to prevent a nuclear conflict. Recently, a new take on an old philosophy has begun to percolate out of Oxford. The idea, known as "longtermism", posits that proper accounting for the sheer number of possible future human lives should prioritize nearly any action that even slightly reduces the risk of a human extinction.
This logic comes with all the standard trappings of trying to do maths with morality, but it starts to make a lot more sense when you realize that the risk of an extinction-level event—and thus the chance we could avert it—isn't actually unimaginably low.
Even a more limited conflict could push our oceans into a fundamentally new state that lasts much, much longer than we would have expected. Understanding the length, and the weight, of these timescales should be forefront in our calculus of ongoing diplomacy.

German nuclear weapons program

This article is about the World War II weapons project.
Source: https://en.wikipedia.org/wiki/German_nuclear_weapons_program

The **Uranverein** (English: "Uranium Club") or **Uranprojekt** (English: "Uranium Project") was the name given to the project in Germany to research nuclear technology, including nuclear weapons and nuclear reactors, during World War II. It went through several phases of work, but in the words of historian Mark Walker, it was ultimately "frozen at the laboratory level" with the "modest goal" to "build a nuclear reactor which could sustain a nuclear fission chain reaction for a significant amount of time and to achieve the complete separation of at least tiny amount of the uranium isotopes." The scholarly consensus is that it failed to achieve these goals and that despite fears at the time, the Germans had never been close to producing nuclear weapons.[1][2]



The German experimental nuclear pile at Haigerloch (Haigerloch Research Reactor) was inspected by American and British soldiers and others.

The first effort started in April 1939, just months after the discovery of nuclear fission in December 1938, but ended only months later shortly ahead of the German invasion of Poland, when many notable physicists were drafted into the *Wehrmacht*. A second effort began under the administrative purview of the *Wehrmacht's Heereswaffenamt* on 1 September 1939, the day of the invasion of Poland. The program eventually expanded into three main efforts: the *Uranmaschine* (nuclear reactor), uranium and heavy water production, and uranium isotope separation. Eventually, it was assessed that nuclear fission would not contribute significantly to ending the war, and in January 1942, the *Heereswaffenamt* turned the program over to the Reich Research Council (*Reichsforschungsrat*) while continuing to fund the program. The program was split up among nine major institutes where the directors dominated the research and set their own objectives. Subsequently, the number of scientists working on applied nuclear fission began to diminish, with many applying their talents to more pressing war-time demands.
The most influential people in the *Uranverein* were Kurt Diebner, Abraham Esau, Walther Gerlach, and Erich Schumann; Schumann was one of the most powerful and influential physicists in Germany. Diebner, throughout the life of the nuclear weapon project, had more control over nuclear fission research than did Walther Bothe, Klaus Clusius, Otto Hahn, Paul Harteck, or Werner Heisenberg. Abraham Esau was appointed as Reichsmarschall Hermann Göring's plenipotentiary for nuclear physics research in December 1942; Walther Gerlach succeeded him in December 1943.
Politicization of the German academia under the Nazi regime had driven many physicists, engineers, and mathematicians out of Germany as early as 1933. Those of Jewish heritage who did not leave were quickly purged from German institutions, further thinning the ranks of academia. The politicization of the universities, along with the demands for manpower by the German armed forces (many scientists and technical personnel were conscripted, despite possessing technical and engineering skills), substantially reduced the number of able German physicists.[3]
At the end of the war, the Allied powers competed to obtain surviving components of the nuclear industry (personnel, facilities, and materiel), as they did with the pioneering V-2 SRBM program.

●▶ Read more at the source's URL.

Even a small nuclear war could cause global famine — here's what the data shows

By Tyler Rohr, Cheryl Harrison, Kim Scherrer, and Ryan Heneghan

Source: https://interestingengineering.com/science/nuclear-war-could-cause-global-famine

Nov 20 – The U.S. and Russia have recently agreed to hold talks on the New START Treaty, and the only accord left regulating the two largest nuclear arsenals in the world. While this is undoubtedly good news, we must not allow it to lull us into complacency. Global events this year, most notably in Ukraine, have raised fears of a nuclear conflict to levels not seen since the cold war. More than 10,000 nuclear warheads remain in the world, and the Kremlin's language regarding weapons of mass destruction has become increasingly threatening in 2022. Beyond the horrible fates of victims in the strike zones, a large-scale nuclear exchange would profoundly alter the climate system as we know it, while more limited scenarios could have a devastating impact. An ever-growing body of work has shown that even a local nuclear conflict could usher in a climate catastrophe. As marine scientists, we have considered what this could specifically mean for the world's oceans.

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The contemporary threat has prompted a new era of research into the potential climate impact of a nuclear war. Using the latest computational tools, we have investigated the consequences for all life on Earth. Our most recent research shows that a nuclear conflict would massively disrupt the climate system and cause global famine. It could also dramatically disturb the ocean and its ecosystems for decades and potentially thousands of years after a conflict.

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We explored the scenario of a nuclear war between the U.S. and Russia that results in 150 billion tons of soot from burning cities reaching the upper atmosphere. We found that the low light and rapid cooling would cause large physical changes to the ocean, including a dramatic expansion of Arctic sea ice.

Critically, this ice would grow to block normally ice-free coastal regions essential for fishing, aquaculture, and shipping across Europe. Three years after such a war, arctic sea ice expands by 50 percent, icing over the Baltic sea year-round and closing major ports such as Copenhagen and St. Petersburg. Even in a more limited conflict between India and Pakistan, 27 to 47 billion tons of soot would be ejected into the upper atmosphere, and the resulting cooling would severely compromise shipping through northern Europe.
Worse, the sudden drop in light and ocean temperatures would decimate marine algae, the foundation of the marine food web, creating a years-long ocean famine. While the whole ocean would be affected, the worst effects would be concentrated at higher latitudes, including all of Europe and especially in the Baltic states, where ocean light is already in short supply.
The Arctic and North Atlantic waters would bear the brunt, likely triggering the collapse of the entire ecosystem. Although fisheries are a relatively small sector of the European economy, there might be added pressure to look toward the sea for food should land-based agricultural systems collapse, leaving the continent with few options for food security.

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As North Korea readies for a nuclear test, does it have a new doctrine?

By Hyun-Binn Cho and Ariel Petrovics

Source: https://thebulletin.org/2022/11/as-north-korea-readies-for-a-nuclear-test-does-it-have-a-new-doctrine/

Nov 21 – In September, North Korea passed new legislation that marks the most significant update to its nuclear doctrine in a decade. This milestone document outlines 11 articles describing the regime's "nuclear weapons policy," including the conditions under which Pyongyang would launch nuclear weapons. Since the legislation was passed, analysts have been pondering its implications for North Korea's nuclear strategy and how it fits with recent missile tests or the regime's expected seventh nuclear test. Even though news reports on North Korea's new nuclear doctrine have highlighted the regime's willingness to launch nuclear weapons preemptively, the most important update from the legislation is North Korea's novel articulation of its nuclear command and control system or, in other words, its nuclear

decision-making process. The legislation and recent developments together indicate that Pyongyang is moving toward a more coherent first-use nuclear strategy.

North Korea is already on record for issuing threats of preemptive nuclear attacks, but other indicators of the Hermit Kingdom's nuclear strategy have been contradictory. For example, its command-and-control system and its lack of field-deployed tactical nuclear weapons have both undermined Pyongyang's statements. These misaligned indicators created uncertainty that led experts to disagree over what strategy North Korea is pursuing, particularly since 2017, when the regime tested multiple short- to long-range ballistic missiles and conducted its sixth nuclear test during the "fire and fury" crisis with the United States. The September 2022 legislation, however, moves North Korea more squarely toward a first-use nuclear strategy, which aims to deter aggression by threatening to asymmetrically escalate to a nuclear strike before its adversaries in a crisis or conventional conflict.

Regional power nuclear strategies have traditionally been distinguished from the nuclear strategies of the two superpowers—Russia/Soviet Union and the United States. Political scientist Vipin Narang, for example, identifies three regional power nuclear strategies. One strategy is based on a first-use approach that threatens to launch nuclear weapons before its adversaries to deter aggression (e.g., present-day Pakistan). This deterrent strategy can include threats of preempting an imminent conventional or nuclear attack. In contrast, a deterrent strategy based on a second-strike approach aims to deter nuclear aggression by promising a nuclear strike in retaliation (e.g., China and India). And a third strategy aims to deter aggression by threatening nuclear breakout and catalyzing a nuclear patron to intervene (e.g., early Pakistan). Determining what nuclear strategy, if any, a regional power may be pursuing involves making a comprehensive assessment of its official statements, discernible technological capabilities, and broader security priorities to ascertain the manner and conditions under which a country primarily envisions using its nuclear weapons.

In terms of official statements, North Korea has issued multiple threats of nuclear preemption in the past. For example, in 2016, a spokesperson for the Korean People's Army General Staff Department stated that "at the slightest indication that there is an attack, [North Korea] will relentlessly conduct a nuclear preemptive strike [*hek sunje tagyuk*] in our own way." In April 2022, the regime implied that it would use nuclear weapons if enemies "try to violate the fundamental interests of [the North Korean] state." These threats and others suggest that Pyongyang would be willing to fire nuclear weapons on adversaries if it believes it faces an immediate conventional or nuclear threat.

Despite North Korea's threats of nuclear preemption, however, other indicators have not aligned with a strategy of first use, dividing experts about the country's nuclear strategy. Principal among these indicators is a state's nuclear command-and-control system. Through major legislation passed in 2013, North Korea expressed a centralized (or "assertive") command and control system by stating that its then-relatively new leader Kim Jong-un has the sole authority to launch nuclear weapons. But, as experts have noted, an assertive decision-making system slows down the launch of nuclear weapons because the authorization must travel down the chain of command. This system has undermined not only North Korea's threats of nuclear preemption but the characterization that Pyongyang is pursuing a first-use nuclear strategy.

The new legislation passed in September includes a section on the "command and control of nuclear forces," which revises North Korea's nuclear command-and-control system. This section stipulates that the regime is prepared to launch nuclear weapons "immediately and automatically" with "plans that have already been made" if its "nuclear command and control system comes under danger from attack by enemy forces." Rather than await direct orders from Kim Jong-un, field commanders may now follow predetermined launch plans to release nuclear weapons. The language in the legislation, moreover, leaves open the possibility that the regime could launch nuclear weapons using predetermined plans even before its enemies conduct a nuclear or conventional attack. By passing legislation that includes a more decentralized (or "delegative") command-and-control system, North Korea appears to provide greater coherence to a nuclear strategy of first use.

This critical development is often overlooked by observers, but it provides at least two important benefits to Pyongyang. First, it increases the credibility of its threats of nuclear preemption by aligning existing statements with a corresponding command-and-control system. This delegative system increases the credibility of threats to use nuclear weapons first by both reducing nuclear launch time and enabling North Korea to fire nuclear weapons before its adversaries if theater commanders lose communication with Pyongyang, such as after an attempted conventional decapitation strike against the regime's leadership. This is not to say that North Korea would necessarily succeed at launching a nuclear first strike. For example, the United States possesses preventive and preemptive capabilities that can cripple North Korea's nuclear weapons before they are fired. But the new legislation takes specific steps to move Kim's regime away from bluster and "cheap talk" and toward a more credible first-use strategy.

Second, by articulating a more coherent nuclear strategy North Korea demonstrates maturity in its nuclear thinking, which may boost the regime's profile as a nuclear-armed state. The new legislation adopts markedly assertive language about North Korea's nuclear status, declaring that the regime will "never abandon" nuclear weapons. Some experts claim that North Korea strives for international recognition as a nuclear weapons state like India or Pakistan. For years, the misalignment between North Korea's statements, capabilities, and command-and-control system generated uncertainty about its nuclear strategy, whereas other regional nuclear powers have nuclear

strategies that more readily fit traditional categories. By aligning its command-and-control system with a traditional first-use strategy, North Korea may seek to join the ranks of more established regional nuclear powers.

Even though North Korea's new legislation clarifies its nuclear strategy, it is not obvious why the regime decided to update its nuclear command-and-control system *now*. One reason may be Kim's maturity as a leader. While the new, more decentralized system enhances the credibility of a first-use strategy by increasing the chances of successfully releasing nuclear weapons, it also risks empowering potential domestic rivals with authority they could redirect to challenge Kim's leadership. It is worthwhile noting that the 2013 legislation mentioned above was passed only a few years after Kim Jong-un came into power. In this regard, the recent update to North Korea's nuclear strategy may reflect Kim's increasing confidence as a ruler rather than the achievement of a technological breakthrough.

Beyond the new legislation, there are important developments to watch for that could further clarify North Korea's nuclear strategy. In particular, fielding smaller "tactical" nuclear weapons that can be used rapidly on the battlefield would corroborate the legislative evidence that the regime is adopting a first-use nuclear strategy.

Unlike larger, strategic nuclear weapons, tactical nuclear weapons may provide a more moderate escalation option to the nuclear level that can reduce the risk of inviting devastating retaliation that jeopardizes the regime. This possibility makes tactical nuclear weapons a key indicator of a first-use deterrent strategy for regional nuclear powers. For example, Pakistan showcases its large arsenal of low-yield warheads as part of its "full spectrum" deterrent strategy of first use against India. As for North Korea, because the survival of its retaliatory nuclear capabilities is still in doubt, it must be especially wary of risking a massive retaliatory blow from its adversaries following nuclear first-use. In this light, Pyongyang could bolster the credibility of a first-use strategy by fielding tactical nuclear weapons too.

But for this North Korea would need to overcome technological hurdles to operationalize a robust nuclear command-and-control system that can support battlefield-ready tactical nuclear weapons as part of a reliable first-use strategy. These challenges include minimizing the risk of unauthorized launches, ensuring nuclear weapons are released when a launch is authorized, and launching before adversaries can neutralize such efforts. Its new delegative system, however, can be considered a step toward potentially deploying tactical nuclear weapons.

In recent weeks, North Korea has taken additional steps to fill capability gaps by testing ballistic missiles that could be mounted with tactical warheads and claiming that its soldiers have simulated the loading of "tactical nuclear warheads at a silo under a reservoir." It followed such steps with new intercontinental ballistic missile (ICBM) tests that suggest the regime is also working to deter large-scale retaliation after a nuclear first use by enhancing the threat of nuclear reprisal on the United States. Taken together, these indicators suggest that Kim's regime is making demonstrative efforts toward a more coherent first-use nuclear strategy. As such, it is particularly important to keep an eye on North Korea's new developments – including if the regime's anticipated seventh nuclear test involves a low-yield device.

Understanding what the recent flurry of events means for North Korea's nuclear strategy remains critically important as indicators like its nuclear capabilities and command-and-control system continue to evolve. Even though uncertainty remains as to when and how the reclusive regime plans to use its nuclear arsenal, the new legislation offers an important glimpse into North Korea's evolving nuclear strategy.

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Iran may enrich uranium to 90% level soon, consider launching terror attack at Qatar World Cup, says IDF intelligence chief

Source: https://economictimes.indiatimes.com/news/international/us/iran-may-enrich-uranium-to-90-level-soon-consider-launching-terror-attack-at-qatar-world-cup-says-idf-intelligence-chief/articleshow/95670004.cms

A number of new-generation Iranian centrifuges are seen on display during Iran's National Nuclear Energy Day in Tehran (photo credit: IRANIAN PRESIDENCY OFFICE/WANA (WEST ASIA NEWS AGENCY)/HANDOUT VIA REUTERS)

Nov 21 – According to Israel Defence Force (IDF) Intelligence Chief Major General Aharon Haliva, Iran is considering launching a terror attack at the ongoing World Cup tournament, but it seems to have been dissuaded out of concern about how Qatar will react.

A view shows railway packages for containers with uranium hexafluoride salt, raw material for nuclear reactors, similar to the one be used for the IAEA Low Enriched Uranium (LEU) Bank (photo credit: SHAMIL ZHUMATOV / REUTERS)

Haliva said Iran is likely to soon conduct at least a symbolic enrichment of uranium to 90% weaponized level. He stated at the INSS meeting on Iran that the world will be tested like never before.

Till now, the Islamic Republic has not gone past the weaponization barrier in uranium enrichment. According to the Jerusalem Post, even if Iran reaches this level, top Israeli officials estimate it will take another two years for Tehran to resolve issues connected to detonating and transporting a nuclear bomb.

Armageddon in the Holy Land? Israel's Nuclear Weapons Program, Mordechai Vanunu, and the Coming War on Iran

By Timothy Alexander Guzman

Source [**+video**]: https://www.globalresearch.ca/armageddon-holy-land-israel-nuclear-weapons-program-mordechai-vanunu-coming-war-iran/5799738

Last month, the United Nations voted on a resolution calling for Israel to end its not-so-secret nuclear weapons program. The results were conclusive with more than 152 countries voted in favor of Israel ending its nuclear weapons program and joining the Non-Proliferation Treaty (NPT) that would allow the International Atomic Energy Agency (IAEA) to inspect its nuclear facilities. There were only five countries who voted against the resolution and that included the United States, Canada, Israel, Palau, and Micronesia. In the case of Palau and Micronesia, I would be willing to bet that they were most likely either bribed or blackmailed in some way or another to vote in favor of Israel.

Nov 21 – Granted, the world in concerned about the Russia-Ukraine conflict and should be, but President Vladimir Putin and the Russian Federation is a rational actor because their nuclear weapons posture clarifies that they are for defensive purposes. The *Ministry of Foreign Affairs of the Russian Federation* released a statement on the Prevention of Nuclear War which does say that *"In implementing its policy in the field of nuclear deterrence, Russia is strictly and consistently guided by the postulate of the inadmissibility of a nuclear war in which there can be no winners and which must never be unleashed. Russian doctrinal guidelines in this area are very clearly outlined, they are purely defensive in nature and do not allow for broad interpretation."* According to *The Jerusalem Post*, even US President Joe Biden admitted in a CNN interview that *"Putin is a "rational actor who has miscalculated significantly,"* and was asked if Putin would use a tactical nuclear weapon, and Biden's response was *"Well, I don't think he will."*

However, most of the world knows that Israel and its leadership is full of radical idealists and religious fanatics that have nuclear weapons at their disposal and that could lead the world into an Armageddon-type scenario in the Middle East. In the *King James Version* of the bible, Armageddon is mentioned in *Revelation 16:16* and says *"And he gathered them together into a place called in the Hebrew tongue Armageddon."* Armageddon is where the final battle takes place during the end times between the forces of good and evil, it is where *'God comes and wages war against the kings of the earth.'* The location of where Armageddon takes place is at the *'Hill of Megiddo'* which is an important town of ancient Palestine that overlooks the *Plain of Esdraelon* (Valley of Jezreel) and southeast of Haifa in northern Israel. For humanity, Armageddon means the last days of our existence, if of course, the US and its NATO allies allow Israel to use its nuclear weapons arsenal to destroy Iran's nuclear facilities. But who is good and who is evil in this coming war to end humanity depends upon your perception of historical events that have taken place more than 2000 years ago in the Holy Land, or you can go to recent events that took place in 1948 when Palestine became Zionist-occupied land now called Israel, but that is up to you.

The idea of nuclear weapons is something that I wish we could eliminate from the face of the earth, but the reality is that several countries have nuclear weapons, and they are not going anywhere, anytime soon. Those who have nuclear weapons include the United States, France, the UK, Russia, China, North Korea, India, Pakistan and of course, Israel who has not publicly declared that they have nuclear weapons. However, I am concerned about two countries who would no doubt, use nuclear weapons to further their agendas and that is the United States, and the other is Israel who I believe is radical enough to use a nuclear weapon on their adversaries. As we all know, the United States was the first country in the world to use *Atomic Bombs* on Japan during World War II, the first bomb was used on Hiroshima and was made of uranium and the other bomb that was used on Nagasaki was made from plutonium. On August 6th, 1945, the US dropped its first atomic bomb on the city of Hiroshima killing more than 140,000 people with many more who died from radiation-related illnesses months later. The second bomb was dropped on August 9th, 1945, on the city of Nagasaki where an estimated 74,000 people were killed and hundreds of thousands more suffered from the aftermath.

The US was the first country in the world to use weapons of mass destruction, now we have Israel who has a doctrine that should be a concern to all of us who know about it, and it's called the *Samson Option* which refers to when the Philistines who captured and then tortured Samson who was involved in the massacre of the Philistines in a battle. Samson was a biblical figure who pushed the pillars of the Philistine

temple causing it to collapse, thus killing thousands of Philistines and killing himself in the process. Journalist and author Seymour Hersch published an eye-opening account on the danger of Israel's foreign policy in *'The Samson Option: Israel's Nuclear Arsenal and American Foreign Policy'* which explains what Samson represents for Israel:

In Israel's history, a reference to the decision of more than nine hundred Jewish defenders — known as the Zealots — to commit suicide in a.d. 73 rather than endure defeat at the hands of the Romans.

In its place, argued the nuclear advocates, would be the Samson Option. Samson, according to the Bible, had been captured by the Philistines after a bloody fight and put on display, with his eyes torn out, for public entertainment in Dagon's Temple in Gaza. He asked God to give him back his strength for the last time and cried out, "Let my soul die with the Philistines." With that, he pushed apart the temple pillars, bringing down the roof and killing himself and his enemies. **For Israel's nuclear advocates, the Samson Option became another way of saying "Never again"***

The Yum Kipper War: How the Middle East almost became Hiroshima and Nagasaki

Not too many books mention that Israel almost used nuclear weapons in the Yum Kipper war of 1973. However, Hersch mentioned in his book about the early outcomes of the Yum Kipper war when Israel considered using its nuclear weapons against Egypt and Syria which would have turned the Middle East into a nuclear wasteland. With that said, the state of Israel would have never lived in peace with its Arab neighbors as a consequence because if the Arabs were attacked with nuclear weapons, their only mission in life then, and well into the future would be solely to fight and destroy Israel at all costs:

The first days were a stunning rout. Israeli soldiers were being killed as never before; some units simply fled in disarray from battle. Five hundred tanks and forty-nine aircraft, including fourteen F-4 Phantoms, were lost in the first three days. In the Sinai, Egyptian forces, equipped with missiles and electronic defenses, blasted through the Bar-Lev defense line along the eastern bank of the canal and soon had two large armies on the eastern bank. The initial Israeli counterattacks by three tank divisions were beaten off". On the Golan Heights, Syrian forces, bolstered by fourteen hundred tanks, rolled through Israeli defenses and moved to the edge of Galilee. Only a few Israeli tanks stood between the Syrians and the heavily populated Hulla Valley. Haifa was just hours away

Hersch went on to explain how Golda Meir's *'Kitchen Cabinet'* decided to call for a nuclear alert, in other words, they were ready to launch nuclear strikes against Egyptian and Syrian forces:

Many Israelis thought it was all over — that, as Moshe Dayan said, "this is the end of the Third Temple." The extent of Dayan's panic on Monday, October 8, has never been fully reported, but it is widely known among Israelis. One of Dayan's functions as defense minister was to provide the censored media and their editors-in-chief with a daily briefing on the war — in essence, to control what they wrote. One journalist, a retired army general, who attended the Monday session, recalled Dayan's assessment: "The situation is desperate. Everything is lost. We must withdraw." There was talk in a later meeting of appeals to world Jewry, distribution of antitank weapons to every citizen, and last-ditch resistance in the civilian population centers. It was Israel's darkest hour, but no withdrawal was ordered.

Instead, Israel called its first nuclear alert and began arming its nuclear arsenal. And it used that alert to blackmail Washington into a major policy change. Moshe Dayan's fears and Israel's gloom were turned around during a dramatic meeting on Monday, October 8, at Golda Meir's office in Tel Aviv, just a few hundred feet from "the Bor," the military's huge underground war complex. Meir's closest aides, the so-called kitchen cabinet, assembled for what turned out to be an all-night session. Among those in attendance, besides Dayan and Meir, were General David (Dado) Elazar, the army chief of staff; Yigal Allon, the deputy prime minister; Brigadier General Yisrael (Gingy) Leor, the prime minister's military aide; and Israel Galili, the influential minister without portfolio and longtime confidant of Meir

The first targets included both Egyptian and Syrian military headquarters:

The kitchen cabinet agreed that the nuclear missile launchers at Hirbat Zachariah, as many as were ready, would be made operational, along with eight specially marked F-4S that were on twenty-four-hour alert at Tel Nof, the air force base near Rehovot. **The initial target list included the Egyptian and Syrian military headquarters near Cairo and Damascus. It could not be learned how many weapons were armed, although Dimona was known to have manufactured more than twenty warheads by 1973**

Fortunately, nuclear strikes in the Middle East never took place. On October 3rd, 2013. *The Times of Israel*published an interview by nuclear historian Avner Cohen *'Dayan pushed PM Meir to consider using nuclear weapons in 1973 war'* explained why the idea of striking Egyptian and Syrian forces with nuclear missile launchers was dismissed by Golda Meir and her advisors:

The interview, which was conducted several years ago by nuclear historian Avner Cohen, was formally made public late Thursday on the website of the Woodrow Wilson International Center for Scholars. It is emerging 40 years after the Yom Kippur War — and precisely as the world focuses attention on Iran's rogue nuclear program, which Israel's Prime Minister Benjamin Netanyahu told the UN General Assembly this week is aimed at developing nuclear weapons

According to Cohen, the discussion between Golda Meir and members of her *kitchen cabinet* were as follows:
Galili and Allon, Meir's closest advisers, determinedly batted the nuclear idea away, Azaryahu says, shouting that, *"We shouldn't panic…"*
And Meir, indeed told Dayan — who *"kept his hand on the door handle the entire time, as though this were a sort of conversation between friends" — to forget about the idea.*
Dayan replied, *"OK, if that's what you say, I accept [it]. I'm going"*
The world was spared from a nuclear disaster in the Middle East, but will the world be spared again from another threat of Israel possibly using its nuclear weapons against Iran?

The Return of Benjamin Netanyahu and the Far-Right Extremists of Israel
If you thought Benjamin Netanyahu's career in Israeli politics was finished, you were wrong. As extreme as Benjamin Netanyahu is, the Israeli people see him as a warrior willing to fight those evil Muslims who just want to kill the Jewish people and eventually destroy Israel. In a recent article published by *The Times of Israel* *'Netanyahu ally: I believe he'll strike in Iran if nuclear talks fail, US doesn't act'* claims that Netanyahu will act on Iran if the US fails to get a nuclear deal based on terms that will only benefit Israel and its Western allies. According to Tzachi Hanegbi, a far-right Likud MP and a former minister who made a claim that Netanyahu will order a strike on Iran's nuclear facilities if a new *Joint Comprehensive Plan of Action* (JCPOA) agreement is not on favorable terms in relation to Israel's security interests:
Speaking to Channel 12 news on Friday, Tzachi Hanegbi said that in such a situation, Netanyahu "will act, in my assessment, to destroy the nuclear facilities in Iran." Hanegbi, a longtime Likud MK and former minister who is not expected to make it into the next Knesset (after placing 46 on the party's slate in primaries), has made threats of a potential Israeli strike in the past to prevent Iran from developing a nuclear weapon. What Hanegbi said next is what will happen if no nuclear deal under Israel's terms is in place and that will leave Netanyahu with no choice, *"It's my assessment, based on my over 35 years of knowing Netanyahu… When there is no choice, someone needs to take command — it will be Netanyahu."*
Here is something to consider regarding Iran's *alleged* nuclear weapons program that Israel is very concerned about. Although its a hyperbole, but if Iran were to strike Israel with a nuclear bomb, won't it kill Palestinians, Jordanians, Syrians, Egyptians and the Lebanese people as well? I mean let's face it, if Iran were to be that reckless in launching a nuclear weapon within the Middle East, of course they would be killing its enemies in Israel but at the same time, they will be killing their allies that surround Israel and that will not benefit Iran at all. The Iranian government and its people are not irrational people who would do something that crazy. It would have irreversible consequences for all Arabs worldwide.
One other Israeli extremist worth mentioning is *Itamar Ben-Gvir* who is the leader of the far-right *Jewish Power Party* and is expected to be in Netanyahu's new government coalition after winning recent elections. Al Jazeera's article *'World is worried about far-right Ben-Gvir: Israeli President'* focuses on Israeli President Isaac Herzog's comments on Ben-Gvir which is striking *"You have a partner who the entire world around us is worried about. I have also said this to him,"* Herzog continued *"You are going to have a problem with the Temple Mount. That is a critical issue"* meaning that under Ben-Gvir, far-right Israelis will be allowed to create more tensions at the Al-Aqsa Mosque. Last May, hundreds of Israelis entered Jerusalem's Al-Aqsa Mosque during a nationalist flag march that increased tensions between Israelis and Palestinians. In other words, the return of Benjamin Netanyahu, along with the new Israeli government coalition that includes the Jewish Power Party with its leader Itamar Ben-Gvir who is an extremist fanatic sets a dangerous precedent in Middle East politics. There is one other problem for Iran and that is the pro-war establishment who serve Israel and the Military-Industrial Complex in Washington. Whoever wins the 2024 US Presidential elections, whether it is a Republican such as Donald Trump who was the most pro-Israel president in modern times, or a Ron DeSantis who is a neoconservative or basically any Democrat, including the possible return of Hillary Clinton or Joe Biden being re-elected by some miracle, the point is, whoever becomes US President, it is guaranteed that there will be a US-Israel coalition that will be willing to green-light an attack on Iran because both Democrats and Republicans are pro-Israel and are absolutely controlled by one of the most powerful lobbies' in Washington, D.C. and that is *AIPAC* (American-Israel Public Affairs Committee).
Since Trump is running for re-election, it is important to understand who he represents. Here is what Trump said in 2021 in a radio interview with conservative talk show host Ari Hoffman, *"The biggest change I've seen in Congress is Israel literally owned Congress — you understand that — 10 years ago, 15 years ago. And it was so powerful. It was so powerful. And today it's almost the opposite,"* continued *"you have between AOC (Rep. Alexandria Ocasio-Cortez) and [Rep. Ilhan] Omar — and these people that hate Israel. They hate it with a passion — they're controlling Congress, and Israel is not a force in Congress anymore. I mean, it's just amazing. I've never seen such a change."* Trump concluded *"and we're not talking about over a very long period of time, but I think you know exactly what I'm saying.* ***They had such power, Israel had such power — and rightfully — over Congress, and now it doesn't. It's incredible, actually"*** There is irony in Trump's statement and that's because it is true that Israel owns the US congress, but what Trump said about Israel's "rightful" power over congress should be enough to consider who he actually works for.

Peace Activist, Whistleblower, and Traitor to Israel: The Plight of Mordechai Vanunu

Mordechai Vanunu is a Moroccan-born Israeli citizen who was a former nuclear technician and peace activist who exposed Israel's nuclear weapons program in detail to *The Sunday Times of London*in 1986. Vanunu was the whistleblower who was drugged and kidnapped by Mossad agents and treated like a terrorist in an Israeli prison cell where he spent more than 11 years out of 18-year prison sentence in solitary confinement. To this day, Vanunu is seen as a traitor to Israel. On April 21st, 2004, *The New York Times* published an article about Vanunu's release from prison *'Israeli Who Revealed Nuclear Secrets is Freed'* and said that *"Mr. Vanunu, 49, is returning to a society where he appears to be as widely reviled today as in 1986, when he was kidnapped by Israel's intelligence service in Rome after granting a detailed interview on Israel's clandestine nuclear program to The Sunday Times of London."*Upon his release, Vanunu declared to the press *"to all those calling me a traitor, I'm proud and happy to do what I did."* As much as I hate to say it, but what I call *"the toilet paper of record"*, the New York Times was somewhat honest about Israel's nuclear weapons program:

Before Mr. Vanunu spoke out, it was widely assumed that Israel had nuclear arms. But to this day, Israel refuses to confirm or deny possessing such weapons under its policy of "nuclear ambiguity." Based on Mr. Vanunu's information, nuclear experts estimated Israel possessed between 100 and 200 nuclear weapons. More recent estimates are in a similar range.

Israel has never signed the Nuclear Non-Proliferation Treaty and has adamantly rejected international inspections. Israel argues that it needs a plausible deterrent threat in a region where its says several countries, including Iraq, Libya and Iran, have tried, or are still trying to develop nuclear arms. But critics say that Israel, with the tacit backing of the United States, has been allowed to develop a large nuclear arsenal in secret, while the Americans have insisted that other Middle East countries be prevented from building weapons of mass destruction. Mr. Vanunu said Israel did not "need the nuclear arms, especially now when all the Middle East is free from nuclear weapons"

In 1979, Vanunu enrolled at Ben-Gurion University and was considered a radical student-activist because he was critical of the Israeli government's internal and external policies. Vanunu opposed the 1982 Lebanon War but was drafted as a reservist in the Engineering Corps but he refused any participation on the field and opted for kitchen duty. As a peace activist, he fought for the equal rights for Arab Israelis. He had aligned himself with Arab students who were also pro-PLO activists and that was something of a taboo for Israeli society. What was interesting about Vanunu was that he had resented the dominance of Ashkenazi Jews and the Jews of European origin in Israeli society as he witnessed discrimination against the Sephardi and Mizrahi Jewish communities from the Middle East and North Africa. Vanunu also felt that he was a victim of discrimination in the Dimona facility because he was born in Morocco. Regardless of what the Israelis or the Americans think of Mordechai Vanunu, he is truly a hero who sacrificed himself to expose Israel's nuclear weapons capabilities. Now that a new far-right extremist government coalition is about to take place in Tel Aviv, the danger of a nuclear strike against Iran is a real possibility in the future since Israel is the '*loose cannon'* in the region. The New York Times also published what Vanunu said about his secrets regarding Israel's nuclear program to the media: But Mr. Vanunu said he had divulged all his secrets in the interview with The Sunday Times, where he provided photos and described his nine years at Israel's nuclear complex in the southern town of Dimona, in the Negev Desert. "My secret is dead," he said in fractured English, refusing to speak Hebrew. "My case is dead. Everything was published." And published indeed, here is a *video* by an Israeli news magazine who created a 3-D version of the Dimona Nuclear Weapon's factory. Just in case the video is removed, **here** is another platform to download the video:

Timothy Alexander Guzman writes on his own blog site, Silent Crow News, where this article was originally published. He is a regular contributor to Global Research.

Zaporizhzhia: What Would Be the Consequences of an Accident?

By Clare Roth

Source: https://www.homelandsecuritynewswire.com/dr20221122-zaporizhzhia-what-would-be-the-consequences-of-an-accident

Nov 22 – When people think about nuclear threats and thewar in Ukraine, most consider two possibilities: What would happen if an accident occurred at a Ukrainian nuclear plant? And what would happen if a nuclear weapon were deployed?

For this article, we talked to experts about the health impact the Fukushima and Chernobyl disasters had on surrounding populations, and asked them to explain the degree to which those disasters might provide a framework for our current understanding of risk at Zaporizhzhia.

In the next article in this series, we'll explain the health effects linked to the detonation of nuclear weapons at Hiroshima and Nagasaki, and also look at what could happen if nuclear weapons were detonated in today's world.

Zaporizhzhia Under Occupation

Ukraine's Zaporizhzhia power plant is located not far from the country's southern border. This year it became the first active nuclear plant in history to continue operations in the midst of a war.

Since occupying forces seized the plant in March, many across Europe have been wondering how a potential accident there would compare with the 1986 Chernobyl disaster — an event that for decades marked the worst nuclear power accident in history. The Chernobyl meltdown released radiation across Europe and tainted humans, plants and animals throughout the region.

Over 30 plant workers died in the three months following the disaster at the Soviet power station as a direct result of the meltdown. A report published by the Chernobyl Forum, a group of UN agencies formed in 2003 to assess the health and environmental consequences of the accident, suggested in 2006 that it will cause at least 4,000 cancer deaths in the long term, although that estimate is hotly debated.

Understanding of Chernobyl's Health Effects Conteste

Some experts say the actual impact of the disaster was concealed by Soviet officials in an attempt to downplay its severity. One of them is Massachusetts Institute of Technology (MIT) professor Kate Brown. She has conducted extensive research on the impact radiation has had on people's health in Ukraine and surrounding countries since the 1986 accident.

In a Greenpeace report published in 2006, researchers estimated the predicted death toll at around 90,000 — nearly 23 times the number suggested by the Chernobyl Forum report.

Edwin Lyman, a physicist and director of Nuclear Power Safety with the US-based Union of Concerned Scientists, said he, "doesn't consider the Chernobyl Forum report to be authoritative."

Lyman said the Forum's report based its cancer death predictions only on cases within the former Soviet Union, ignoring exposure to populations in other parts of Europe and the Northern Hemisphere. The original Chernobyl health impact report conducted by UN agencies and published in 1988, did address the global exposure to radiation in response to the accident, and estimated it would ultimately correspond to 30,000 or more cancer deaths, Lyman said.

"The fundamental issue is whether one believes that low-level exposures will cause cancer or not — and the worldwide expert consensus is that they do. The Chernobyl Forum essentially assumed otherwise," he said, calling the study a "highly political document with conclusions that were carefully massaged to minimize the impacts of the accident."

Studies following the survivors of the Chernobyl disaster have shown an increase in cases of thyroid cancer. In the decades following the accident, researchers detected rates of that particular condition in young people in the former Soviet Union that were around three times higher than expected. This increase is partly attributed to the consumption of tainted milk, studies reported.

However, according to Lyman, the large studies outlining overall cancer risk were published in the early 2000s, at a time when many cancers that could have been triggered by the Chernobyl disaster may not yet have started showing up. And nearly 20 years later, there hasn't been any comprehensive follow-up to these reports.

Reports on the disaster's health impact also note high rates of depression and anxiety in the surrounding population.

Fukushima — a Better Comparison

ccording to Lyman, any fallout from a possible accident at the Zaporizhzhia power plant would likely have more in common with the fallout of the 2011 Fukushima nuclear disaster in Japan.

"The consequences that led to such a large and wide dispersal of radioactive activity [at Chernobyl] are probably less likely to occur at the reactors at Zaporizhzhia, which are light water reactors more similar to the reactors in Germany or elsewhere in the West," he said.

The nuclear accident in Fukushima marks the only other disaster at a plant that has been rated a 'seven' on the International Atomic Energy Agency (IAEA)'s International Nuclear Event Scale. It was generated

by a powerful tsunami and earthquake that caused the plant to lose power, prompting three nuclear meltdowns, hydrogen explosions and extensive releases of radiation from the facility.
Official reports have concluded that although many people died in the tsunami and earthquake, none died in direct response to the nuclear incident. Aside from radiation sickness experienced by people in the direct vicinity, they say, the biggest health impact has been the psychological stress people nearby experienced when they were evacuated. Today, researchers say the Fukushima incident has left only a negligible mark on the surrounding environment, because much of the radiation was released into the nearby sea. "Zaporizhzhia is obviously landlocked, so that wouldn't be the case. But still, you would expect probably less radioactive material released and dispersed less widely," Lyman said. Lyman added that the level of radiation a potential accident at Zaporizhzhia could release would depend on whether the accident was technical (i.e., a response to the facility losing power for multiple days) or related to combat, in which case the radiation would be released more quickly. In a situation like that, the severity of any consequences would probably fall somewhere in between of what happened at Chernobyl and what happened at Fukushima, he said. "I think the likelihood of another Chernobyl-like event affecting Germany is lower," he said. "There would probably be measurable impacts, but not as great as what was experienced in 1986."

Ukraine's Other Reactors Also Present a Risk
Zaporizhzhia has drawn a lot of attention because it's currently the only Ukrainian nuclear plant under direct Russian control. But Lyman said he is also concerned about the other plants in Ukraine, which are older. That makes them even more susceptible to catastrophic failure in the event of an accident. "There are three other nuclear plants in Ukraine that are actually closer to the Western border. So they're away from the front, but they're still within range of Russian rocket fire or drones," he said. He said that although none of those reactors are the same model as those at Chernobyl, some are older Soviet light-water reactors that wouldn't be as resistant to an attack as the plant at Zaporizhzhia. "If things unravel, and they become more affordable to attack, that could be a greater concern to Western Europe," he said.

Clare Roth is a Fulbright Young Journalist in Germany.

Iran Needs Only 4 Weeks to Produce Enough Material for 4 Nuclear Weapons

Source: https://www.homelandsecuritynewswire.com/dr20221122-iran-needs-only-4-weeks-to-produce-enough-material-for-4-nuclear-weapons

Nov 22 – The International Atomic Energy Agency's (IAEA) quarterly report on Iran's nuclear weapons program, *Verification and Monitoring in the Islamic Republic of Iran in Light of United Nations Security Council Resolution 2231 (2015),* was released 10 November 2022. It includes Iran's compliance with the Joint Comprehensive Plan of Action (JCPOA) – the 2015 nuclear agreement between Iran and the world leading powers (the United States withdrew from the agreement in 2018).
The Institute for Science and International Security analyzed the IAEA's report. Here are "Findings" section of that analysis:
Findings

- Since the last IAEA report, Iran has surged the quantity of installed advanced centrifuges at its Natanz Fuel Enrichment Plant (FEP). It has added roughly 1740 new advanced centrifuges, consisting mostly of IR-2m and IR-4 centrifuges, making the current installed capacity over 50 percent larger than it was in August.
- This large increase in enrichment capacity poses immediate challenges. It reduces the time Iran would need to break out and produce several quantities of weapon-grade uranium (WGU) for nuclear weapons (see also below). This increase erodes further the value of a revived nuclear deal, since the JCPOA allows Iran to store advanced centrifuges, enabling Iran to further reduce breakout timelines for acquisition of weapon-grade uranium or more quickly build back its enrichment capacity in the event of another breakdown of the JCPOA.
- Iran's breakout time remains at zero because it has more than enough 60 percent enriched uranium, or highly enriched uranium (HEU), to directly fashion a nuclear explosive. Iran may prefer further enriching its 60 percent HEU up to 90 percent (or WGU) that is used in Iran's known nuclear weapons designs. In that case, it could produce enough for a nuclear weapon within a few weeks utilizing only a few advanced centrifuge cascades.
- Due to the current size of Iran's 60 percent, 20 percent, and 4.5 percent enriched uranium stocks, Iran can now produce enough WGU for four nuclear weapons in one month and make enough for a fifth weapon within the following month
- Iran continues to learn important lessons in breaking out to nuclear weapons, including by experimenting with skipping typical enrichment steps as it enriches up to 60 percent uranium-235. It is starting from a level below 5 percent LEU and enriching directly to near 60 percent in

one step in two interconnected cascades, rather than using two steps in between, a slower process entailing the intermediate production of 20 percent enriched uranium. It has used temporary feed and withdrawal setups to produce HEU from near 20 percent enriched uranium feed. Iran is also enriching uranium in one IR-6 cascade modified to switch more easily from the production of near 5 percent enriched uranium to 20 percent enriched uranium. As such, Iran is experimenting with multi-step enrichment while seeking to shortcut the process.

- In essence, Iran has effectively broken out slowly by accumulating 60 percent enriched uranium. As of October 21, Iran had a stock of 62.3 kilograms (kg) (in uranium mass or U mass) of 60 percent enriched uranium in UF6 form, or 92.2 kg (in hexafluoride mass or hex mass). Iran also has 2 kg of 60 percent HEU (U mass) in chemical forms other than UF6.
- Iran keeps the majority (85 percent) of its stock of 60 percent HEU at the Esfahan site, where it maintains a capability to make enriched uranium metal. Although Iran has stated that it is using the HEU to make targets for irradiation in the Tehran Research Reactor (TRR), it has converted only a small fraction of its HEU into targets – about 2.1 kg – and has not converted more since March 2022.
- Iran's current production rate of 60 percent enriched uranium is 3.3 kg per month (U mass) centered on the use of two advanced production-scale centrifuge cascades, one containing IR-6 centrifuges and the other IR-4 centrifuges, and up to 5 percent low enriched uranium (LEU) as feed.
- For most of the reporting period, Iran was enriching uranium to 20 percent in both cascades of IR-6 centrifuges at the Fordow Fuel Enrichment Plant (FFEP). It is also operating six IR-1 cascades (three sets of two interconnected cascades) that were already producing 20 percent enriched uranium. For part of the reporting period, Iran was using the two IR-6 cascades to produce near 5 percent LEU from natural uranium to directly feed one of the three sets of IR-1 cascades for further enrichment up to 20 percent. The presence of advanced centrifuges at the FFEP enhances Iran's ability to break out using a declared but highly fortified facility.
- The average production rate of 20 percent enriched uranium at the FFEP was 26.8 kg (U mass) per month, or 39.6 kg (hex mass) per month.
- As of October 21, 2022, Iran had an IAEA-estimated stock of 386.49 kg of 20 percent enriched uranium (U mass and in the form of UF6), equivalent to 571.73 kg (hex mass). Iran also has a stock of 30.8 kg (U mass) of 20 percent uranium in other chemical forms.

- At the Natanz FEP, Iran added up to ten cascades of advanced centrifuges during the last reporting period, for a total installed of 36 cascades of IR-1 centrifuges, 15 cascades of IR-2m centrifuges (up by nine), three cascades of IR-4 centrifuges (up by one), and three cascades of IR-6 centrifuges. Iran further announced it is planning to install an additional three IR-4 cascades and 18 cascades of a yet-unspecified type of centrifuge.
- Iran's current, total operating enrichment capability is estimated to be about 16,300 separative work units (SWU) per year, slightly lower than the 16,600 SWU per year at the end of the last reporting period, due to fewer IR-1 centrifuges enriching uranium at the FEP. As of the end of this reporting period, Iran was not yet using its fully installed enrichment capacity at the FEP, which, as noted above, has grown substantially.
- Average daily production of near 5 percent LEU at the FEP doubled, and for the first time since early 2021, Iran's near 5 percent LEU stock increased from one reporting period to the next, reaching 1030 kg (U mass).
- Despite the increase during this reporting period in the amount of uranium enriched between two and five percent, Iran has not prioritized its stockpiling during the last two years, at odds with its contention that its primary goal is to accumulate 4-5 percent enriched uranium for use in nuclear power reactor fuel. Instead, this stock has been used extensively to produce near 20 percent and 60 percent enriched uranium, far beyond any of Iran's civilian needs.
- Iran's overall reported stockpile of LEU decreased, due to a decrease in Iran's stock of up to 2 percent enriched uranium, much of which was used as feed in the production of near 5 percent LEU.
- The IAEA reports that it faces serious challenges in re-establishing continuity of knowledge about Iran's activities under a revived JCPOA, such as production of centrifuges and heavy water, due Iran's decision in February 2021 to deny the IAEA access to data from key monitoring and surveillance equipment. The IAEA details the rather tough remedial measures it will need to take in order to re-establish a centrifuge manufacturing baseline, including access to extensive records.
- The monitoring situation has been severely worsened by Iran's decision in June 2022 to remove all JCPOA-related monitoring and surveillance equipment, including video cameras. For more than five months, the IAEA has not had equipment installed to monitor Iran's activities at advanced centrifuge manufacturing sites, which have multiplied this year. It faces an additional surveillance gap at the former TESA Karaj centrifuge manufacturing facility from June 2021 until January 2022, when cameras were destroyed or removed following an attack on the facility. The absence of monitoring and surveillance equipment, particularly since June 2022, has caused the IAEA to doubt its ability to ascertain whether Iran has diverted or may divert advanced centrifuges.
- A risk is that Iran will accumulate a secret stock of advanced centrifuges, deployable in the future at a clandestine enrichment plant or during a breakout at declared sites. Another risk is that Iran will establish additional centrifuge manufacturing sites unknown to the IAEA. Iran is fully capable of moving manufacturing equipment to new undeclared sites, further complicating any future verification effort and contributing uncertainty about where Iran manufactures centrifuges.
- The IAEA concludes that "Iran's decision to remove all of the Agency's equipment previously installed in Iran for surveillance and monitoring activities in relation to the JCPOA has also had detrimental implications for the Agency's ability to provide assurance of the peaceful nature of Iran's nuclear program."
- Combined with Iran's refusal to resolve outstanding safeguards violations, the IAEA has a significantly reduced ability to monitor Iran's complex and growing nuclear program, which notably has unresolved nuclear weapons dimensions. The IAEA's ability to detect diversion of nuclear materials, equipment, and other capabilities to undeclared facilities remains greatly diminished.

●▶ **Read the full analysis as PDF** here.

EDITOR'S COMMENT: All predictions are just hypothetical. The reality dictates that one day Iran will say "*Greetings! Now we have at least two nuclear weapons, but this might not be the accurate number. Now let's talk about politics, strategies, equilibriums, sanctions, etc.*" It happened before; it will happen again!

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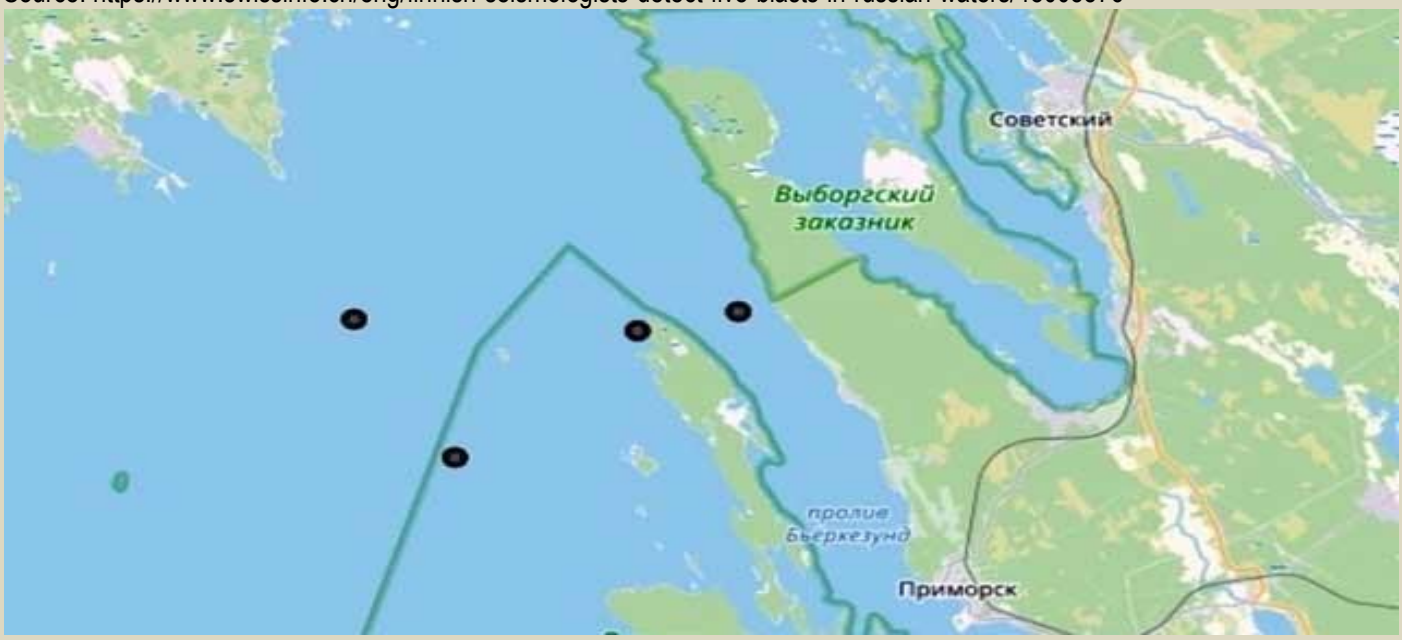
EXPLOSIVE NEWS

Finnish seismologists detect five blasts in Russian waters

Source: https://www.swissinfo.ch/eng/finnish-seismologists-detect-five-blasts-in-russian-waters/48005576



Oct 25 – Finnish seismologists detected five underwater blasts in Russian waters in the Baltic Sea last week, the Helsinki University Institute of Seismology said on Tuesday. "We have detected five explosions, the largest of them having been of 1.8 in magnitude and the smallest of 1.3," the institute's director Timo Tiira told Reuters, referring to the Richter scale used to describe the intensity of seismic activity. Four explosions were recorded on Thursday and one on Friday in Russian territorial waters in the Gulf of Finland, Tiira said, adding it had been clear that the observations had been caused by blasts and not by other seismic activity. "It can be seen in the shape of the signal and in the content of its frequency," he said. The institute did not know what had caused the blasts but that similar disturbances had been detected during previous naval drills and sweeping of old mines from the sea bottom, Tiira said. "We have detected explosions in that same area before, but not very often, not even every year," he said. The Russian Ministry of Defence was not immediately available for comment.

EDITOR'S COMMENT: There are four scenarios for the causes of these explosions: (1) New sabotage of parts of Nord Stream 1 and 2 pipelines; (2) Destruction of underwater observation stations of either Russia or NATO that had been illegally "planted" in the area. Underwater stations control underwater traffic, i.e., if there is a presence of submarines or marine vehicles in general; (3) Closure of underwater passages, i.e., ravines, valleys, etc. The relief of the seabed is exactly like that of the land. Probably the Russians, with explosions, caused underwater landslides to "cut" underwater routes and protect their territorial waters; (4) Possibility of pursuing NATO submarines in the area that the Russians intercepted by using high-powered underwater bombs.

Russia's claim that British navy personnel blew up Nord Stream gas pipelines dismissed by MoD

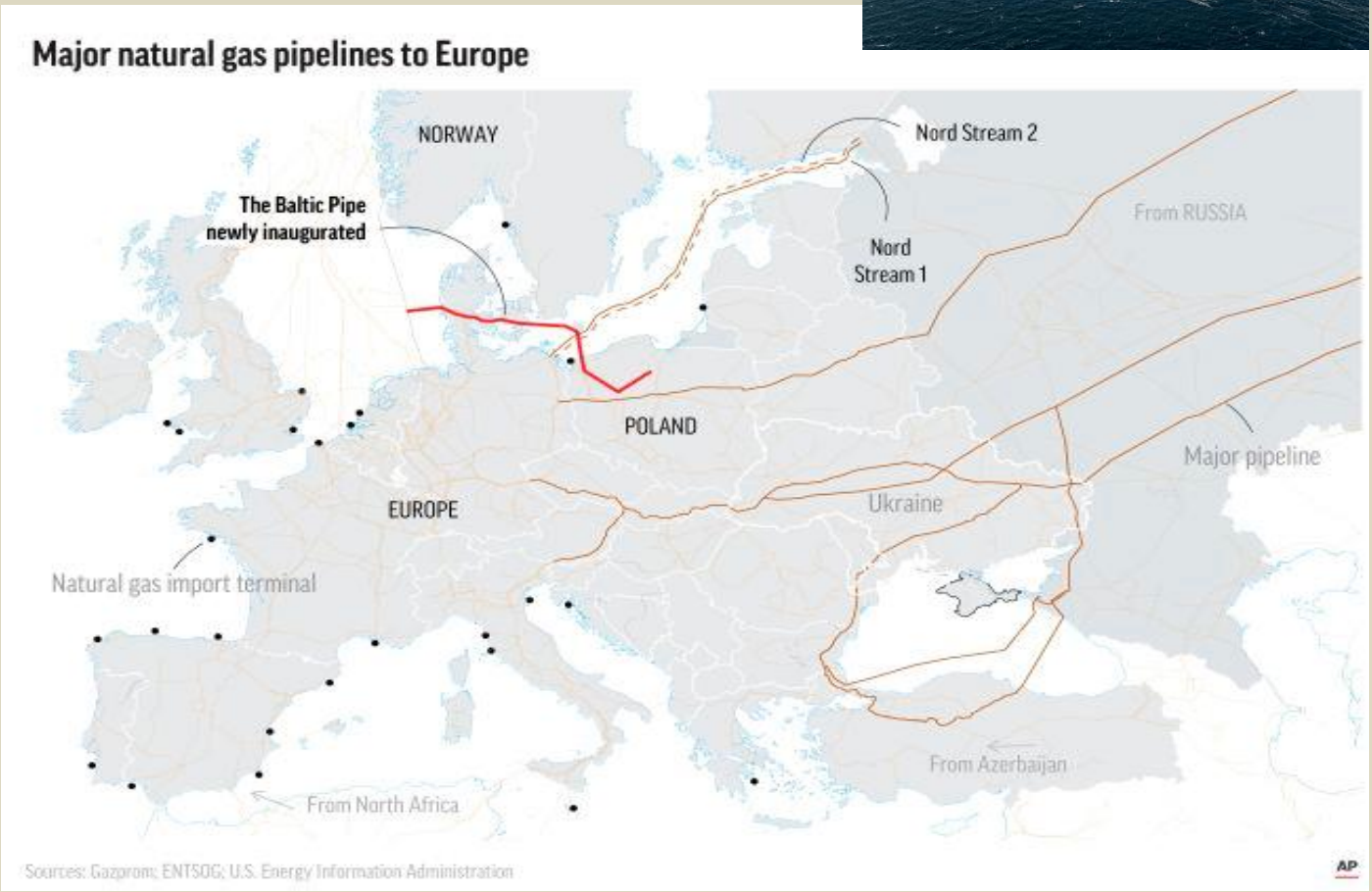
Source: https://www.itv.com/news/2022-10-29/russia-says-british-navy-personnel-blew-up-nord-stream-gas-pipelines

Oct 29 – The UK's Ministry of Defence (MoD) said Russia is "peddling false claims of an epic scale" after the country's defence ministry claimed that British navy personnel blew up the Nord Stream gas pipelines on the bed of the Baltic Sea in September. Russia's defence ministry did not give any evidence for its unsubstantiated allegation, which accuses a key NATO member of sabotaging vital Russian infrastructure.

"According to available information, representatives of this unit of the British Navy took part in the planning, provision and implementation of a terrorist attack in the Baltic Sea on September 26 this year - blowing up the Nord Stream 1 and Nord Stream 2 gas pipelines," the ministry said.

In response, the MoD posted on Twitter: "To detract from their disastrous handling of the illegal invasion of Ukraine, the Russian Ministry of Defence is resorting to peddling false claims of an epic scale. "This invented story, says more about arguments going on inside the Russian government than it does about the West."

The Kremlin has previously accused the West of being behind the explosions that ruptured the Russian-built Nord Stream 1 and Nord Stream 2 pipelines last month. Russia, however, has never given specific details of who it thought damaged the pipelines, which used to be the largest routes for Russian gas supplies to European countries.



Earlier this month, German federal prosecutors said they had opened an investigation against persons unknown on suspicion of deliberately causing an explosion and anti-constitutional sabotage. Prosecutors said that there was sufficient evidence that the pipelines were damaged by at least two deliberate detonations.

They added that the aim of their investigation is to help identify the perpetrator or perpetrators as well as a possible motive.

The German investigation came on top of a separate probe being carried out in Sweden.

The governments of Denmark and Sweden previously said they suspected that several hundred pounds of explosives were involved in carrying out a deliberate act of sabotage.

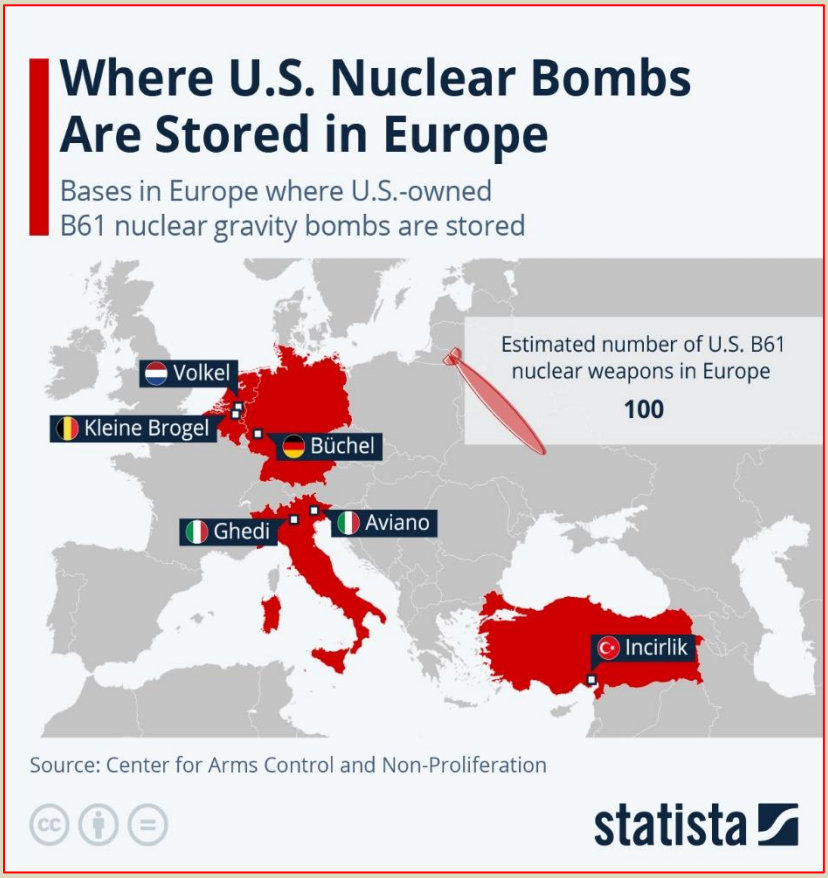
The Russian defence ministry's statement came as at least two Russian ships suffered damage in a major port in Crimea, the Ukrainian peninsula annexed by Moscow in 2014, on Saturday.

The ministry said two ships received “minor damage” during an alleged Ukrainian drone attack on navy and civilian vessels docked in Sevastopol at 4:20am.

The city, Crimea’s largest, hosts the headquarters of Russia’s Black Sea Fleet. The ministry said 16 drones were used in the attack and that Russian forces had “repelled” them. An adviser to Ukraine’s Interior Ministry gave a conflicting account, claiming that that “careless handling of explosives” had caused blasts on four warships in Russia’s Black Sea Fleet. Anton Gerashchenko wrote on Telegram that the vessels included a frigate, a landing ship and a ship that carried cruise missiles used in a deadly July attack on a western Ukrainian city. Neither side’s claim could be immediately verified.

Where U.S. Nuclear Bombs Are Stored in Europe

Source: https://www.statista.com/chart/18711/bases-for-us-b61-nuclear-gravity-bombs-in-europe/



Oct 07 – In 2019, a NATO-affiliated body released and subsequently deleted a document that apparently confirmed something that had been suspected for a long time - U.S. nuclear weapons are being stored at air bases in several European countries. A copy of the document was published by Belgian newspaper De Morgen which stated that B61 nuclear bombs are stored at six bases in Europe. As a factsheet from the Center for Arms Control and Non-Proliferation details, the bases in question are Kleine Brogel in Belgium, Büchel in Germany, Aviano and Ghedi in Italy, Volkel in the Netherlands and Incirlik in Turkey. The presence of the weapons stems from an agreement during the Cold War in the 1960s aimed to deter the Soviet Union and convince the countries involved that starting their own nuclear weapons programs was not necessary. The B61 is a low to intermediate-yield strategic and tactical thermonuclear gravity bomb which features a two-stage radiation implosion design. It is capable of being deployed on a range of aircraft such as the F-15E, F-16 and Tornado. It can be released at speeds up to Mach 2 and dropped as low as 50 feet where it features a 31 second delay to allow the delivery aircraft to escape the blast radius.

B61-12 nuclear gravity bomb

US must return overseas nukes to national territory: Russian envoy

Source: https://www.presstv.ir/Detail/2022/10/29/691801/Russian-ambassador--Anatoly-Antonov-urges-US-to-return-all-nuclear-weapons-stationed-abroad-to-national-territory--

Oct 29 – Ambassador Anatoly Antonov urged Washington on Saturday to "return all the nuclear weapons deployed overseas back to its national territory, eliminate overseas infrastructure for their storage and maintenance, and to abandon the practice of simulating the use of such weapons."

"In these times of tensions and increased risks, nuclear states have a special responsibility to prevent escalation," the Russian ambassador said.

Antonov also called on the White House to "stop the practice of testing the use of such munitions with the involvement of military personnel of non-nuclear states, as part of NATO 'joint nuclear missions,' contrary to the fundamental principles of the NPT (Treaty on the Non-Proliferation of Nuclear Weapons)."

The ambassador also warned Washington against its plan of expediting the updated nuclear warheads to Europe.

"As for US air-dropped bombs, they are deployed to European countries with short flight times to Russia's border. This is why B61-12 bombs have strategic importance despite their limited capacity."

Antonov referred to a report by Politico on Wednesday, which said Washington had accelerated the upgraded B61-12 air-dropped gravity bomb to NATO bases in Europe. Citing a US diplomatic cable and two people familiar with the issue, Politico reported that the arrival of the nuclear bomb, originally slated for next spring, is now planned for December.

The B61 is a family of nuclear bombs first developed in the early 1960s and initially demonstrated in underground nuclear tests in Nevada.

Friction in relations between the West and Russia is becoming deeper over what the United States and its allies brand as Russia's threats to use nuclear weapons in Ukraine. For months, US officials have repeatedly warned of the possibility of Russia using weapons of mass destruction in Ukraine. However, officials in Washington have conceded they have seen no change to Russia's nuclear forces that would require a change in the alert posture of American nuclear forces.

Russia launched a military campaign in Ukraine in late February, following Kiev's failure to implement the terms of the 2014 Minsk agreements and Moscow's recognition of the breakaway regions of Donetsk and Luhansk.

On October 25, the Kremlin warned Ukraine was preparing to use a "dirty bomb," which is an explosive device laced with radioactive material. Ukraine has denied any attempt to use such a weapon.

At least 100 killed, 300 hurt in 'heinous' Mogadishu car bombings

Source: https://www.aljazeera.com/news/2022/10/30/hundreds-killed-wounded-in-heinous-mogadishu-car-bombings

Oct 30 – At least 100 people have been killed and 300 wounded in two car bomb explosions in the capital Mogadishu, Somali President Hassan Sheikh Mohamud said.

Blaming the al-Shabab armed group for the attacks, Mohamud told reporters on Sunday that he expected the death toll from the twin blasts to rise further.

"Our people who were massacred … included mothers with their children in their arms, fathers who had medical conditions, students who were sent to study, businessmen who were struggling with the lives of their families," the Somali leader said after visiting the site of the blast.

Authorities said the attack at the busy Sobe intersection on Saturday targeted the Somali education ministry and a school.

Sadiq Doodishe, a police spokesperson, told reporters that women, children and the elderly had been killed in the attack.

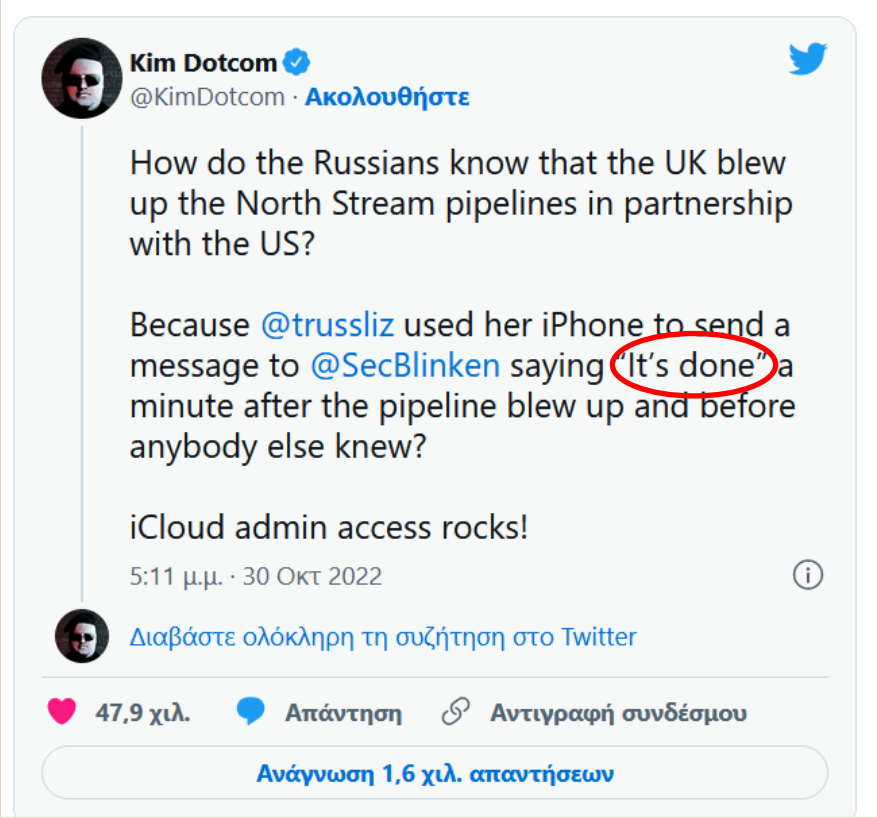
State news agency SONNA said independent journalist Mohamed Isse Kona was also killed.

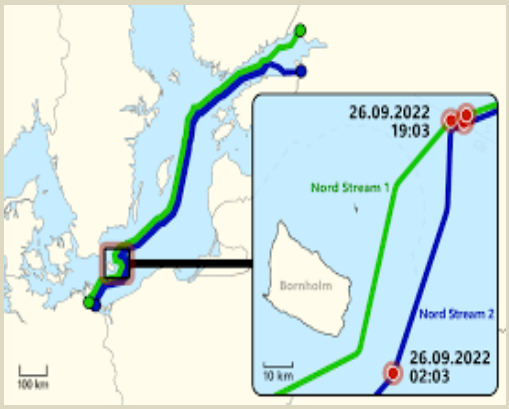
The first explosion hit the ministry; then the second blast occurred as ambulances arrived and people gathered to help the victims, police officer Nur Farah told the Reuters news agency.
"I was 100 meters away when the second blast occurred," witness Abdirazak Hassan told The Associated Press news agency. "I couldn't count the bodies on the ground due to the [number of] fatalities." He said the first blast hit the perimeter wall of the education ministry, where street vendors and money changers plied their trade.
A Reuters journalist near the blast site said the two explosions occurred within minutes of each other and smashed windows in the vicinity. Blood from victims of the blasts covered the tarmac just outside the building, he said.
Moments after the blasts, a large plume of smoke rose over the site.
The Aamin ambulance service said on Saturday that they had collected at least 35 wounded people. One ambulance responding to the first attack was destroyed by the second blast, director Abdulkadir Adan added in a tweet.

Rescuers remove a body from the scene of a double car bomb attack in Mogadishu, Somalia, on October 29, 2022 [Farah Abdi Warsameh/ AP]

A driver and a first aid worker were wounded, he said. The United Nations Mission in Somalia condemned Saturday's "vicious attack" and extended its condolences to the families of the victims. Turkey condemned the "heinous" attack, while Qatar – firmly rejecting violence and "terrorism" – expressed its condolences and wished the wounded a speedy recovery.
The explosions occurred in the same location as Somalia's largest bombing in October 2017, which killed more than 500 people. In that bombing, a truck bomb exploded outside a busy hotel at the K5 intersection, which is lined with government offices, restaurants and kiosks. Al-Qaeda-allied al-Shabab, which has been fighting in Somalia for more than a decade, is seeking to topple the central government and establish its own rule based on a strict interpretation of Islamic law.
The group uses a campaign of bombings both in Somalia and elsewhere, and targets have included military installations as well as hotels, shopping centres, and busy traffic areas.
In August, at least 20 people were killed and dozens wounded when al-Shabab fighters stormed the Hayat Hotel in Mogadishu, triggering a 30-hour standoff with security forces before the siege was finally ended.
Mohamud, with support from the United States and allied local militias, has launched an offensive against the group, although results have been limited.

There is no smoke without a fire ...





Manchester Arena's weapon-scanning tech questioned

Source: https://www.bbc.com/news/technology-63476769

Nov 01 – Some of the world's biggest venues, including Manchester Arena, are using weapons scanners "incapable" of detecting some large knives. Evolv, a US-based company that sells artificial-intelligence (AI) scanners, claims they can detect all weapons.
But documents shared with BBC News by research firm IPVM suggest they may fail to detect certain types of knives, as well as some bombs and components.

Evolv told BBC News it had told venues of all "capabilities and limitations".
Marion Oswald, of the government's Centre for Data Ethics and Innovation, told BBC News: "There needs to be more public information and more independent evaluation of these systems before they are rolled out in the UK.
"At the end of the day, they are potentially replacing methods of metal detection and physical searches that have been tried and tested."

Expressed doubts

AI and machine learning enable the scanners to create unique "signatures" of weapons that differentiate them from items such as computers or keys, Evolv says, reducing manual checks and preventing long queues.

"Metallic composition, shape, fragmentation - we have tens of thousands of these signatures, for all the weapons that are out there," chief executive Peter George said last year, "all the guns, all the bombs and all the large tactical knives."
For several years, independent security experts have expressed doubts about some of Evolv's claims.
The company has previously refused to let IPVM test its technology, Evolv Express.
But last year, it gave permission to the National Center for Spectator Sports Safety and Security (NCS4).

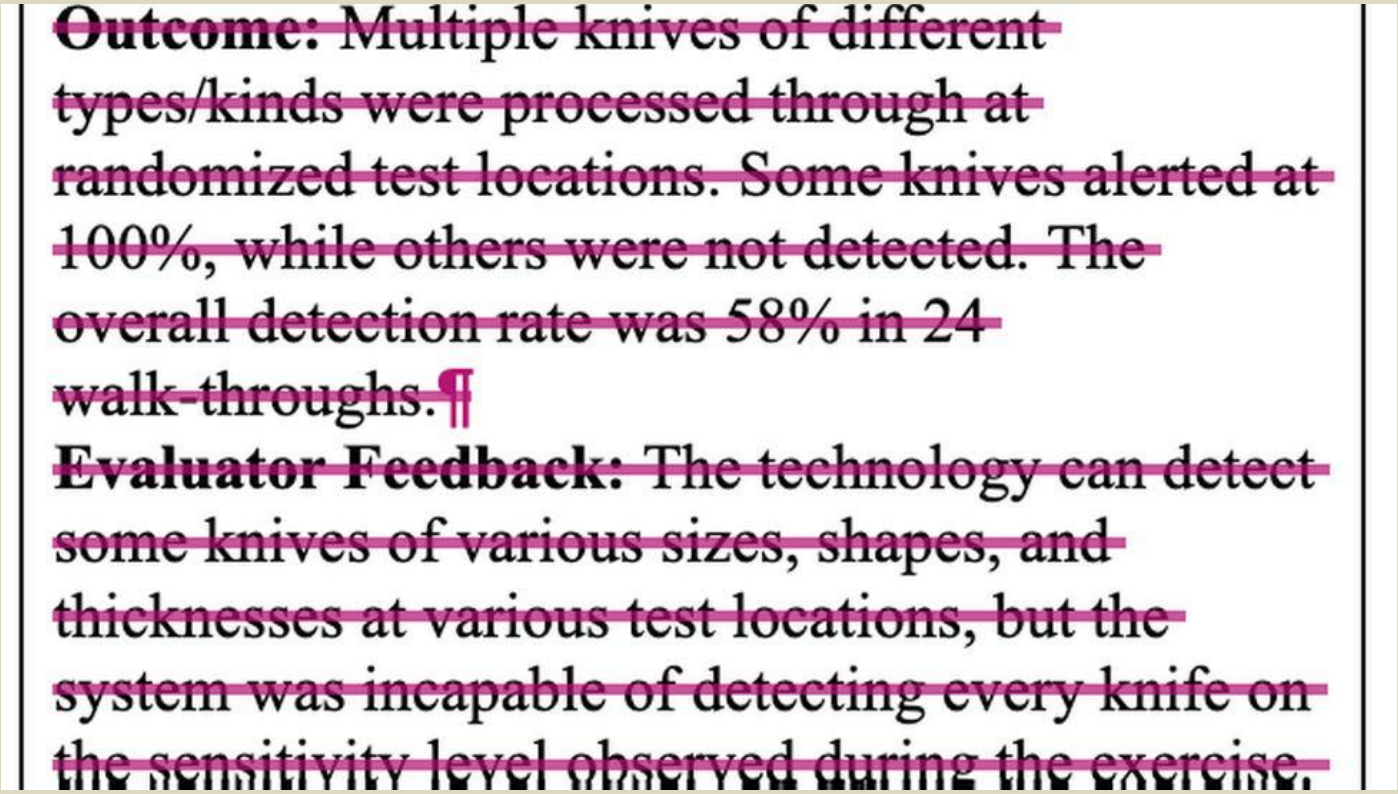
Evolv Express scans people for weapons

NCS4's public report, published earlier this year, gave Evolv a score of 2.84 out of three - many types of guns were detected 100% of the time.
But it also produced a private report, obtained via a Freedom of Information request by IPVM and shared with BBC News along with emails between Evolv and NCS4.
And it gave Evolv's ability to detect large knives a score of just 1.3 out of 3.
In 24 walkthroughs, Evolv Express failed to detect large knives 42% of the time.
"The system was incapable of detecting every knife on the sensitivity level observed during the exercise," the report says.
"Recommend full transparency to potential customers, based on data collected."

An Evolv screen that alerts users to potential threats

IPVM's Conor Healy said: "For certain categories of knives, the system didn't detect them at all when they were brought through. And that completely conflicts with what Evolv has told the public."
NCS4's report does not say, and BBC News is not reporting, what types of large knives the technology failed to detect
And for security reasons, BBC News is reporting no further details about the documents' suggestion it may also fail to detect certain types of bombs and their components.

ASM Global, which owns Manchester Arena, has said its use of Evolv Express is the "first such deployment at an arena in Europe" and it plans to roll the technology out to other venues.
In 2017, a man detonated a bomb at an Ariana Grande concert in the arena, killing 22 people and injuring hundreds more, many of them children.
Asked whether the private report's conclusions had been passed on, an ASM Global official told BBC News it did not wish to comment on security matters.
Emails obtained by IPVM show Evolv employees had been allowed to make "tracked changes" to the report - deleting certain sections.


Outcome: Multiple knives of different types/kinds were processed through at randomized test locations. Some knives alerted at 100%, while others were not detected. The overall detection rate was 58% in 24 walk-throughs.¶
Evaluator Feedback: The technology can detect some knives of various sizes, shapes, and thicknesses at various test locations, but the system was incapable of detecting every knife on the sensitivity level observed during the exercise.

A section on the detection of large knives deleted by an Evolv employee using "track changes"

In one version, dated 19 January, the conclusion "knives were not consistently detected" was deleted.
An Evolv employee using "track changes" also deleted a reference to the system being "incapable of detecting every knife" and one to the 1.3 score.
Asked why Evolv had been able to edit what was labelled an independent report, NCS4 told BBC News it "did not allow Evolv to directly edit the report". "The 'track changes' feature was used as a means to collect feedback," an official said.
And NCS4 "stands by its process, which has proven effective in informing and educating solution providers and practitioners".

'Informed decisions'
Evolv did not dispute the private report's conclusions.
"We work closely to communicate sensitive security information, including the capabilities and limitations of our system, so that security professionals can make the most informed decisions for their specific venue," an official told BBC News.
"We feel providing a blueprint of how to get around the security-screening process and technology to the public will make the venues our customers secure less safe."
The NCS4's report is important because very little is known, publicly, about how well Evolv technology works. Evolv told BBC News it had also been tested by the Centre for the Protection of National Infrastructure - a body attached to the Home Office.
But when asked by BBC News, the Home Office refused to confirm or deny this.

Ukraine is becoming a showroom for modern weaponry

By Mark Galeotti

Source: https://www.spectator.co.uk/article/ukraine-is-becoming-a-showroom-for-modern-weaponry/

Nov 05 – The war in Ukraine has become a testing ground for new technology, an opportunity to develop weapons and find different ways of fighting. Nations that are supposedly neutral have been sending weapons to the front line to find out just how they work in the heat of battle.

This is a relatively new trend in the history of warfare, one that first emerged in the 1936-39 Spanish Civil War. The backers of both sides treated the war not just as a testing range but also a showroom. The Germans, supporting Franco's nationalists, first tried Blitzkrieg on the Spanish peninsula. Hermann Göring saw the civil war as a chance 'to test my young Luftwaffe'. The German Condor Legion fielded Messerschmitt fighters and Heinkel medium-range bombers, later used by the Germans in the Blitz attacks on London. Also present in Spain was Germany's new 8.8cm Flak cannon, whose real-world use helped sell the powerful weapon to Italy and Finland. The Soviets were less strategic in their support for the opposing Spanish republicans but even so, thousands of soldiers and airmen gained combat experience and learned what Blitzkrieg felt like from the losing side.

Since Vladimir Putin's invasion, Ukraine has become a similar showcase for arms exporters as well as something of a proxy war between international rivals. From the very start of the war, Ukraine's so-called 'Alibaba army' of commercial, off-the-shelf drones bought from the Chinese wholesaler offered it an unexpected edge. The drones were first used for surveillance but were soon modified to drop grenades or be packed with explosives to slam into Russian targets.

The capacity for turning what they had into what they needed has proven to be something of a Ukrainian characteristic, also reflecting their command structures. Whereas the Russians have retained an almost Soviet-style model of rigid, top-down command, the Ukrainians have adopted a flexible style akin to Nato's 'mission command', whereby the senior officer sets the objective but gives subordinates much greater scope to decide how to achieve it.

From a military perspective, the loss of munitions is well worth the information gathered in return

A similar commitment to innovation in drone warfare could be seen in last weekend's attack on Russia's Black Sea Fleet at Sevastopol where, for the first time ever, aerial and maritime drones were used in a combined attack. Those water drones were reportedly custom-made using commercial parts, including a motor from a jet ski.

It's not just technology that is changing but tactics too; the introduction of roaming-strike teams with anti-tank weapons has severely undermined the Russians' reliance on tanks and armoured vehicles. The Ukrainian defence minister Oleksii Reznikov has gone out of his way to tout weapons and tactics testing as a reason for Nato states to send support. 'We have a combat testing field in Ukraine during this war,' he has said, allowing 'competition between systems' to find advantages and test defects.

Many have taken up the offer. Latvia's AtlasPro surveillance drone received its first field test in Ukraine, as did the US's secretive new Phoenix Ghost loitering munition, which flies in circles above the battlefield until it finds a target and crashes into the unsuspecting soldiers below. The US military has also been able to pit its latest electronic warfare systems against the Russians', which one Pentagon official described as 'priceless… It's impossible really to know how this kind of kit will measure up until it's given a real shakedown against a real opponent.'

From a military perspective, the loss of munitions is well worth the information gathered in return. In 2020, a British officer involved in Operation Orbital, the UK capacity-building mission in Ukraine, admitted to me that his men were also learning from the Ukrainians. 'No one else has the same experience in fighting a modern, peer rival in conventional war. I've seen action in Iraq and Afghanistan; I've been under fire. But I've never faced a tank.'

A Turkish Bayraktar TB2 combat drone at a Lithuanian Air Force Base, 6 July 2022 (Getty Images)

New forms of warfare have created new markets for arms manufacturers. Turkey's Bayraktar TB2 attack drone was already hailed as the decisive weapon in the 2020 war between Azerbaijan and Armenia; now it has achieved near-cult status as the first star weapon of the Russo-Ukrainian war. So successful was the TB2 in blunting Russia's initial armed thrust towards Kyiv that it became the subject of a catchy little patriotic folk song, penned by a Ukrainian soldier at the defence ministry's request.

Since then, the US-supplied Javelin missile and the lighter British-supplied NLAW anti-tank missile have also acquired cult status. Saint Javelin – an image of the Virgin Mary cradling a missile launcher rendered in the style of an Orthodox icon – has become a meme. There is now a website selling the image on patriotic stickers and clothing to raise money for humanitarian relief in Ukraine. You can't buy advertising like that. On the other side, Russia's deployment of Iranian-built Shahed loitering munitions against the Ukrainian electricity grid is proving a marketing opportunity for Tehran. Sanctions have forced Iran to build its own arms industry, and while it is still limited, it is growing. Traditionally, Iranian weapons sales have suffered because of a lack of market profile and a belief that its relatively simple systems have little use in modern war. However, according to Tehran, since the Shahed's use in Ukraine, 22 countries have expressed an interest in buying it. Suddenly, cheap and cheerful looks tempting. A Shahed costs around £18,000. In its first month using the drone, Russia's swarm bombardments cost Moscow around £10-15 million. However, the cost to Ukraine of trying to counter these Iranian drones was an estimated £25 million in anti-air defences. Similarly, part of the Bayraktar's success is its price.

Ukrainian forces are willing to risk a drone costing as little as $1 million on missions that the British or Americans, with their multi-million-dollar equivalents, wouldn't dare attempt. Price changes the calculus.

'Saint Javelin' mural on the side of an apartment block in Kyiv, Ukraine (Getty Images)

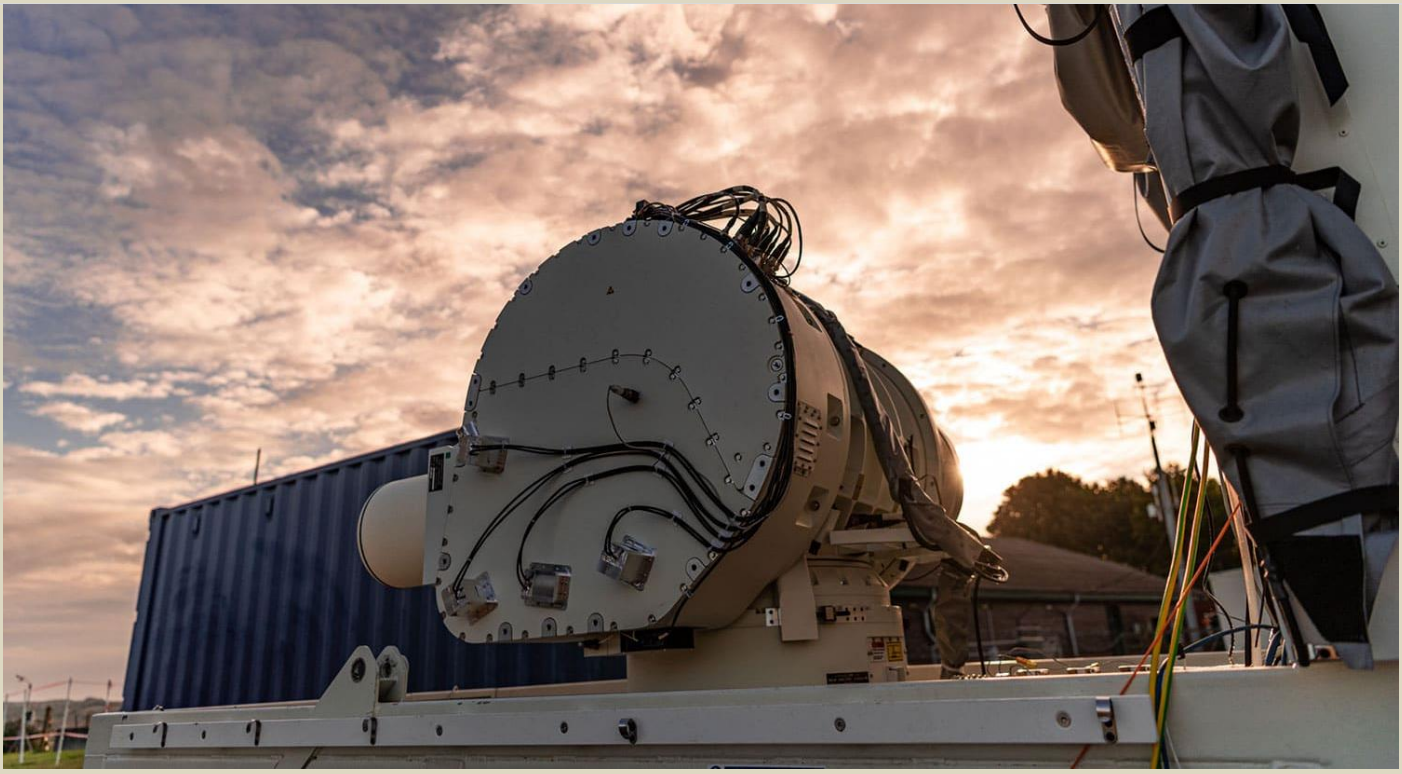
Nor is this confined to drones. Russia is reportedly running out of the Iskander short-range ballistic missiles it has used to pummel Ukraine's cities. It has ordered at least 200 Iranian Fateh-110 and Zolfaghar missiles to replenish its stocks. Perversely, this may save Moscow money: an Iskander has a unit cost of around $5 million, but a Fateh-110 just $2.1 million. If they also prove effective on the battlefield, Tehran hopes these too will find new markets. Arms sales are often a part of proxy conflicts. As in other wars, where Iran goes, Israel follows. The Israelis, conscious of their historic relationship with Putin and his regime, have been reluctant to get too directly involved. Nonetheless, last month, following Russia's Iranian shopping spree, the Israeli defence minister Benny Gantz agreed to send Ukraine early-warning systems for missile strikes. The two countries' intelligence agencies have begun co-operating too, particularly on the performance of Iranian weapon systems. Israel can test its own understanding of Iran's capabilities in someone else's war. The final irony is that just as the Ukrainians are degrading Putin's war machine, the West is learning more about how to defeat it. Beijing is undoubtedly taking note. US intelligence sources are claiming a greater degree of co-operation between Chinese and Russian defence attachés, with Beijing observing the successes of western systems and also trying to evaluate how to foil them. Washington was keen for the Ukrainians to use their anti-shipping missiles – including the attack by US-made Harpoons that sank a resupply tug in June – precisely to show the Chinese how vulnerable their ships could be were they to attack Taiwan. We are not the only ones learning from this war and looking to what might come next.

Dr Mark Galeotti is a political scientist and historian. His book Putin's Wars: From Chechnya to Ukraine is out next month.

Britain test fires its first high-energy laser weapon

Source [+video]: https://newatlas.com/military/britain-test-fires-its-first-high-energy-laser-weapon/

Nov 09 – The UK Ministry of Defence (MoD) has announced that it successfully test fired Britain's first high-powered, long-range laser directed energy weapon (LDEW), called DragonFire, on October 17 at the Porton Down science park test range in Wiltshire.



The recent demonstration trials by the MoD's Defence Science and Technology Laboratory (Dstl) were the second in a series designed to show that the technological hurdles needed for Britain to build a home-grown high-energy laser weapon have been cleared.

The first trials in July demonstrated that the DragonFire system could track and hit targets in the air and at sea. The second test in October fired the laser at targets at a number of different ranges to show that the weapon could safely control and place a high-powered beam on target with pinpoint accuracy from the beam director.
DragonFire is being developed under a £100-million (US$114-million) budget by the DragonFire Consortium made up of MBDA Missile Systems, which has overall responsibility for the project and developed the advanced command and control (C2) and image processing capabilities; Leonardo, which built the beam director used to focus and aim the laser while compensating for atmospheric conditions; and QinetiQ, which developed the 50-kW solid-state, phase-combined laser generator.
The British government is interested in developing lasers and similar directed energy weapons because such systems can engage targets like drones and missiles at the speed of light with virtually limitless ammunition costing about a dollar a shot outside of equipment costs. They also greatly simplify logistical needs and the technology is easily scalable to higher power levels.
The next step in the program will be to combine the two trials for later tests against more realistic targets and to find ways to move the findings of the demonstrator into practical weapon applications.
"This trial is the culmination of design, development and demonstration activity over a number of years," said Dstl's Technical Partner, Ben Maddison. "DragonFire has already successfully demonstrated an ability to track targets with very high levels of precision and to maintain a laser beam on the selected aim-point. This trial has assessed the performance of the laser itself – the outcome shows that the UK has world-leading capability in the technologies associated with laser directed energy weapons systems."

Iran Develops Hypersonic Missile That "Breaches All Defence Systems": Report

Source: https://www.ndtv.com/world-news/iran-develops-hypersonic-missile-that-breaches-all-defence-systems-report-3507384

Nov 10 – Iran has developed a hypersonic missile capable of penetrating all defence systems, General Amirali Hajizadeh, the commander of its Revolutionary Guards aerospace unit, said Thursday.
Hypersonic missiles, like traditional ballistic missiles which can deliver nuclear weapons, can fly more than five times the speed of sound.
"This hypersonic ballistic missile was developed to counter air defence shields," Hajizadeh said, quoted by Iran's Fars news agency.

"It will be able to breach all the systems of anti-missile defence," said the general, adding that he believed it would take decades before a system capable of intercepting it is developed.
"This missile, which targets enemy anti-missile systems, represents a great generational leap in the field of missiles."
The announcement comes days after Iran admitted sending drones to Russia, but denied doing so since Russia invaded Ukraine.
The Washington Post reported on October 16 that Iran was preparing to ship missiles to Russia, but Tehran rejected the report as "completely false".
Unlike ballistic missiles, hypersonic missiles fly on a trajectory low in the atmosphere, potentially reaching targets more quickly.
North Korea's test of a hypersonic missile last year sparked concerns about a race to acquire the technology.
Russia currently leads the race to develop the missiles, followed by China and the United States.
A hypersonic missile is manoeuvrable, making it harder to track and defend against.
While countries like the United States have developed systems designed to defend against cruise and ballistic missiles, the ability to track and take down a hypersonic missile remains a question.

Smiths Detection launches HI-SCAN 7555 DV dual-view X-ray scanner with enhanced capabilities

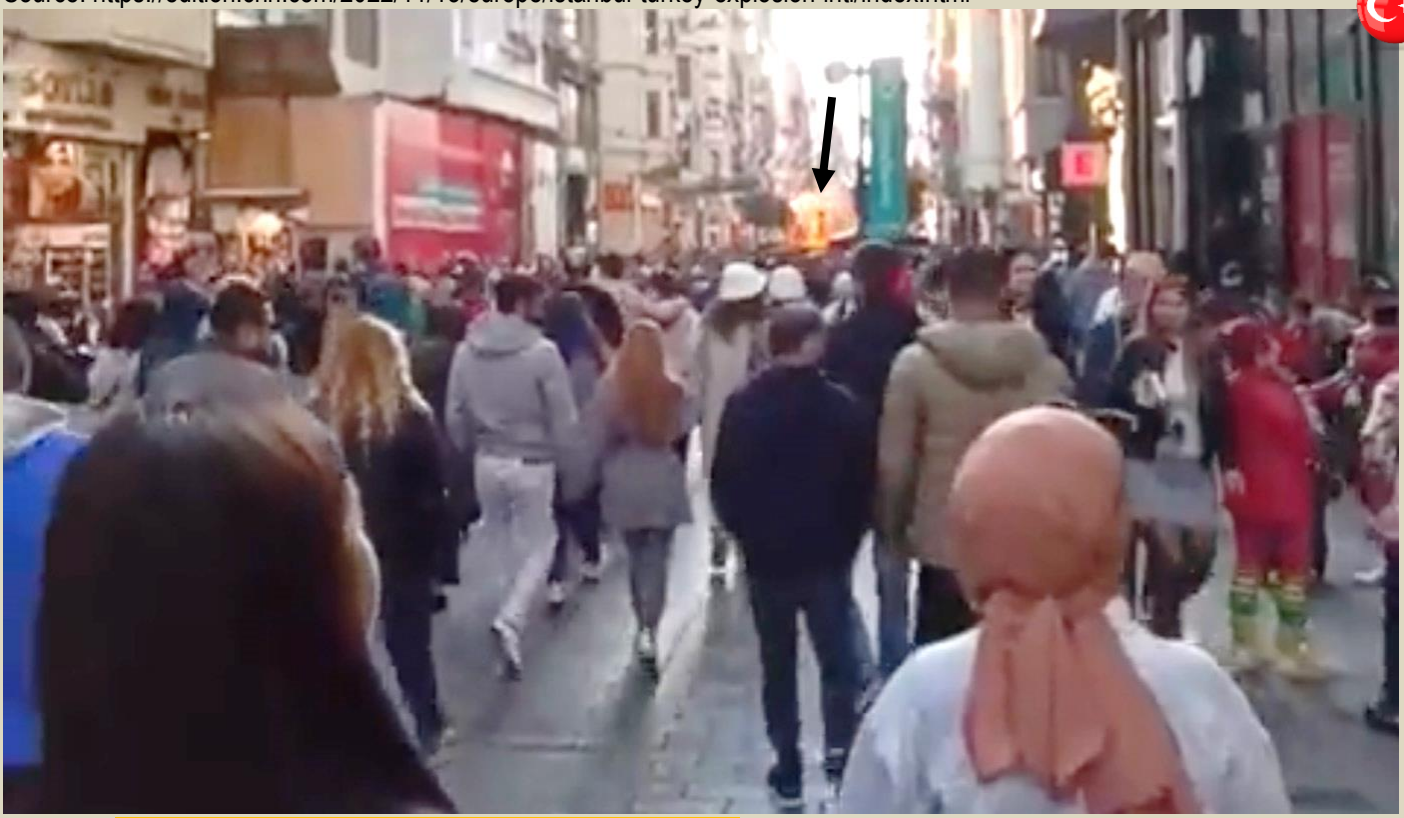
Source: https://border-security-report.com/smiths-detection-launches-hi-scan-7555-dv-dual-view-x-ray-scanner-with-enhanced-capabilities/

Smiths Detection today announces the launch of the HI-SCAN 7555 DV. A dual-view X-ray scanner, the HI-SCAN 7555 DV delivers superior image quality, automatic explosives detection, and a compact footprint, to provide efficient screening in high threat applications.
Equipped with an advanced dual-view X-ray scanning system, the new model offers increased operational efficiency by eliminating the need to re-position or rescan objects. Smart display functions further support the scanner's effectiveness, by facilitating accurate and rapid discrimination between substances. Two 120 Hz 24" monitors expedite image evaluation and reduce motion blur, ensuring that operators can make accurate and fast decisions.

The HI-SCAN 7555 DV offers an automated explosives detection algorithm as standard, plus a discretionary ECAC EDS CB C1 certified algorithm in combination with optional iCMORE weapons capability to allow for the automatic detection of weapons. The new scanner is compatible with Checkpoint.Evo^{plus}, Smiths Detection's central screening and digital management solution, which offers real-time data, allowing actionable insights and health status monitoring. The HI-SCAN 7555 DV can also be equipped with Smiths Detection's latest automated detection algorithm, iCMORE currency, which assists with the automatic detection of large stacks or bundles of notes.
With a compact footprint, the HI-SCAN 7555 DV has been designed to be easily integrated into both Smiths Detection and third-party lanes, making it ideal for high-throughput environments such as airports, customs, government facilities or embassies.
Richard Thompson, Vice President Marketing, Smiths Detection said: "We are delighted to be delivering enhanced capabilities for our HI-SCAN series, with the launch of the new dual view HI-SCAN 7555 DV. Not only does this scanner offer higher definition images, but the highest level of protection against cyber threats. This addition to our screening portfolio reaffirms our commitment to providing the most advanced security solutions."

Deadly explosion rocks central Istanbul street

Source: https://edition.cnn.com/2022/11/13/europe/istanbul-turkey-explosion-intl/index.html



Nov 13 – **At least six people have been killed and 81 injured** in an explosion in the heart of the Turkish city of Istanbul on Sunday afternoon, according to the city's governor. Those who were injured are being treated, the governor, Ali Yerlikaya, added. "We wish God's mercy on those who lost their lives and a speedy recovery to the injured," he tweeted. Yerlikaya earlier confirmed that the explosion took place **on Istiklal Street in Beyoglu Square**.

"Our police, health, fire and AFAD teams were sent to the scene," he said. "Developments will be shared with the public."

Calling the explosion in Istanbul on Sunday afternoon an attack, Turkish President Recep Tayyip Erdogan said state authorities would work to identify those responsible for it.

"All the responsible figures will be identified and punished," Erdogan said.

Erdogan added that he and his delegation would be departing shortly for the G20 summit in Bali, Indonesia, as planned.

An investigation has been launched into the explosion, the country's official Anadolu news agency reported.

Istanbul's Chief Public Prosecutor's Office has begun the investigation, with five public prosecutors assigned to it, according to the agency.

The city's criminal court issued a broadcast ban on all visual and audio news, as well as on social media sites, related to the explosion, Anadolu added.

Local media reports and images from the area showed a large number of emergency vehicles in the aftermath of the blast, with at least one person receiving medical attention. Some people could be seen fleeing the scene in the pictures and the area was being cordoned off by security services. The cause of the explosion is not known and CNN cannot independently verify whether there are any casualties. One eyewitness, journalist Tariq Keblaoui, told CNN that several people could be seen lying on the ground following the blast on Istiklal Street. Keblaoui said he was in a store on Istiklal Street when the explosion occurred about 10 meters ahead of him. The extent of the injuries of those he saw was not clear but several people were bleeding from their legs and arms, he said. Keblaoui said Istiklal Street, a popular tourist area, was heavily crowded on Sunday. Istiklal Street is one of the main streets leading to Taksim Square.Istanbul Mayor Ekrem Imamoglu called for assistance from police and health worker teams as they respond to the explosion in the city.

Worst Istanbul bombings

- 1999 Istanbul bombings
- 2003 Istanbul bombings
- 2008 Istanbul bombings
- 2009 Istanbul Molotov Bus Attack
- 2010 Istanbul bombing
- 2015 Istanbul bombing
- January 2016 Istanbul bombing
- March 2016 Istanbul bombing
- June 2016 Istanbul bombing
- 2016 Istanbul Atatürk Airport attack
- December 2016 Istanbul bombings
- 2017 Istanbul nightclub attack

Turkey alleges US complicity in deadly Istanbul bombing, rejects condolence statement

Source: https://thehill.com/policy/international/3734308-turkey-alleges-us-complicity-in-deadly-istanbul-bombing-rejects-condolence-statement/

Nov 14 – Turkey's interior minister accused the U.S. of being complicit in a recent bombing in the city of Istanbul on Sunday that left at least six people dead and dozens of others injured. Interior Minister

Süleyman Soylu rejected a statement of condolence from the U.S. during a press conference with reporters near the scene of the attack after authorities arrested a Syrian woman with suspected ties to Kurdish militants.
"I emphasize once again that we do not accept, and reject the condolences of the U.S. Embassy," Soylu said, according to Turkish state media publication Anadolu Agency.
The interior minister said the U.S. statement of condolence was like "a killer being first to show up at a crime scene."
The U.S. Embassy in Turkey tweeted Sunday that it was "deeply saddened" by the explosion, adding, "We extend our deepest condolences to the families of those who lost their lives and wish a speedy recovery for the injured."
White House press secretary Karine Jean-Pierre also tweeted on Sunday that the U.S. "condemns the act of violence that took place today in Istanbul."
"Our thoughts are with those who were injured and our deepest condolences go to those who lost loved ones," the statement read. "We stand shoulder-to-shoulder with our NATO Ally Turkiye in countering terrorism."

EDITOR'S COMMENT: A NATO ally with a big mouth and an even bigger tongue!

30% of Ukraine mined, twice the area of Austria, says emergency service

Source: https://news.yahoo.com/30-ukraine-mined-twice-area-172800183.html

Nov 18 – "The area that has been mined and number of landmines have increased tenfold compared to the period when we were not (in the full-scale) war," he said.
Kruk also spoke about the situation with mine clearance in the liberated areas of Kherson and Mykolaiv oblasts.
According to him, more than 8,000 square kilometers now have to be cleared of mines.
"That includes about 7,000 square kilometers in Kherson Oblast and up to 1,500 square kilometers in Mykolayiv Oblast," the official said. Many territories have been mined in Ukraine since Russia's full-scale invasion of Ukraine and the conduct of active hostilities.
The Interior Ministry and the State Emergency Service predict it may take up to 10 years to complete the mine clearance of the country. According to the Interior Ministry, about 270,000 square kilometers of land in Ukraine will have to be cleared of mines, including in currently Russian-occupied territories.
Meanwhile, Ukrainian sappers carry out demining work every day, the Emergencies Service said.

EDITOR'S COMMENT: I copy one of the comments under this article: "*How can 30% of Ukraine be mined when the Russians only ever controlled around 25% at most? And it's gonna take 10 years to remove the mines placed in 9 months? Something doesn't add up.*"

Extremist Content Online: ISIS Bomb-Making Video, Guides On Manufacturing Chemical And Biological Weapons, Removed From The Internet Archive

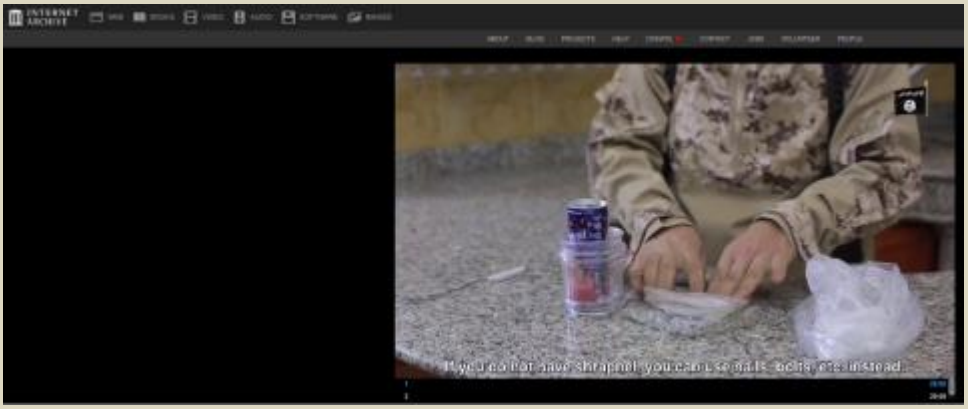
Source: https://www.counterextremism.com/press/extremist-content-online-isis-bomb-making-video-guides-manufacturing-chemical-and-biological

Nov 22 — The Counter Extremism Project (CEP) reports weekly on the methods used by extremists to exploit the Internet and social media platforms to recruit followers and incite violence. Last week, CEP researchers located a copy of a notorious ISIS bomb-making video and guidance on the manufacture of chemical and biological weapons on the Internet Archive. Separately, a white supremacist Telegram channel posted instructions on making homemade explosives and, on another channel, offered counsel on enhancing operational security.

Additionally, CEP researchers located more than a dozen neo-Nazi channels promoting violence on the Russian communications platform TamTam. Lastly, CEP researchers located discussions among neo-Nazis about Monero cryptocurrency and white supremacists soliciting funds via CashApp.

Large Quantity of Explosives Instructions Found in the Internet Archive

CEP researchers located a large number of instructions for the homemade manufacture and use of explosives on the Internet Archive. On November 15, CEP found a notorious ISIS bomb-making video on the site that instructs viewers on making explosive devices using commercially available products. It is at least the sixth time the specific video, originally released in November 2016 and linked to the May 2017 Manchester Arena bombing perpetrator who killed 22 people and injured hundreds more, has been found on the site. The video also encourages acts of terrorism and shows the use of a knife against a human target, who is brutally executed in the process. The video was uploaded on April 15, 2022, and was viewed at least 103 times when CEP found it. The Internet Archive quickly removed the video after CEP reported it.



ISIS video on the Internet Archive. Screenshot taken on November 15, 2022.

On November 16, CEP researchers located two identical folders on the site, each containing over 2.7 GB of content helpful in committing terrorist attacks, including how to manufacture multiple types of homemade explosives, improvised explosive devices, and synthesizing botulism toxin, cyanide, and other poisons. The folders also included guides on using explosives and vehicle-borne improvised explosive devices. An infographic from the pro-ISIS al-Saqri Foundation on making a homemade explosive device was also located. The Internet Archive removed both folders and the infographic after CEP reported them.

White Supremacist Telegram Channel Posts Instructions and Tips for Making Homemade Explosive

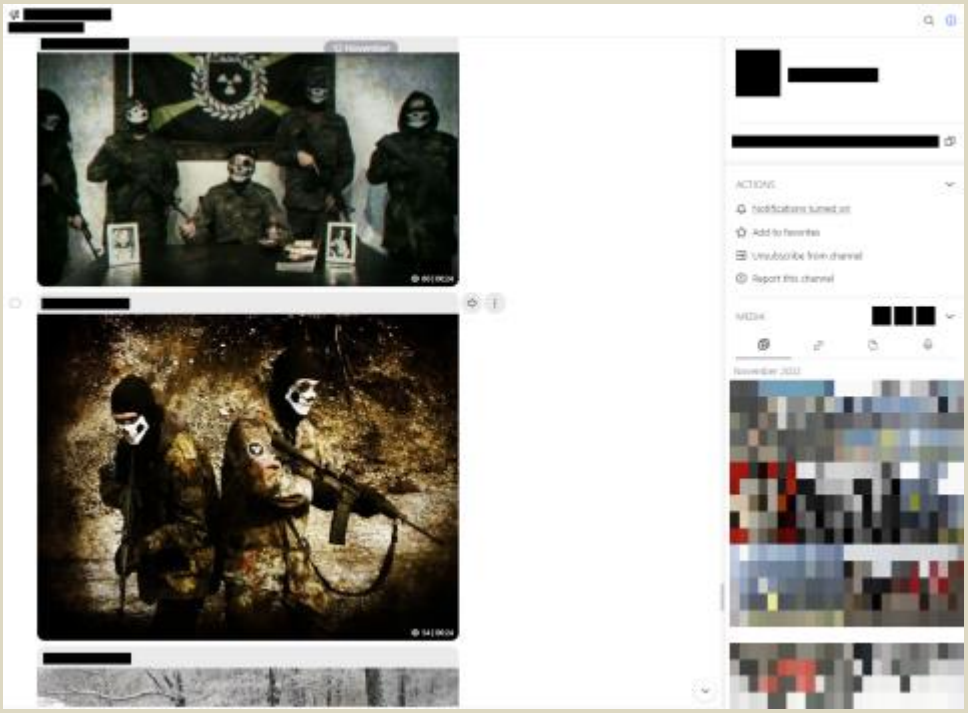
CEP located a post on a white supremacist Telegram channel that contained instructions and tips for the homemade manufacture of explosives. The post was made on November 13, and the exact same post was previously made on the communications app in December 2021 on a channel that has since been removed. The post advised users on operations security, how to legally obtain precursors, and how to increase the effectiveness of the explosive. The post was viewed approximately 75 times and forwarded twice in four days. The channel was removed after CEP reported it.

White Supremacist Telegram Channel Urges Followers to Improve Operations Security

A white supremacist Telegram channel urged their followers to take operations security seriously after the sentencing of a prolific right-wing extremist poster to six years in prison. “Slovakbro” was arrested in May after posting information on the homemade construction of explosives and firearms and advocating for violent white supremacism. A Telegram channel stated on November 12 that Slovakbro’s fate was proof that encryption, secrecy, and sound operations security were necessary to prevent future criminal charges. The channel posted additional advice on information security and Pretty Good Privacy encryption.

Neo-Nazi Channels Promoting Violence Located on TamTam

On November 16, CEP researchers located 13 channels on the TamTam messenger platform that promoted neo-Nazi accelerationism and acts of terrorism, including bomb-making and other activities meant to create "a climate of anxiety" and fear. TamTam is a communications app owned by the Russian company Odnoklassniki Ltd, which is, in turn, owned by the Russian social media company VK. Both the extreme-right and pro-ISIS supporters migrated to TamTam after various crackdowns by Telegram, with one poster claiming that TamTam doesn't remove content. The channels, which were previously located on Telegram and part of the "Terrorgram" community, posted a series of guides on how to make explosives, the manifestos of several white supremacist mass shooters, videos from several neo-Nazi groups, including the Atomwaffen Division, the National Socialist Order, The Base, and Feuerkrieg Division, and a recently released propaganda video that encourages acts of terrorism and praises individuals who have committed acts of white supremacist violence, referring to them as "saints." At least seven channels posted a neo-Nazi accelerationist book that calls for lone actor violence, workplace violence, attacks on infrastructure, law enforcement, politicians, people of color, Jews, Muslims, Sikhs, Latinos, and LGBT people. The book also includes information on making homemade bombs, conducting surveillance, and other information helpful in committing attacks.



Atomwaffen Division Propaganda on TamTam, screenshot taken on November 17.

A user posted in mid-November that the group of channels was moving from Telegram to TamTam because the latter does not remove content. Telegram began removing some extreme-right users that advocate violence in January 2021, including multiple "Terrogram" accounts. While neo-Nazi content, including advocating for violence, instructional manuals, and propaganda glorifying mass shooters, continues to exist on Telegram, these specific channels are often eventually removed after they are created. A Telegram channel that is part of the same online ideological sphere as the TamTam channels stated that it was essential to spread propaganda to create "a climate of anxiety" and fear on all possible online platforms. In April 2020, a similar white supremacist accelerationist channel created a TamTam channel allegedly as a backup for Telegram content, however, it was never fully utilized. After the Telegram-Europol crackdown on ISIS content on the platform in November 2019, ISIS propagandists similarly moved to TamTam. The company quickly removed many pro-ISIS channels shortly after the app saw an influx of pro-ISIS users. While there is still a limited pro-ISIS presence on TamTam, multiple supporters of the terrorist group have stated that the app is unsafe, citing privacy and operations security concerns. The 13 neo-Nazi TamTam channels had an average of 81 followers. Three were created in November 2022, one in August, six in July, two in June, and one in May. TamTam prohibits using the messenger service to "promote" or "call for violence and… illegal and immoral acts," as well as promoting "extremism, terrorism," or hate based on race, "sexual orientation, gender, gender identity, religious opinions."

CEP reported the channels to TamTam on November 16, but they were still accessible six days later.

Neo-Nazi Chat Recommends Use of Privacy Coins

Users of a neo-Nazi Telegram chat that focuses on information and operations security discussed potential European Union anti-money laundering regulations that would prevent crypto providers from offering privacy coins such as Monero. CEP has previously located requests for donations through Monero by The Base and

supporters of the National Socialist Order, as well as promotion of the privacy coin by online ISIS supporters. Extreme-right users warned that privacy coins were the only way for specific individuals to purchase items online and recommended buying Monero on a specific decentralized exchange.

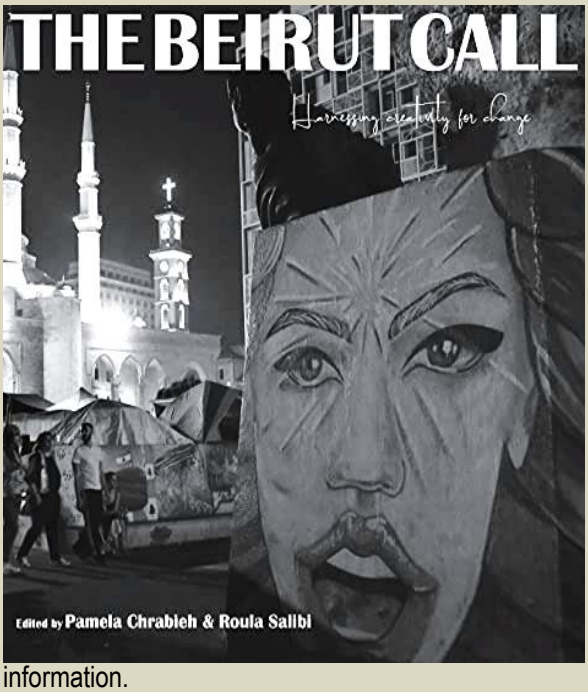
White Supremacist Group Soliciting Donations Via CashApp

Members of a white supremacist group that advocates for and claims to previously have committed an act of violence were found to be requesting donations via CashApp. There is no indication that the group's account was deactivated after CEP reported it to CashApp.

The Beirut Call: Harnessing Creativity for Change.

Edited by Pamela Chrabieh and Roula Salibi. Redlands, Calif.: Elyssar Press, 2021. 236 pp. $49.99.
Reviewed by Neil Leadbeater
Middle East Quarterly | Fall 2022 (view PDF)
Source: https://www.meforum.org/63519/the-beirut-call-harnessing-creativity-for-change

The explosion of a stockpile of 2,750 tons of highly volatile ammonium nitrate off-loaded into a warehouse in the port of Beirut on August 4, 2020, provided the catalyst for *The Beirut Call*, born from unimaginable tragedy. The explosion, perhaps the most powerful non-nuclear blast in history, ripped apart a city: It killed more than 200 people, injured more than 7,000, and displaced almost 300,000.



The Beirut Call represents a cooperative effort by publishers, journalists, translators, poets, musicians, choreographers, photographers, singer-songwriters, activists, and visual artists, all of whom share a love for Beirut and a belief that art can bring about change, agreeing with Mitri Raheb that art is one of the most important elements for people's survival ... art allows the soul not only to survive but to thrive.

This may sound grandiose, but art can draw together people of divergent views to process collective grief as artists raise awareness about socioeconomic, political, and environmental concerns and develop a vision for the future.

Black and white illustrations and photographs showing scenes from the revolution of October 17, 2019, and the devastation caused by the explosion on August 4, together with sketches on paper and digital art, accompany the text. Footnotes provide references and web links to more detailed information.

In her introduction, Chrabieh writes about the Nabad program (*heartbeat* in Arabic), established by Bethlehem's Dar al-Kalima University College of Arts and Culture, largely as a response to the port blasts. The program empowers artists, art organizations, and creative enterprises in the Middle East to implement their artistic ideas and market their artworks.

Rabih Rached informatively and accessibly charts the history of culture in Beirut from Roman times up to the twentieth century. Nada Raphael gives us a further glimpse of Beirut as it was before the tragedy struck. She describes it as a

Capital with a capital C—the place where everyone meets, befriends and unfriends, falls in love or breaks up ... a melting pot of cultures, colors, and religions ... an inspiration for filmmakers, artists, street artists, and painters ... a picture, or rather an album, where colors meet black and white; where 18th and 19th century palaces meet modern buildings; where paved streets lead you to the sea; where fishermen and

businesswomen walk on the same path; where street vendors meet designer and high-end boutiques, and where the old Beetle races with the new Mercedes.

Katia Aoun Hage's poem "Beyond the screen in my palm" describes the anxiety experienced by so many who heard about the port explosion on hand-held devices:

the screen lists numbers
of family and friends
names sift through my fingers
my memory of where they live
places of their work 011 – 961 –
aloo Beirut?
011 – 961 –
before hearing the familiar voice ...

The camera zooms in on what actually happened in Linda Tamin's eyewitness account. Loulou Malaeb reflects upon the random nature of death. Faten Yaacob's poem "Bayrut" recalls that this Arabic name derived in turn from the Phoenician *be'rut* meaning "wells":

Wells of weeping,
That's what evil times
Have turned you into.
You used to quench
Our thirst for beauty,
Our love for life.

The Beirut Call features Maha Nasrallah's detailed watercolor sketches of abandoned houses in Beirut, mapping their locations, many of them almost completely destroyed, in the hope that preserving their memory will help with their eventual restoration. Art therapy workshops for nurses at Saint George's Hospital University Medical Center have been specifically designed to help those heavily traumatized by the port blasts.

The positive messages in the book show it to be about a people looking to the future.

The positive messages in the book show it to be not about a people who feel defeated but one already looking to the future, who understand that "suffering creates creativity" and that "any destruction on the ground coincides with the construction of art." In Nadia Wardeh's words,

We need the power and the determination of inimitable Beirut, the strong lady who, despite all catastrophes in the past, and the current suffering, remains committed to produce Goodness, Beauty and Truth.

Neil Leadbeater is an author, essayist, poet, and critic living in Edinburgh. Reading Between The Lines (Littoral Press, 2020) is his most recent book.

Stopping The Biggest Terrorist Threat Since 9/11 | The Liquid Bomb Plot

Source: https://www.youtube.com/watch?v=1aRe-dEF2TI

May 6, 2022 – A terrorist plot to detonate liquid explosives, carried on board airliners travelling from the UK to the USA and Canada, disguised as soft drinks, was discovered by British police during an extensive surveillance operation.

ICI International CBRNE INSTITUTE

CBRNE-Terrorism Newsletter

CYBER NEWS

C2BRNE DIARY

No Internet, Now What? A New York Village Plans for the Worst

Source: https://www.govtech.com/network/no-internet-now-what-a-new-york-village-plans-for-the-worst

Oct 18 – A New York village is planning for the possibility of a major Internet outage — the kind that could last six months.

"There will be a time when an outage occurs due to a major solar flare, terrorism or human error, lasting weeks or months on a regional or national level," Lynbrook Village Administrator John Giordano told *Government Technology.* The village officially adopted its *Internet Outage Continuity Plan* on Sept. 12, 2022 and has distributed copies to all departments. The document is intended to supplement other disaster recovery and business continuity plans. It maps out every function conducted by local government, identifies those involving Internet and lists alternative, offline methods of getting the job done.

To Giordano's knowledge, theirs is the first municipal Internet outage plan in the state. He said that while prolonged Internet loss sounds unlikely, so did the pandemic. "COVID – that was a big inspiration for this," Giordano said. "… Nobody thought COVID would happen and this [long-term Internet loss] seems to be more realistic than what anybody would've thought COVID would be a year before."

Lynbrook spent about four months convening department heads to discuss ideas and develop its plan. It gave a copy to the New York Conference of Mayors, for sharing with other interested local governments. Should an outage occur, the village aims to be ready. "When it does happen, there is a need to act right away, instead of trying to reinvent the wheel," Giordano said.

When the Internet goes out?

Recent years have given communities a taste of Internet loss. For example, a July 2022 outage at major Canadian Internet and mobile provider Rogers Communications caused card payments to fail, saw a trial hearing delayed over video-conferencing issues and impeded residents' abilities to call for emergency services. Rogers attributed that incident to a maintenance upgrade. In 2021, human error also prevented U.K. residents from accessing many websites.

And — as Mississippi State University Assistant Clinical Professor of Electrical Engineering David Wallace writes — a significant solar flare could disrupt Internet and electricity.

Lynbrook isn't the only government concerned, and many counties include Internet loss in their own continuity of operations plans, said Rita Reynolds, CIO of the National Association of Counties (NACo). In her experience, these plans tend to look at a shorter time frame, envisioning outages that last weeks or months, but not half a year. Discussions over how to handle such an outage have become more frequent, too, as government cloud adoptions rise.

"This definitely has been on the mind of counties, and they recognize that there needs to be backup solutions, but beyond that, even some other approaches," Reynolds said.

Retaining, restoring Internet

Alongside planning for a loss of Internet service, governments are also aiming to stave off such events in the first place.

Reynolds said some counties' contingency plans include backup methods of Internet access, should connectivity only be downed for government buildings, while remaining available in the surrounding area. That could happen if an animal chewed through Internet cables, for example.

In response, counties might switch to a second provider or other type of connection. "Some counties have backup Internet connectivity, through maybe a Metro-E [Ethernet] circuit or an alternate … you could have a Verizon connection, but your alternate is a Comcast cable connection. While the speed might not be as fast, you still have an alternative for those types of outages," Reynolds said.

The Lynbrook plan anticipates many months of offline services, but Reynolds said county governments facing such extensive outages may be able to relocate to regain connectivity. Should natural disasters destroy entire government buildings, officials may be able to move to backup facilities that have retained online access.

Cyber best practices also call for maintaining offline data backups in physically separate locations, which governments could turn to when key records become no longer available to them online. Governments transitioning to cloud should still maintain such backup practices, Reynolds advised, though they may be able to manage with only doing so for essential assets, like financial databases.

Offline continuity

Still, governments' best efforts may not always be enough, and keeping operations running could mean ensuring older technologies like landline telephones and faxes remain an option, even as governments acquire modern tech.

"The reality is that counties know they have to be prepared to go, as we call it, 'old school': paper documents, manual forms that they used years ago — you still have to keep some," Reynolds said. "… While we are eliminating [paper] to a great extent in our society and in the workplace, for continuity purposes, if you lose access to the Internet, you've got to have a way to conduct transactions and keep citizen services moving — and so paper becomes the backup." Lynbrook's plan, which was shared with *GovTech*, anticipates the loss of everything from credit card processing (answered by a reversion to checks and cash) and email (replaced by fax, phone calls and, in some cases, postal mail) to the downing of the key fob system at village headquarters (the alternative: reinstall manual locks). Police would go back to handwriting parking tickets, while government procurements would need to take place via phone or in-person vendor meetings, Giordano said. While a solar flare might knock out power in addition to Internet, the village expects its existing plans for restoring electricity — via generator — would go into effect, and so counts on having power available during a hypothetical Internet blackout.

Balancing resilience and protection

When considering how to ensure data remains accessible without Internet, assessments of the criticality, urgency and sensitivity of the data should guide agencies' choices around what to print out, what to store as an offline copy on a computer and what kinds of password protections and access controls are needed, Reynolds said. Critical, urgent data needs to be handled in a way that allows for rapid restoration, while sensitive data needs privacy and security protections. In her experience, county CFOs often print out backup copies of weeks' transactions, while other types of data might be stored on-premise by IT, such as in Excel databases. For the sake of privacy and security, it's best practice for IT to save such on-site digital backups in one central location, rather than for employees to save copies on their desktops or email files to themselves. To stay on top of this, counties should make sure to review their data retention policies and data asset inventories at least once a year, Reynolds said.

Reynolds urged agencies to test their plans, which can help them identify any gaps or needed adjustments. One opportunity is through her organization's Cyber Simulation exercises, some of which include loss of Internet connectivity in the mock scenarios.

Defense Algorithm Developed Against Cyber Terror

Source: https://i-hls.com/archives/114568

Oct 26 – Researchers at the Indian Institute of Technology Madras have developed an innovative algorithm to mitigate disruptions in critical networks such as air traffic control and power distribution during a targeted attack. "The terror attacks of 11th September 2001, all of which happened only on one day targeting a single country resulted in the entire airline industry coming to a standstill. Such threats are a reminder that in today's highly interconnected world, there exists a high risk of one adverse event leading to the disruption of the entire network. Air traffic, road traffic, power distribution infrastructure and even social media platforms are all examples of highly connected networks and are, therefore, highly vulnerable to targeted attacks," stated Karthik Raman, Core Member of Robert Bosch Centre for Data Science and Artificial Intelligence, IIT Madras. The algorithm proposes a way to build spare capacity in the network so that if one node (one entity linked to many entities) of the network is attacked, it is guided through this spare capacity to keep the network functioning. Raman explained that this dormant space capacity is comparable to a spare tire kept in a car, as it is used if any of the four nodes becomes inoperable. "The algorithm takes a network whose spare capacity has to be determined as an input and gives out a modified network with added spare capacity, the cost of spare capacity for the network etc. Importantly, the algorithm also optimizes the cost associated with adding spare capacity."

Cyberterrorism: Four Reasons for Its Absence—So Far

By Jeppe T. Jacobsen

Perspectives on Terrorism | Volume 16, Issue 5

Source: https://www.universiteitleiden.nl/binaries/content/assets/customsites/perspectives-on-terrorism/2022/issue-5/jacobsen.pdf

Abstract

Why has cyberterrorism (still) not happened? This article revisits two existing explanations and adds two novel ones. First, developing fear-inducing destructive cyberattacks is more difficult and involves more uncertainty in terms of producing harmful effects than conventional terrorist attacks. Second, cyberattacks rarely produce spectacular imagery. Since cyberattacks with the potential to cause fear do not necessarily

require as high technical barriers of entry as an imagined cyber 9/11, the author adds two additional explanations to better understand the absence of cyberterrorism. Third, a corporal explanation: Violent bodies most often come into being through memetic practices of other violent figures and artefacts but the hacker's subjectivity is different from the typical non-state terrorist. Rather than through violence, the thrill of hacking emerges after having stared at endless lines of code, when a technical puzzle is solved, and access to an IT system is achieved. And fourth, a social explanation: it is difficult for prospective cyberterrorists to build the necessary amount of trust online. Based on these four explanations, the article sketches the likely characteristics of a future cyberterrorist. If we are to experience cyberterrorism from non-state actors, we will most likely face an antisocial Unabomber-like figure who has acquired the necessary technical knowhow independently, while not being attracted to a violent spectacle or to violent imitations of a jihadi or right-wing corporality.

Jeppe T. Jacobsen, PhD, is an assistant professor at the Institute for Military Technology, the Royal Danish Defence College where he focuses his research on new military technologies and states' political and military behavior in cyberspace. Jeppe is the editor of the Scandinavian Journal of Military Studies and has published in several journals such as International Affairs, Review of International Studies, European Journal of International Security, and Critical Studies on Security.

Cybersecurity Professionals May Be Burning Out at a Faster Rate Than Frontline Health Care

Source: https://www.homelandsecuritynewswire.com/dr20221101-cybersecurity-professionals-may-be-burning-out-at-a-faster-rate-than-frontline-health-care

Nov 01 – As October's Mental Health Month and Cybersecurity Awareness Month both draw to a close, a new study from not-for-profit cyber mental health support initiative, Cybermindz is showing early evidence of burnout in cyber professionals, signaling a potential loss of skills to a critical part of the economy.

Cybermindz notes that stress and burnout are not unique to cyber, but points out that systemic weaknesses in our human cyber defenses would tend to impact society at mass levels, especially if essential services like water, energy, telecommunications, health, financial services, food distribution and transportation are affected.

As the nation digests the continuing fallout of the Optus, Medibank and MyDeal breaches and others which are coming to light, Cybermindz has warned that unless policy makers recognize the mental health impacts on Australia's embattled cyber workforce, a deterioration in the mental health of core defenders may accelerate, creating a cascading effect of reduced effectiveness and increased risk.

While the research is ongoing and will run until year's end, Cybermindz founder and veteran internet industry leader, Peter Coroneos, explained the importance of signaling the emerging trend as he compared it to "the canary in the cybersecurity coal mine."

He observed: "Most of our critical systems now have cyber risk exposure — it's not hard to see that a reduction in our national cyber capability due to psychological burnout may have population-wide downstream effects. The pandemic, floods and bushfires have shown us the systems we rely upon are not to be taken for granted. Cyber-attacks are a daily occurrence and, unlike natural disasters, there is no conceivable endpoint in sight."

Coroneos added: "Cybersecurity workers are the unsung heroes of our time. Their day-to-day work is invisible, but a single failure through a breach which can affect millions of people makes headlines. The rapidly evolving and relentless attack environment defies any sense of 'job well done'. The one successful attack that could end their career could be around the corner. They are mission-driven with a strong protective ethos. But a sense of hopelessness will eventually take its toll on even the most committed worker. So it's important we recognize their efforts and invest in their wellbeing. We must build a strong and resilient cyber workforce. If they fall, we all fall."

Cybermindz.org Director of Organizational and Behavioral Research, Dr. Andrew Reeves is leading the study.

Reeves stated: "Although these are preliminarily results, they point to a worrying trend. On the key burnout metric of 'professional efficacy' – or how well cyber workers think they are performing in their current roles – they scored significantly worse than the general population. We also compared their rates of burnout on this metric to another highly burnt-out industry: that of frontline healthcare workers and found that the cyber professionals score considerably lower than even this group on this metric."

Reeves added: "This is worrying as this metric is a predictor of intention to resign. As a result, I think we are seeing early indications of a cohort of professionals who are questioning their own effectiveness and concluding their efforts are in vain. When good people leave the industry, we lose so much knowledge and expertise. It then increases the pressure on those who remain behind. As a psychological driver of burnout, it's something we should all be concerned about."

Training the Next Generation of Cyber Guardians

By Steve Stein

Source: https://www.domesticpreparedness.com/commentary/training-the-next-generation-of-cyber-guardians/

Nov 02 – Rarely a day goes by without a headline declaring a new cybersecurity threat, disaster, or data breach. Small local governments are overrun with malware, ransomware, and myriad other threats. The picture from the inside of the industry is not much better. Job posts go unanswered for months, searching for experienced professionals while students search for nonexistent entry-level jobs. One Washington State-based nonprofit is seeking to tackle both problems.

One Washington State-based nonprofit builds cybersecurity skills in a real-world environment to help close today's cybersecurity gaps.

The Expansion of Cybersecurity Readiness

The Public Infrastructure Security Cyber Education System (PISCES) provides undergraduate students with supervised experiences to serve as entry-level cyber analysts. Students at partner colleges and universities analyze streaming metadata from small communities and government agencies that are unable to adequately fund a commercial cybersecurity monitoring service or hire qualified practitioners. Through PISCES, a reliable, high-quality pipeline of entry-level cyber analysts with operational experience is being developed to address the shortage of cyber professionals who are ready for the workforce while simultaneously providing a level of monitoring to critical infrastructure networks.

PISCES grew out of the Public Information Security Event Management (PRISEM) regional monitoring system, a 2009 pilot from the U.S. Department of Homeland Security (DHS) Science & Technology (S&T) Directorate in the Puget Sound region. After nearly five years of successful operation, PRISEM was reimagined as PISCES, focusing on cyber event analysis for small public institutions using student analysts. DHS S&T provided initial funding to test and then implement the PISCES concept. With leadership from Critical Insight and in partnership with Western Washington University (WWU), PISCES established a data-sharing infrastructure, developed a curriculum, and provisioned participating communities. With the support of DHS Cybersecurity and Infrastructure

Security Agency and the Pacific Northwest National Laboratory (PNNL), PISCES has expanded from Washington State to include Alabama, Colorado, and Kentucky in 2022 and aims to add more state partnerships in the future.

Real-World Threats & Educational Opportunities

PISCES provides students with real-world operational experience working with and processing large volumes of live data, examining network flow data, and documenting suspicious activity. Through the course, students develop the capability to monitor for threats in real-time using live data from small communities. However, these streams are not small. A typical community generates over 20 million trouble reports that students must sift through in just one month. The course teaches students not only to find the "needle" in a giant stack of needles but to pinpoint irregularities and trends to determine the validity of an attack or malicious actor.

In January 2021, for example, one of the participating communities was under attack by a group attempting to use brute-force password cracking. The attackers were attempting to break in to remotely control computers on the communities' network. The students identified and reported the type of threat and the ports that were being attacked and recommended shutting off those IP addresses to stop the attackers before they could gain access. That same month another community came under attack by a group attempting to place a Trojan virus onto their network. Again, students identified and validated the attack. Based on the students' recommended actions, the community took the necessary actions to remove the respective malware before the attackers could activate it.

Although the dominant bad actors generally come from Russia, China, North Korea, Nigeria, and Germany, there also are plenty of domestic-sourced attacks. The attacks that students encounter span the entire range of denial of service to planting malware for theft of information or money, bitcoin mining, password cracking, phishing, spamming, etc. With these skills and experiences, students are more prepared to work in technology-driven careers across industries and business sectors.

Since its founding in 2017, PISCES has worked with DHS and PNNL to establish, develop, and grow this nonprofit into a nationwide program. With 10 academic institutions – including universities, colleges, and community colleges as partners – and more than 20 communities sharing data, PISCES provides 300-400 students per year with this critical experience. However, as the program matures, PISCES seeks to expand its relationships and find additional partners. With students already sifting through hundreds of millions of alerts each month, PISCES must grow to meet this growing problem. Although this program does not replace commercial 24/7 analysis services, it does help to fill a critical cybersecurity gap and build a robust junior cyber analyst training force.

In 2021, PISCES established its first state-level partnership in Washington and is now hopeful that the 2021 Infrastructure Investment and Jobs Act will empower other states to follow suit. The bill requires states to build all-of-state-plan offering services and capabilities that can be paid for by the grants. Once the plan is in place, communities can select services or capabilities they want supported to improve their protection. If PISCES is included in these plans, then small communities can easily access PISCES services while building the workforce. The infrastructure and processes are scalable. So, with adequate future resources, PISCES is striving to make this capability available across the nation.

Steve Stein is the executive director of PISCES. As such, he is responsible for the day-to-day business operations and expansion strategy for PISCES. He retired in 2017, after 38 years with Pacific Northwest National Laboratory where he served as a senior program manager and director of the Northwest Research and Technology Center providing new solutions to first responders and emergency managers.

The Dark Web Price Index 2022

Source: https://www.visualcapitalist.com/cp/charted-the-dark-web-price-index-2022/

Nov 10 – Did you know that the internet you're familiar with is only 10% of the total data that makes up the World Wide Web?

The rest of the web is hidden from plain sight, and requires special access to view. It's known as the Deep Web, and nestled far down in the depths of it is a dark, sometimes dangerous place, known as the darknet, or **Dark Web**.

This graphic by **Enrique Mendoza** provides us a glimpse at this shrouded part of the internet, showing us some of the common items that are sold on there, and how much they typically cost.

A Brief Introduction to the Dark Web

Before diving in, it's worth quickly explaining what the Dark Web is, and how people typically gain access to it.

Unlike the ordinary web (which is also known as the Surface Web), the Dark Web cannot be accessed through a regular browser such as Chrome or Safari. Rather, users need to access it anonymously via a Tor browser.

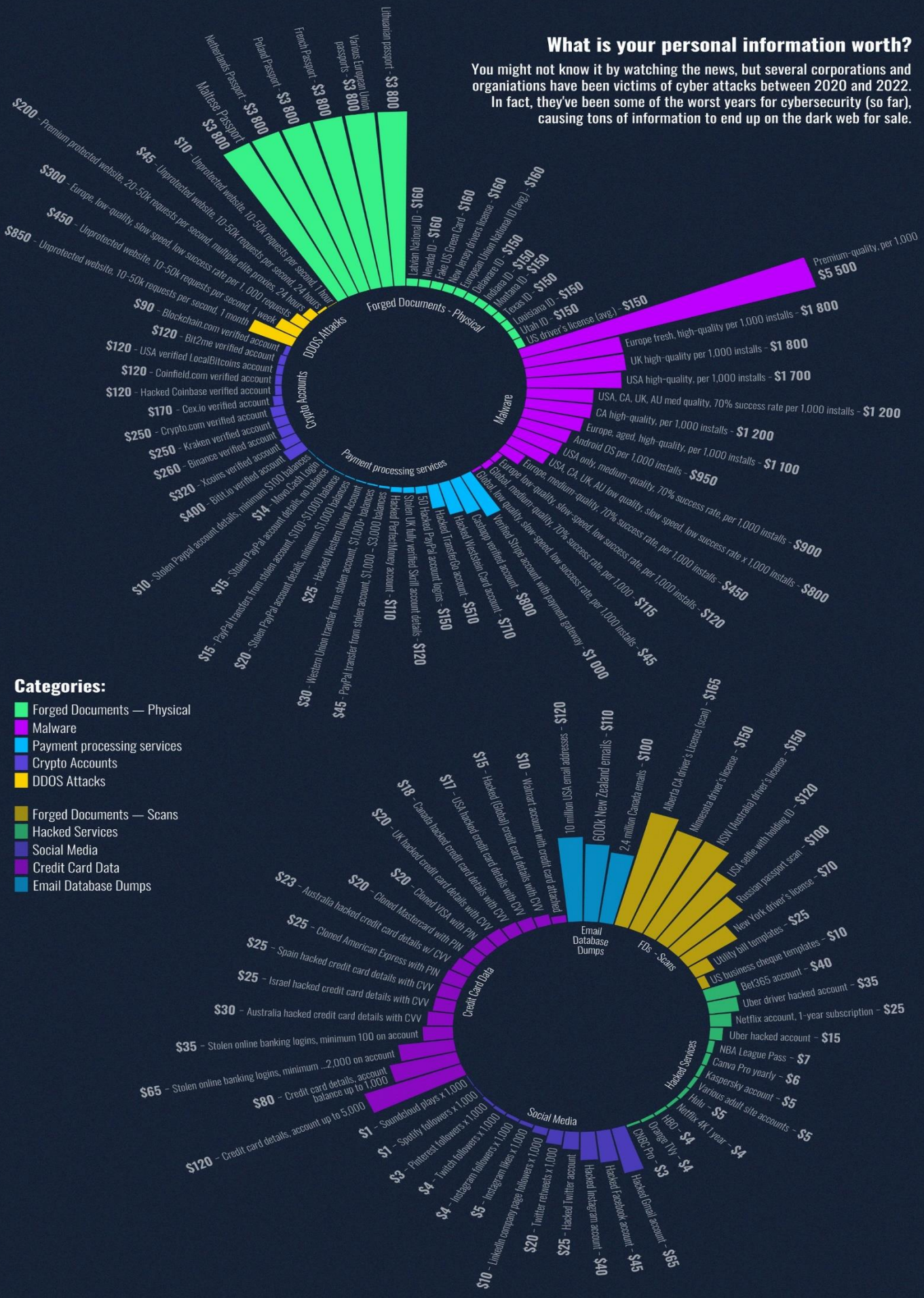
DARK WEB

PRICE INDEX 2022

GRAPHS SHOW AN AVERAGE PRICE IN USD

What is your personal information worth?

You might not know it by watching the news, but several corporations and organiations have been victims of cyber attacks between 2020 and 2022. In fact, they've been some of the worst years for cybersecurity (so far), causing tons of information to end up on the dark web for sale.



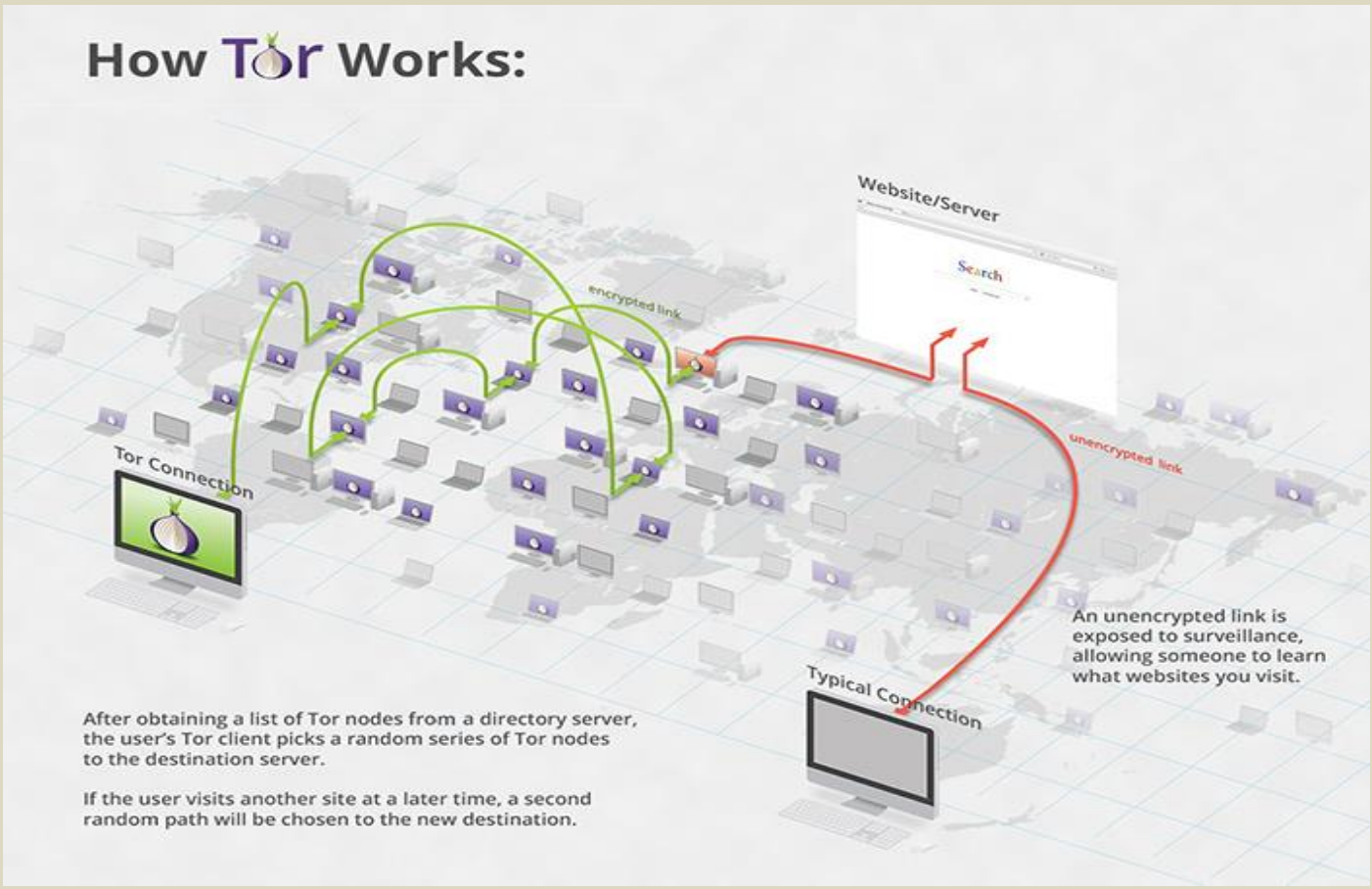
Categories:

- Forged Documents — Physical
- Malware
- Payment processing services
- Crypto Accounts
- DDOS Attacks
- Forged Documents — Scans
- Hacked Services
- Social Media
- Credit Card Data
- Email Database Dumps

Designer: Enrique Mendoza Tincopa | IG: @datavizadventure

Data Source: privacyaffairs.com | "Dark Web Price Index 2022" - 7 July 2022

Tor, which is short for "The Onion Router," is a special portal that connects users to Dark Web websites in a complicated way that ultimately protects the user's identity. This means users can access websites anonymously.
The Dark Web can be a breeding ground for illegal activity, where people can buy things like contract killings, drugs, malware, and other people's personal information.



Product Price Breakdown
How much is your personal information worth on the Dark Web? This graphic uses data from the **2022 Dark Web Product Price Index** to find that out and more.
This annual report by privacyaffairs.com provides insights into some of the most popular products that are for sale on the Dark Web, such as credit card data, forged documents, and hacked info, and lists the average price of each product.
While this list is far from exhaustive and not the only measure of Dark Web prices, the report gives us a glimpse into hidden online territory that's extremely unfamiliar to many of us.
Search:

Product	Product Category	Avg. Price USD (2022)
Credit card details, account balance up to 5,000	Credit Card Data	$120
Credit card details, account balance up to 1,000	Credit Card Data	$80
Stolen online banking logins, minimum 2,000 on account	Credit Card Data	$65

Product	Product Category	Avg. Price USD (2022)
Israel hacked credit card details with CVV	Credit Card Data	$25
Hacked (Global) credit card details with CVV	Credit Card Data	$15
Spain hacked credit card details with CVV	Credit Card Data	$25
Cloned American Express with PIN	Credit Card Data	$25
Canada hacked credit card details with CVV	Credit Card Data	$18
Australia hacked credit card details w/ CVV	Credit Card Data	$23
Cloned Mastercard with PIN	Credit Card Data	$20
Cloned VISA with PIN	Credit Card Data	$20
Stolen online banking logins, minimum 100 on account	Credit Card Data	$35
Walmart account with credit card attached	Credit Card Data	$10
USA hacked credit card details with CVV	Credit Card Data	$17
UK hacked credit card details with CVV	Credit Card Data	$20
PayPal transfer from stolen account, $1,000 – $3,000 balances	Payment Processing Services	$45
Cashapp verified account	Payment Processing Services	$800
Stolen PayPal account details, minimum $1,000 balances	Payment Processing Services	$20
Stolen UK fully verified Skrill account details	Payment Processing Services	$120
50 Hacked PayPal account logins	Payment Processing Services	$150

One of the most expensive items included in the dataset is **premium malware**, which costs about $5,500 per 1,000 installs. While the cost for premium malware is hefty, there are still billions of malware attacks occurring every year causing huge monetary damage. On the other end of the spectrum are Paypal account details, Netflix logins, or stolen credit card details (complete with a CVV) all available for less than $20.

How to Protect Your Personal Information

As the line between the digital and physical realm becomes increasingly blurry, it's more important than ever to make sure you're protecting yourself and your personal information from identity theft.

According to Privacy Affairs, there are several proactive measures you can take to decrease your chances of getting hacked. This includes using a VPN whenever you access public Wi-Fi, using different passwords for different online accounts, and investing in anti-malware software to combat unwanted visitors.

FBI Says It has 'National Security Concerns' About TikTok

By Masood Farivar

Source: https://www.homelandsecuritynewswire.com/dr20221116-fbi-says-it-has-national-security-concerns-about-tiktok

Nov 1 – FBI Director Christopher Wray said on Tuesday that the bureau has "national security concerns" about popular short-form video hosting app TikTok as the Chinese-owned company seeks U.S. government approval to continue operating in the country.

Speaking during a U.S. House of Representatives Homeland Security Committee hearing on "worldwide threats to the homeland," Wray said the FBI's concerns about TikTok include "the possibility that the Chinese government could use it to control data collection on millions of users."

There is also concern, Wray said in response to a question, that the Chinese government could "control the recommendation algorithm, which could be used for influence operations … or to control software on millions of devices, which gives the opportunity to potentially technically compromise personal devices."

In written testimony, Wray called the foreign intelligence and economic threat from China "the greatest long-term threat to our nation's ideas, innovation, and economic security." But he declined to answer in an open session a lawmaker's question about whether the Chinese government has been leveraging TikTok to collect data about U.S. citizens.

Concerns about ties to Chinese government

TikTok's ties to the Chinese government have been a flashpoint among U.S. lawmakers and officials for years. The app grew in popularity in recent years after its parent company, ByteDance, a China-based company with suspected ties to the Chinese government, bought and later absorbed Musical.ly, which allowed users to create and share lip-sync videos.

Citing national security concerns, then-President Donald Trump issued an executive order in 2020 that would effectively ban TikTok in the United States. But the social platform sued to block Trump's executive order.

Last year President Joe Biden revoked the Trump directive, asking the Treasury Department to examine security concerns associated with the app.

The Committee on Foreign Investment in the United States (CFIUS), an interagency body headed by the Treasury Department that reviews the national security implications of foreign investments in U.S. companies, has been examining TikTok's proposal to continue to remain active in the U.S. market and the risks associated with it.

Noting that the FBI's foreign investment unit is part of the CFIUS review process, Wray said that "our input would be taken into account in any agreements that might be made to address the issue."

U.S. Lawmakers Question How Data Used

Although TikTok has denied having ties to China's ruling Communist Party, U.S. lawmakers have long expressed concern about the Chinese government's ability to access U.S. user data collected by the app.

Questioning Wray during Tuesday's hearing, Republican Representative Diana Harshbarger cited a recent Forbes article that reported ByteDance "planned to use the TikTok app to track the physical location of specific American citizens."

TikTok later dismissed the allegation raised in the article, saying in a statement it "does not collect precise GPS location information from U.S. users."

In a June letter, TikTok sought to reassure U.S. lawmakers about its data security, writing that it now stores "100% of US user data, by default, in the Oracle cloud environment."

'Spinach' vs. 'Opium' Versions

Last week, the U.S. TV news magazine "60 Minutes" reported that TikTok has two versions — a limited, educational "spinach version" for Chinese consumers, and an addictive "opium version" for the rest of the world.

While the version used in the West "has kids hooked for hours at a time," in China, children under 14 years can use TikTok for only 40 minutes per day and view only videos about science experiments, museum exhibits, patriotic videos and educational videos, according to "60 Minutes."

Wray said the online "threat to our youth is something we're always concerned about." The FBI is just as concerned about the way the Chinese government uses its laws as "an aggressive weapon against companies, both U.S. companies and Chinese companies," he said.

"Under Chinese law, Chinese companies are required to essentially — and I'm going to shorthand here — basically do what the Chinese government wants them to do, in terms of sharing information or serving as a tool of the Chinese government," Wray said. "And so, that's plenty of reason by itself to be concerned."

Beijing has denied similar allegations in the past.

Masood Farivar covers the Justice Department and the *FBI* for Voice of America.

A new Tinder Swindler? ISIS using dating app to fund terrorism: Report

Source: https://english.alarabiya.net/News/world/2022/11/15/A-new-Tinder-Swindler-ISIS-using-dating-app-to-fund-terrorism-Report-

Nov 15 – The Netflix true-crime documentary 'Tinder Swindler,' which told the story of how a young Israeli conman used the popular dating app to lure women into sending him thousands of dollars to support his lavish lifestyle, sent shockwaves around the globe earlier this year.

Now, Tinder is reportedly being used by ISIS agents in South Africa to fund its insurgency campaigns and recruit members, the head of the South African Banking Risk Information Center (SABRIC) Nischal Mewalall told British daily The Times.

Members of the terrorist group have been creating fake profiles of unknown actors and models to manipulate users into sending them money, according to Mewalall.

Tinder has acknowledged that the app has been used by "a relatively small percentage" of people for criminal activity and has warned people to be wary of individuals asking for money.

"We have a zero-tolerance policy on predatory behavior of any kind. We have a dedicated fraud team that utilizes a network of industry leading technology that scans for fraud and reviews each and every member profile for red flag language, and conducts manual reviews of suspicious profiles, activity, and user generated reports," the app says in its policy statement.

"Ultimately, no one, whether they met on Tinder or not, should ever send money to someone they haven't met in person. In addition, we encourage our members to report any individual who has requested financial information via our self-reporting tool."

SABRIC's findings also reaffirm concerns put forth by the UN Security Council in a July 2022 report over ISIS using South Africa as a safe haven to rebuild itself after its defeat in Syria and Iraq. The UNSC said its monitoring team "detected a number of transactions of more than $1 million being channeled through South Africa by ISIS leadership to affiliates in Africa," including members in Mozambique, the Democratic Republic of Congo and elsewhere in the continent.

Earlier this month, the US Treasury sanctioned four people who provided technical, financial, or material support to a cell in South Africa belonging to the terrorist group, as well as eight companies which were owned, controlled, or directed by the individuals in this ISIS cell.

"ISIS continues to expand its terrorist network across the continent, as evidenced by the July 2022 United Nations Security Council report that highlighted the emerging importance of the country for funds transfers from ISIS leadership to ISIS affiliates across Africa. Treasury remains committed to exposing and disrupting terrorist financing on the African continent," the treasury said in a statement on November 7. "Today, Treasury is targeting key individuals in ISIS's network in South Africa, as well as their business assets, who have played pivotal roles in enabling terrorism and other criminal activities in the region," Under Secretary of the Treasury for Terrorism and Financial Intelligence Brian E. Nelson, said in a statement at the time.

"The United States, as part of the Global Coalition to Defeat ISIS, will continue to partner with South Africa to deny ISIS the ability to exploit the country's economy to raise and move funds to support the growth of ISIS affiliates and networks."

Extremists use video games to recruit vulnerable youth. Here's what parents and gamers need to know

By Helen Young

Source: https://theconversation.com/extremists-use-video-games-to-recruit-vulnerable-youth-heres-what-parents-and-gamers-need-to-know-193110

Nov 10 – Reports of far-right extremists trying to recruit young people through video games have raised concerns for parents, guardians and youth alike.

In October, a statement from Australian Federal Police said officers had seen evidence of extremist groups trying to recruit young people through online games. In one instance, a teen had shared a video game recreation of the 2019 Christchurch attack.

Another recent example came from online gaming platform Roblox, in which some users had set up recreations of the Nazi Third Reich. Extremist groups, including jihadists and neo-Nazis, have a history of using video games to spread messages of hate. And while this doesn't mean all gamers will be exposed, or radicalised if they are, it's still a concern for security agencies the world over. Parents, guardians and gamers should be aware of the risks.

Is far-right extremism in gaming a problem?

Violent video games are sometimes blamed for acts of terrorist violence, especially when perpetrators are identified as gamers. However, although some studies have found violent games can cause players to

become desensitised to violent images, decades of research have not shown a link between violent games and violent behaviour in real life.
That said, far-right extremists have long used games and gaming platforms to try to spread hateful ideologies.
There are many different beliefs that might fall under the label "far right", but generally these ideologies are united in being anti-democratic, racist and against multiculturalism and equality.
Since as early as 2002, American neo-Nazi organisations have been creating and selling their own "white power" games, and modifying existing popular games to suit their agenda. Extremists will also try to recruit through in-game chat functions and gaming-adjacent platforms (such as where games are streamed).
In 2002, American neo-Nazi leader Matt Hale said, in regards to recruiting people to his white supremacist "church":
If we can influence video games and entertainment, it will make people understand we are their friends and neighbours.
In 2018, violent terrorist group Atomwaffen Division (also called the National Socialist Order) was found posting freely on the gaming platform Steam, before eventually being banned. A year later in 2019, the US Anti-Defamation League raised the alarm about extremist content still spreading on Steam.

Many gaming franchises, including the Call of Duty franchise, have online modes that let players connect and chat with others from all over the world. Sam Delon/Flickr, CC BY-SA

The tactics far-right extremists use to recruit

Former white supremacist Christian Picciolini has explained on Reddit how far-right extremist recruiters target "marginalised youth" using popular games such as Fortnite, Minecraft and Call of Duty.
They "drop benign hints and then ramp up" when players are "hooked" on their message, Picciolini said.
Of his own experience of being recruited, he said:

They appealed to my desperate need for identity, community and purpose. I was bullied and they provided safety. I was lonely and they provided family. That's how they draw people in, with a sense of belonging and 'humanitarianism'.
Far-right extremists will often interpret games to suit their own positions. For instance, they'll point to the inherent superiority of a fantasy game species, such as elves, to draw false and racist parallels with reality. They'll also use gaming to find and build connections with others who share their views. By playing together they can reinforce each other's beliefs, bond over "dark humour" and use the game to act out violent fantasies. And while moderating sites to remove extremist content is important, it's complex to do in democracies for a range of technical, legal and ethical reasons. Moderation should not be relied on as the only method for addressing far-right extremism online. Extremists can also find ways to avoid moderation, such as by using coded language. For instance, 88 and 1488 are both associated with neo-Nazism – but most people wouldn't know it.

What can we do about it?
As counter-terrorism expert Greg Barton recently told Channel 7, far-right extremists aim to prey on young, vulnerable young people as part of a potential radicalisation process: It's the sort of predatory behaviour where they're trying to win their confidence that's the concern. The video, the games, that's just the bait to get them hooked. As you'd expect, extremists use plenty of other hooks too. These include gyms and fitness groups, wellness culture and even animal rights and environmentalism. So recruitment via games is part of a wider problem. Parents, guardians and young gamers can take protective steps – the first of which is to understand that extremist ideologies online can have an impact in the real world. It's also important to remember video games themselves are not a cause of extremism, and both security services and parents should avoid thinking as such.
Further, not all young people who come into contact with extremist material or far-right extremists online will become radicalised. In fact, some people become more prosocial when they encounter extremist propaganda. In other words, they think less aggressively and more empathetically towards others.
Millions of people play video games, but only a tiny proportion are radicalised towards violent ideologies or acts.
The best thing parents and community can do is be aware of the risks and be involved in the lives and interests of young people – especially when navigating the online world. This isn't always easy, but the Australian eSafety Commissioner has some tips on how to do this. The US-based Western States Centre, which works against bigotry, also has a toolkit for parents and caregivers on engaging with extremism and conspiracy theories. According to one of the authors, former educator and diversity consultant Christine Saxman, debating young people will likely not work: You want to be on that critical thinking journey with them, not fighting them.
The Australian Federal Police also details warning signs that might indicate someone is being drawn into far-right extremist beliefs. These include becoming distant from friends and family, and using violent, angry or abusive language (especially towards minority groups or public figures).

●▶ For more information you can visit the Australian government's Living Safe Together website.

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Call of Duty Is a Government Psyop: These Documents Prove It

Source: https://scheerpost.com/2022/11/19/call-of-duty-is-a-government-psyop-these-documents-prove-it/

Nov 19 – *Call of Duty: Modern Warfare II* has been available for less than three weeks, but it is already making waves. Breaking records, within ten days, the first-person military shooter video game earned more than $1 billion in revenue. Yet it has also been shrouded in controversy, not least because missions include assassinating an Iranian general clearly based on Qassem Soleimani, a statesman and military leader slain by the Trump administration in 2020, and a level where players must shoot "drug traffickers" attempting to cross the U.S./Mexico border.
The *Call of Duty* franchise is an entertainment juggernaut, having sold close to half a billion games since it was launched in 2003. Its publisher, Activision Blizzard, is a giant in the industry, behind titles games as the *Guitar Hero*, *Warcraft*, *Starcraft*, *Tony Hawk's Pro Skater*, *Crash Bandicoot* and *Candy Crush Saga* series.Yet a closer inspection of Activision Blizzard's key staff and their connections to state power, as well as details

gleaned from documents obtained under the Freedom of Information Act, reveal that *Call of Duty* is not a neutral first-person shooter, but a carefully constructed piece of military propaganda, designed to advance the interests of the U.S. national security state.

Military-entertainment complex

It has long been a matter of public record that American spies have targeted and penetrated Activision Blizzard games. Documents released by Edward Snowden revealed that the NSA, CIA, FBI and Department of Defense infiltrated the vast online realms such as *World of Warcraft*, creating make-believe characters to monitor potential illegal activity and recruit informers. Indeed, at one point, there were so many U.S. spies in one video game that they had to create a "deconfliction" group as they were wasting time unwittingly surveilling each other. Virtual games, the NSA wrote, were an "opportunity" and a "target-rich communication network".

However, documents obtained legally under the Freedom of Information Act by journalist and researcher Tom Secker and shared with *MintPress News* show that the connections between the national security state and the video game industry go far beyond this, and into active collaboration.

In September 2018, for example, the United States Air Force flew a group of entertainment executives – including *Call of Duty*/Activision Blizzard producer Coco Francini – to their headquarters at Hurlburt Field, Florida. The explicit reason for doing so, they wrote, was to "showcase" their hardware and to make the entertainment industry more "credible advocates" for the U.S. war machine.

"We've got a bunch of people working on future blockbusters (think Marvel, Call of Duty, etc.) stoked about this trip!" wrote one Air Force officer. Another email notes that the point of the visit was to provide "heavy-hitter" producers with "AFSOC [Air Force Special Operations Command] immersion focused on Special Tactics Airmen and air-to-ground capabilities."

"This is a great opportunity to educate this community and make them more credible advocates for us in the production of any future movies/television productions on the Air Force and our Special Tactics community," wrote the AFSOC community relations chief.

Francini and others were shown CV-22 helicopters and AC-130 planes in action, both of which feature heavily in *Call of Duty* games.

Yet *Call of Duty* collaboration with the military goes back much further. The documents show that the United States Marine Corps (USMC) was involved in the production of *Call of Duty: Modern Warfare 3* and *Call of Duty 5*. The games' producers approached the USMC at the 2010 E3 entertainment convention in Los Angeles, requesting access to hovercrafts (vehicles which later appeared in the game). *Call of Duty 5* executives also asked for use of a hovercraft, a tank and a C-130 aircraft.

This collaboration continued in 2012 with the release of *Modern Warfare 4*, where producers requested access to all manner of air and ground vehicles.

Secker told *MintPress* that, by collaborating with the gaming industry, the military ensures a positive portrayal that can help it reach recruitment targets, stating that,

For certain demographics of gamers it's a recruitment portal, some first-person shooters have embedded adverts within the games themselves…Even without this sort of explicit recruitment effort, games like Call of Duty make warfare seem fun, exciting, an escape from the drudgery of their normal lives."

Secker's documentary, "Theaters of War: How the Pentagon and CIA Took Hollywood" was released earlier this year.

The military clearly held considerable influence over the direction of *Call of Duty* games. In 2010, its producers approached the Department of Defense (DoD) for help on a game set in 2075. However, the DoD liaison "expressed concern that [the] scenario being considered involves future war with China." As a result, Activision Blizzard began "looking at other possible conflicts to design the game around." In the end, due in part to military objections, the game was permanently abandoned.

From war on terror to first-person shooters

Not only does Activision Blizzard work with the U.S. military to shape its products, but its leadership board is also full of former high state officials. Chief amongst these is Frances Townsend, Activision Blizzard's senior counsel, and, until September, its chief compliance officer and executive vice president for corporate affairs.

Prior to joining Activision Blizzard, Townsend spent her life working her way up the rungs of the national security state. Previously serving as head of intelligence for the Coast Guard and as Secretary of State Condoleezza Rice's counterterrorism deputy, in 2004, President Bush appointed her to his Intelligence Advisory Board.

As the White House's most senior advisor on terrorism and homeland security, Townsend worked closely with Bush and Rice, and became one of the faces of the administration's War on Terror. One of her principal achievements was to whip the American public into a constant state of fear about the supposed threat of more Al-Qaeda attacks (which never came).

As part of her job, Townsend helped popularize the term "enhanced interrogation techniques" – a Bush-era euphemism for torturing detainees. Worse still, Lt. Col. Steven L. Jordan, the officer in charge of the notorious Abu Ghraib prison, alleged that Townsend put pressure on him to ramp up the torture program, reminding him "many, many times" that he needed to improve the intelligence output from the Iraqi jail.

Townsend has denied these allegations. She also later condemned the "handcuff[ing]" and "humiliation" surrounding Abu Ghraib. She was not referring to the prisoners, however. In an interview with CNN, she lamented that "these career professionals" – CIA torturers – had been subject to "humiliation and opprobrium" after details of their actions were made public, meaning that future administrations would be "handcuffed" by the fear of bad publicity, while the intelligence community would become more "risk-averse". During the Trump administration, Townsend was hotly tipped to become the Director of National Intelligence or the Secretary of Homeland Security. President Trump also approached her for the role of director of the FBI. Instead, however, Townsend took a seemingly incongruous career detour to become an executive at a video games company.

Enter the war planners

In addition to this role, Townsend is a director of the NATO offshoot, the Atlantic Council, a director at the Council on Foreign Relations, and a trustee of the hawkish think tank, the Center for Strategic and International Studies, a group *MintPress News* has previously covered in detail.

Funded by weapons companies, NATO and the U.S. government, the Atlantic Council serves as the military alliance's brain trust, devising strategies on how best to manage the world. Also on its board of directors are high statespersons like Henry Kissinger and Conzoleezza Rice, virtually every retired U.S. general of note, and no fewer than seven former directors of the CIA. As such, the Atlantic Council represents the collective opinion of the national security state.

Two more key *Call of Duty* staff also work for the Atlantic Council. Chance Glasco, a co-founder of Infinity Ward developers who oversaw the game franchise's rapid rise, is the council's nonresident senior fellow, advising top generals and political leaders on the latest developments in tech.

Game designer and producer Dave Anthony, crucial to *Call of Duty*'s success, is also an Atlantic Council employee, joining the group in 2014. There, he advises them on what the future of warfare will look like, and devises strategies for NATO to fight in upcoming conflicts.

Anthony has made no secret that he collaborated with the U.S. national security state while making the *Call of Duty* franchise. "My greatest honor was to consult with Lieut. Col. Oliver North on the story of *Black Ops 2*," he stated publicly, adding, There are so many small details we could never have known about if it wasn't for his involvement."

Oliver North is a high government official gained worldwide infamy after being convicted for his role in the Iran-Contra Affair, whereby his team secretly sold weapons to the government of Iran, using the money to arm and train fascist death squads in Central America – groups who attempted to overthrow the government of Nicaragua and carried out waves of massacres and ethnic cleansing in the process.

Republicans for hire

Another eyebrow-raising hire is Activision Blizzard's chief administration officer, Brian Bulatao. A former Army captain and consultant for McKinsey & Company, until 2018, he was chief operating officer for the CIA, placing him third in command of the agency. When CIA Director Mike Pompeo moved over to the State Department, becoming Trump's Secretary of State, Bulatao went with him, and was appointed Under Secretary of State for Management.

There, by some accounts, he served as Pompeo's personal "attack dog," with former colleagues describing him as a "bully" who brought a "cloud of intimidation" over the workplace, repeatedly pressing them to ignore potential illegalities happening at the department. Thus, it is unclear if Bulatao is the man to improve Activision Blizzard's notoriously "toxic" workplace environment that caused dozens of employees to walk out en masse last summer.

After the Trump administration's electoral defeat, Bulatao went straight from the State Department into the highest echelons of Activision Blizzard, despite no experience in the entertainment industry.

The third senior Republican official Activision Blizzard has recruited to its upper ranks is Grant Dixton. Between 2003 and 2006, Dixton served as associate counsel to President Bush, advising him on many of his administration's most controversial legal activities (such as torture and the rapid expansion of the surveillance state). A lawyer by trade, he later went on to work for weapons manufacturer Boeing, rising to become its senior vice president, general counsel and corporate secretary. In June 2021, he left Boeing to join Activision Blizzard as its chief legal officer.

Other Activision Blizzard executives with backgrounds in national security include senior vice president and chief information security officer Brett Wahlin, who was a U.S. Army counterintelligence agent, and chief of staff, Angela Alvarez, who, until 2016, was an Army chemical operations specialist.

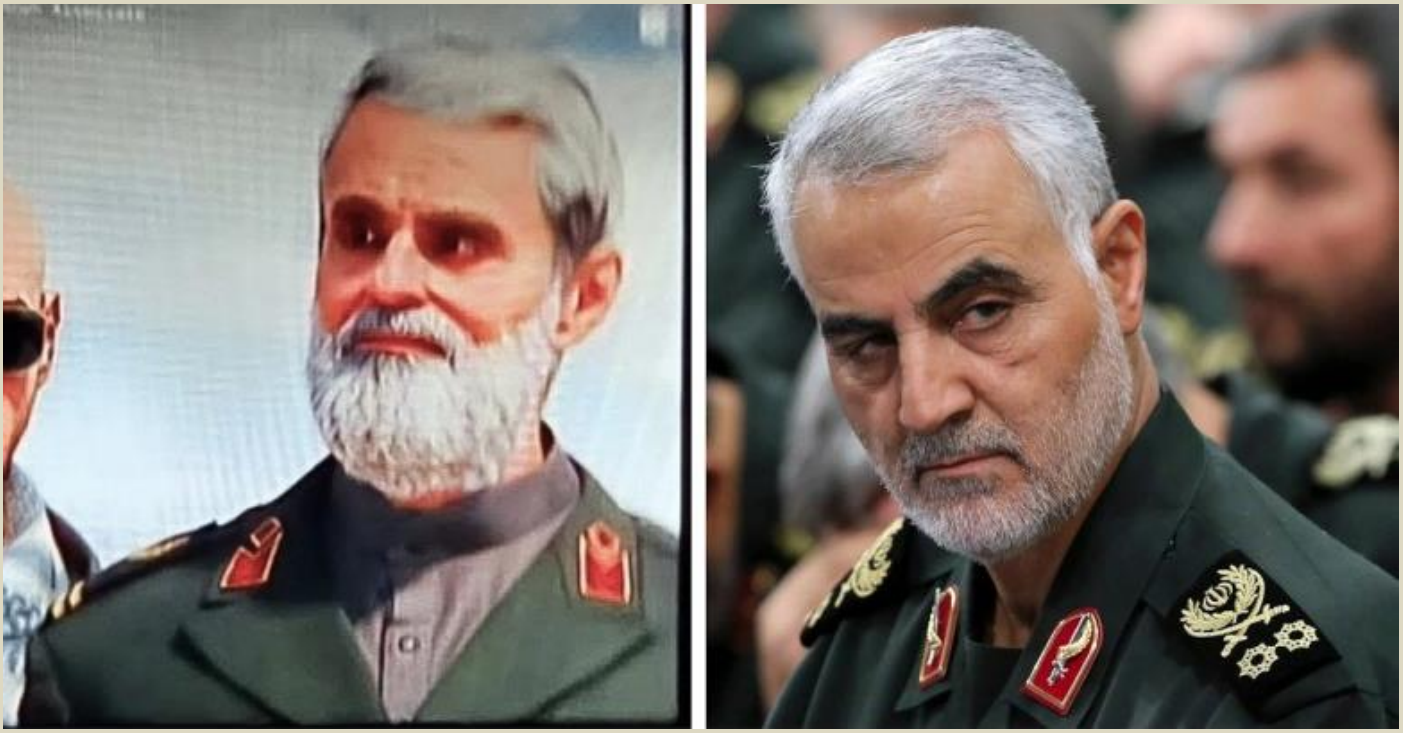
That the same government that was infiltrating games 10-15 years ago now has so many former officials controlling the very game companies raises serious questions around privacy and state control over media, and mirrors the national security state penetration of social media that has occurred over the same timeframe.

War games

These deep connections to the U.S. national security state can perhaps help partly explain why, for years, many have complained about the blatant pro-U.S. propaganda apparent throughout the games.

The latest installment, *Call of Duty: Modern Warfare II*, is no exception. In the game's first mission, players must carry out a drone strike against a character named

The latest installment, *Call of Duty: Modern Warfare II*, is no exception. In the game's first mission, players must carry out a drone strike against a character named General Ghorbrani. The mission is obviously a recreation of the Trump administration's illegal 2020 drone strike against Iranian General Qassem Soleimani – the in game general even bears a striking resemblance to Soleimani.



The latest Call of Duty game has players assassinate a General Ghorbrani, a nebulous reference to Iranian General Qassem Solemani, pictured right.

Call of Duty: Modern Warfare II ludicrously presents the general as under Russia's thumb and claims that Ghorbrani is "supplying terrorists" with aid. In reality, Soleimani was the key force in defeating ISIS terror across the Middle East – actions for which even Western media declared him a "hero". U.S.-run polls found that Soleimani was perhaps the most popular leader in the Middle East, with over 80% of Iranians holding a positive opinion of him.

Straight after the assassination, Pompeo's State Department floated the falsehood that the reason they killed Soleimani was that he was on the verge of carrying out a terror attack against Americans. In reality, Soleimani was in Baghdad, Iraq, for peace talks with Saudi Arabia.

These negotiations could have led to peace between the two nations, something that the U.S. government is dead against. Then-Iraqi Prime Minister Adil Abdul-Mahdi revealed that he had personally asked President Trump for permission to invite Soleimani. Trump agreed, then used the opportunity to carry out the killing.

Therefore,, just as Activision Blizzard is recruiting top State Department officials to its upper ranks, its games are celebrating the same State Department's most controversial assassinations.

This is far from the first time *Call of Duty* has instructed impressionable young gamers to kill foreign leaders, however. In *Call of Duty Black Ops* (2010), players must complete a mission to murder Cuban leader Fidel Castro. If they manage to shoot him in the head, they are rewarded with an extra gory slow motion scene and obtain a bronze "Death to Dictators" trophy. Thus, players are forced to carry out digitally what Washington failed to do on over 600 occasions.

Likewise, *Call of Duty: Ghosts* is set in Venezuela, where players fight against General Almagro, a socialist military leader clearly modelled on former president Hugo Chavez. Like Chavez, Almagro wears a red beret and uses Venezuela's oil wealth to forge an alliance of independent Latin American nations against

the U.S. Washington attempted to overthrow Chavez and his successor, Nicolás Maduro, multiple times. During the sixth mission of the game, players must shoot and kill Almagro from close range.

A mission from "Call of Duty: Black Ops" has players assassinate a hostage-taking Fidel Castro

The anti-Russian propaganda is also turned up to 11 in *Call of Duty: Modern Warfare* (2019). One mission recreates the infamous Highway of Death incident. During the First Iraq War, U.S.-led forces trapped fleeing Iraqi troops on Highway 80. What followed was what then-Joint Chiefs of Staff Chairman Colin Powell described as "wanton killing" and "slaughter for slaughter's sake" as U.S. troops and their allies pummeled the Iraqi convoy for hours, killing hundreds and destroying thousands of vehicles. U.S. forces also reportedly shot hundreds of Iraqi civilians and surrendered soldiers in their care.

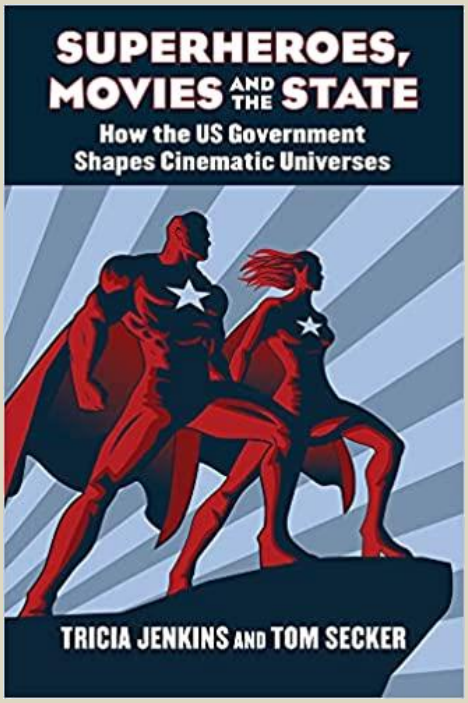
Call of Duty: Modern Warfare recreates this scene for dramatic effect. However, in their version, it is not the U.S.-led forces doing the killing, but Russia, thereby whitewashing a war crime by pinning the blame on official enemies.

A mission in "Call of Duty: Modern Warfare" has players recreate the infamous highway of death.

"*Call of Duty*, in particular, has been flagged up for recreating real events as game missions and manipulating them for geopolitical purposes," Secker told *MintPress*, referring to the Highway of Death, adding,

In a culture where most people's exposure to games (and films, TV shows and so on) is far greater than their knowledge of historical and current events, these manipulations help frame the gamers' emotional,

intellectual and political reactions. This helps them turn into more general advocates for militarism, even if they don't sign up in any formal way."
Secker's latest book, "Superheroes, Movies and the State: How the U.S. Government Shapes Cinematic Universes," was published earlier this year.



Game Over
In today's digitized era, the worlds of war and video games increasingly resemble one another. Many have commented on the similarities between piloting drones in real life and in games such as *Call of Duty 4: Modern Warfare*. Prince Harry, who was a helicopter gunner in Afghanistan, described his "joy" at firing missiles at enemies. "I'm one of those people who loves playing PlayStation and Xbox, so with my thumbs I like to think I'm probably quite useful," he said. "If there's people trying to do bad stuff to our guys, then we'll take them out of the game," he added, explicitly comparing the two activities. U.S. forces even control drones with Xbox controllers, blurring the lines between war games and *war games* even further.
The military has also directly produced video games as promotional and recruitment tools. One is a U.S. Air Force game called Airman Challenge. Featuring 16 missions to complete, interspersed with facts and recruitment information about how to become a drone operator yourself. In its latest attempts to market active service to young people, players move through missions escorting U.S. vehicles through countries like Iraq and Afghanistan, serving up death from above to all those designated "insurgents" by the game. Players earn medals and achievements for most effectively destroying moving targets. All the while, there is a prominent "apply now" button on screen if players feel like enlisting and conducting real drone strikes on the Middle East. U.S. Armed Forces use the popularity of video games to recruit heavily among young people, sponsoring gaming tournaments, fielding their own U.S. Army Esports team, and directly trying to recruit teens on streaming sites such as Twitch. The Amazon-owned platform eventually had to clamp down on the practice after the military used fake prize giveaways that lured impressionable young viewers onto recruitment websites. Video games are a massive business and a huge center of soft power and ideology. The medium makes for particularly persuasive propaganda because children and adolescents consume them, often for weeks or months on end, and because they are light entertainment. Because of this, users do not have their guards up like if they were listening to a politician speaking. Their power is often overlooked by scholars and journalists because of the supposed frivolity of the medium. But it is the very notion that these are unimportant sources of fun that makes their message all the more potent.
The *Call of Duty* franchise is particularly egregious, not only in its messaging, but because who the messengers are. Increasingly, the games appear to be little more than American propaganda masquerading as fun first-person shooters. For gamers, the point is to enjoy its fast-paced entertainment. But for those involved in their production, the goal is not just making money; it is about serving the imperial war machine.

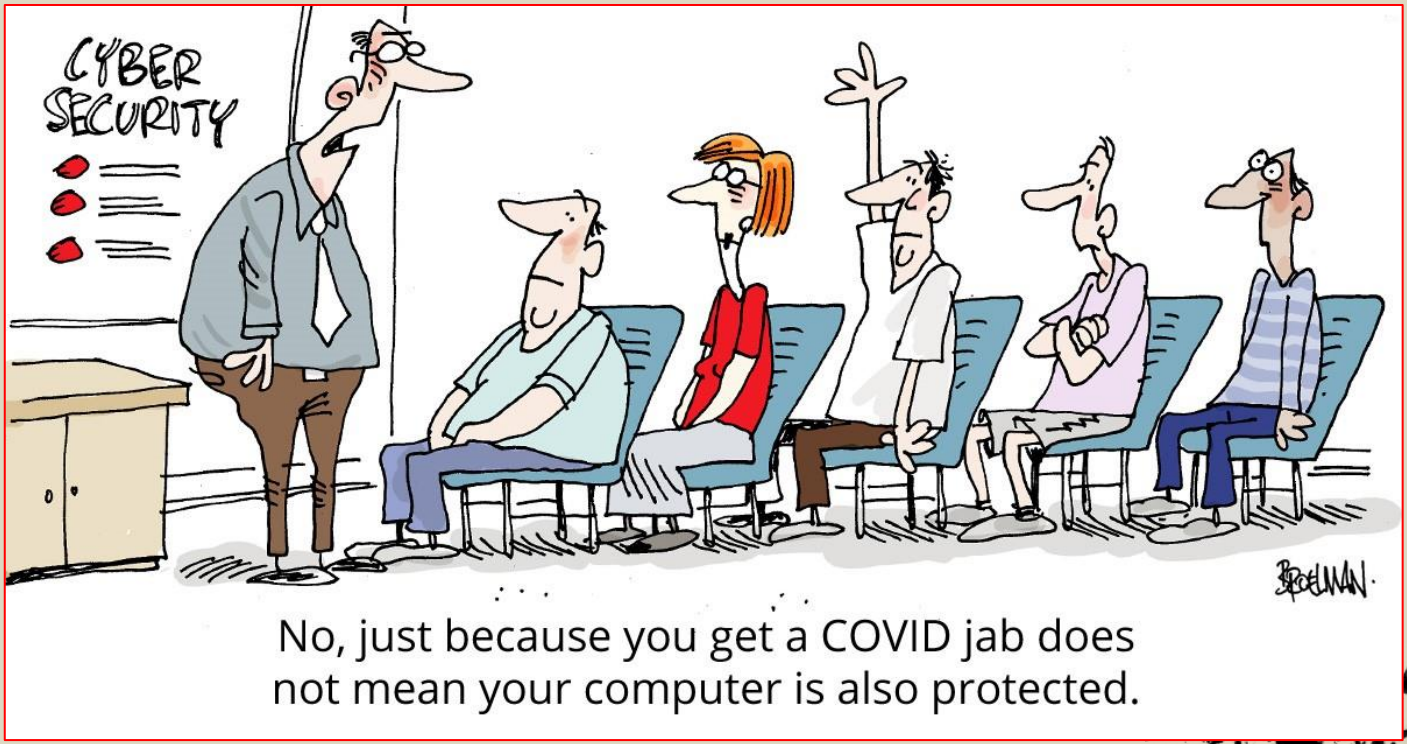
The Human Side of Cybersecurity

Source: https://www.homelandsecuritynewswire.com/dr20221122-the-human-side-of-cybersecurity

Nov 22 – We might think of cybersecurity as being mostly about firewalls, antivirus software, spam filters, and dDOS detection, but it is often social engineering and human failure that leads to breaches of computer systems and networks rather than sophisticated malware.
New work in the *International Journal of Business Information Systems* looks at the human side of cybersecurity. We might think of cybersecurity as being mostly about firewalls, antivirus software, spam filters, and dDOS detection, but it is often social engineering and human failure that leads to breaches of computer systems and networks rather than sophisticated malware.
Rajesh Kumar Upadhyay of the Graphic Era Hill University, Dehradun, and Anurag Singh and Brij Mohan Singh of the India and College of Engineering Roorkee surveyed professionals, non-professionals, and students working and studying in the educational sector of the Uttarakhand region. They hoped to explore the relationship between awareness of computer security issues and human behavior. They focused on various personality traits to determine whether there were correlations between those and a person's understanding of cybersecurity. The team points out that while an organization or individual can put in place policies and tools to protect from intrusion that happens digitally it is almost impossible to protect against social engineering without ongoing education of users who might succumb to the dubious and persuasive skills of the confidence trickster.

Cybersecurity is an enormous challenge worldwide, the team emphasizes. The team has now looked at extroversion, agreeableness, conscientiousness, neuroticism, and openness of personality and how this relates to an individual's perception and understanding of cybersecurity with a view to educating where there are gaps in knowledge or where a particular personality type might well be more susceptible to social engineering than another. Fundamentally, we all have different attitudes to cybersecurity and this can thus be an issue within an organization. However, the team did find that conscientious extroverts tended to be more aware of the issues and more likely to take a proactive approach to cybersecurity than others with different personality traits, and this was regardless of gender.

The team suggests that organizations ought to improve their security awareness among their users as well as instigate practices to help thwart social engineering attacks.



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DRONE NEWS

Plane flying to Rhodes nearly crashed into drone at 16,000 feet!

Source: https://en.protothema.gr/plane-flying-to-rhodes-nearly-crashed-into-drone-at-16000-feet/

Oct 24 – An EasyJet plane, which was at 16,000 feet, had a near-drone collision while flying from Gatwick, UK to Rhodes Island, Greece.

According to the Sun, the incident happened on July 5, 2022, at 8:55 a.m. The Airbus A320, with 180 passengers, was over the Kent coast at 16,000 feet when the pilots noticed something unusual. In particular, they saw a black and cylindrical device heading towards them, the aircraft flying at a speed of 400 miles per hour, 20 miles west of Dover.

One pilot heard a thump and feared the drone had hit the aircraft. In particular, the drone flew from the bottom of the cabin. However, as an inspection of the exterior of the cabin showed, when it landed in Greece, there was no collision after all.

However, the presence of unmanned aircraft at such a height is strange and impressive. **The maximum allowable height that a drone can fly is 400 feet.** This means that the particular drone flew 40 times higher than the permitted limit.

The plane's captain told air traffic controllers: "We almost hit a drone. We are talking about less than three meters. We don't think we hit it, there was a little noise, we'll be back."

"I can confirm that we did not hit the drone", said the captain. "The noise that the first officer heard was probably from inside the aircraft's cabin," he added after examining the aircraft.

Dubai-made drone ready for healthcare delivery market

Source: https://www.thenationalnews.com/uae/2022/10/27/dubai-made-drone-hits-healthcare-delivery-market/

Mustafa Masri, founder of C-drones with R&D engineer Osama Yaser. Victor Besa / The National

Oct 27 – A Dubai start-up is joining a growing band of tech firms developing delivery drones capable of transporting vital medicines to remote areas thanks to in-built temperature regulators.

Heating and cooling systems to maintain required temperature of payloads, a drone safety parachute and anti-collision sensors are features of the flying delivery bots built by Customised Drones (C-Drones).

The company entered the Dubai Programme to Enable Drone Transportation, a government initiative to explore drone use across the health, security, shipping and food industries.
C-Drones founder Mustafa Masri, said by offering customised drones the technology can be used by a variety of sectors.
These trips can take 45 minutes, so it is critical the temperature is controlled, we have seen this with the Covid vaccine
"This is not new technology in the delivery industry, but what we are doing in the medical sector is unique," he said.
"Companies need to transport medication or even human organs in critical areas where there is poor infrastructure, bad roads or mountainous regions that can be hard to access.
"What is one mile by air, can be 10 miles by ground.
"Shipments are often delivered in extreme temperatures, either hot or cold.
"These trips can take 45 minutes, so it is critical the temperature is controlled, we have seen this with the Covid vaccine, for example."

Limited 20km range

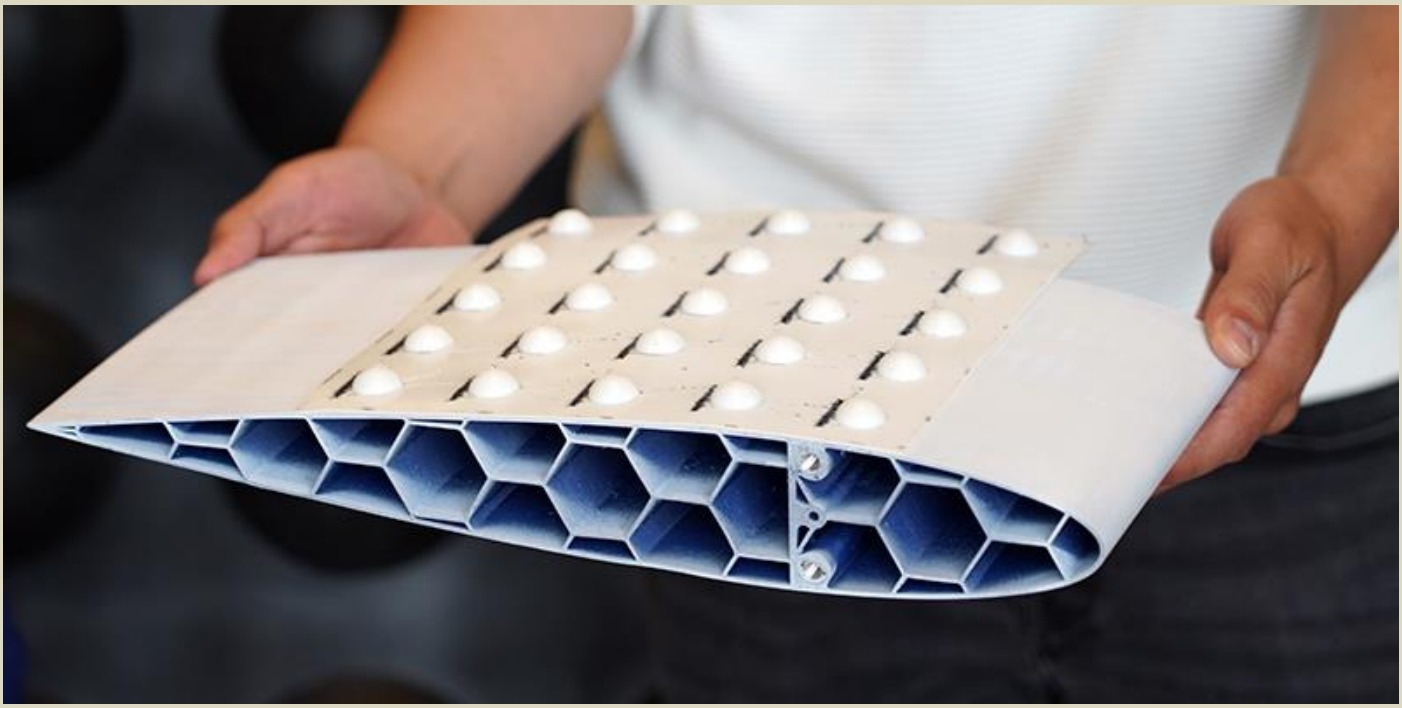
Each drone has a range of around 20km and is capable of carrying a payload of 10kg, although this can be customised.
Health authorities in Saudi Arabia and Oman have expressed an interest in taking on the technology to deliver medical supplies and prescriptions to those without transport, Mr Masri said.
All drones are manufactured in the UAE, and can be controlled via a mobile app.
Drones have already been used to deliver vital medicines to remote areas around the world, including Malawi and the Democratic Republic of Congo in Africa, Scotland and Canada.

The device currently has a 20km range and there are plans to extend that. Victor Besa / The National

In 2019, heath authorities in Malawi established a drone corridor to enable childhood vaccines for malaria, TB and rotavirus.
"Beehive" pharmaceutical hubs were established for health workers to load drones for delivery.
Meanwhile, in Scotland, the UK's NHS launched a drone delivery pilot scheme in 2021 to deliver Covid-19 tests, medicines and PPE to remote communities in Argyll and Bute.
The Dubai-built drones have a 360-degree collision avoidance system, retractable landing gear and precision landing positioning — as well as the ability to heat or cool deliverable contents at required temperatures.
A major hurdle during the Covid-19 pandemic was how to maintain the cold temperatures required to deliver vaccines in remote areas.
The short shelf life of vaccines meant some nations were unable to deliver doses into hard-to-reach areas or were unable to keep them cold in transit.
According to the World Health Organisation, Yemen utilised just 42 per cent of its vaccines, Syria used 33 per cent and only 14 per cent of delivered vaccines were administered in Djibouti.
Mr Masri said his drones could provide a viable option in future pandemics to improve remote access, and bolster existing global vaccination programmes.
"We have seen a growing demand for this technology since the pandemic," he said.
"The innovative, built-in cooling and heating system is what marks this out from others.
"So if a hospital requires a pick-up it can be ordered from the app and the drone will arrive to deliver the package.
"It is equipped with a dynamic parachute system to avoid any issues of power loss that could see it crash to the ground and cause any damage.
"Drones have a big role to play in this area of final frontier healthcare."

A Drone Wing That Could Learn How to Sense Danger Faster

Source: https://www.homelandsecuritynewswire.com/dr20221026-a-drone-wing-that-could-learn-how-to-sense-danger-faster



Oct 26 – The oddly satisfying small domes that you press on your soda's to-go cup lid may one day save a winged drone from a nosedive.

Patterns of these invertible domes on a drone's wings would give it a way to remember in microseconds what dangerous conditions feel like and react quickly. The study, conducted by researchers at Purdue University and the University of Tennessee, Knoxville, is among the first demonstrations of a metamaterial that uses its shape to learn how to adapt to its surroundings on its own. The paper is published in the journal Advanced Intelligent Systems.

Unlike humans and other living beings, autonomous vehicles lack ways to filter out information they don't need, which slows their response time to changes in their environment.

"There's this problem called 'data drowning.' Drones cannot use their full flight capability because there is just too much data to process from their sensors, which prevents them from flying safely in certain situations," said Andres Arrieta, a Purdue associate professor of mechanical engineering with a courtesy appointment in aeronautical and astronautical engineering.

Dome-covered surfaces that can sense their surroundings would be a step toward enabling a drone's wings to feel only the most necessary sensory information. Because it only takes a certain minimum amount of force to invert a dome, forces below this threshold are automatically filtered out. A specific combination of domes popped up and down at certain parts of the wing, for example, could indicate to the drone's control system that the wing is experiencing a dangerous pressure pattern. Other dome patterns could signify dangerous temperatures or that an object is approaching, Arrieta said.

Giving drones associative memory through feel

It may seem strange that an invertible dome could give memory cues to a drone wing for dangerous conditions, but humans and animals also use unrelated concepts to recognize relationships. This learning strategy is called associative memory. When you have forgotten the name of a place, for example, you might use a detail such as the color of a building to remember it. Recalling a partial version of the memory allows you to construct a much more complete version of that memory.

Arrieta's lab investigates ways that an engineered material's shape could help it to compute and process information. His lab frequently takes inspiration from how spiders and other animals use their anatomical shapes to sense and understand the world around them.

For decades, electronics have been designed to save and retrieve images by encoding information in patterns of black or white pixels as zeroes or ones. Because a dome can adopt only two states — popped up or popped down — these states can act like zeroes and ones to create spatial patterns for building associative memory.

Arrieta and his team showed in the study that when a certain level of force inverts a dome, sensors embedded into the flat part of a metamaterial sheet surrounding the dome detect the change in shape. An electrical signal then triggers a memory device called a memristor to make a record of the force and where it was detected on the sheet. With each instance of an inverted dome, the metamaterial learns to remember the pattern that a certain level of force creates on its surface.
In practice, a drone wing would be able to quickly recall a pattern associated with a dangerous condition because the metamaterial keeps a record of all its "partial memories" from inverted dome patterns as a single "complete memory" that these patterns create altogether. Based on this study, the researchers believe that the metamaterial wouldn't need to "buffer" to recall information that it stores within itself over time.
Since the metamaterial can be manufactured with existing methods, these domes can easily cover a large surface area like a drone's wing, Arrieta said. Next, the researchers will test how the material responds to its surroundings based on information it learns from the domes. Arrieta anticipates that it will be possible to build a drone wing using this material design in the next three to five years.

Iran Watch Listen: Has Iran Become the Master of its Drone Destiny?

Source: https://www.iranwatch.org/our-publications/interviews-podcasts/iran-watch-listen-has-iran-become-master-its-drone-destiny

Oct 12 – In this episode of Iran Watch Listen, we sat down with Dan Gettinger and Adam Rawnsley, both experts on Iranian drones and drone technology. We discussed the current state of Iran's capabilities, Iran's growing ambitions to become a drone exporter, and whether tighter sanctions and export controls could hinder its progress. The conversation took place on September 15 and was hosted by John Caves, Senior Research Associate at the Wisconsin Project on Nuclear Arms Control, and John Krzyzaniak, a Research Associate at the Wisconsin Project. Read more about our guests below.

Background
Unmanned aerial systems (UAS), commonly known as unmanned aerial vehicles (UAVs) or drones, are remote-controlled pilotless aircraft. Drones generally perform two military missions: intelligence, surveillance, and reconnaissance (ISR) and striking targets using on-board munitions or explosive payloads. Those with strike capabilities are sometimes called unmanned combat aerial vehicles, or UCAVs. "Kamikaze" or "suicide" drones, also known as loitering munitions, carry an explosive payload all the way to the target and destroy themselves on impact, functioning much like a cruise missile.

An Iranian Mohajer-6 drone. Credit: Tasnim News Agency

Drones are generally grouped according to their weight at take-off, the distance they can fly, the amount of time they can remain in the air, and their top speed. The most capable drones, classified as medium-altitude long-endurance (MALE) or high-altitude long-endurance (HALE), typically have a takeoff weight of 600 kilograms or more and can remain aloft for at least 24 hours.

Iranian drones at a 2019 defense exhibition in Tehran. (Credit: Tasnim News Agency)

Our Discussion

We reviewed the current state of Iran's drone program and the entities involved in producing drones or procuring parts for them. These include Iran Aircraft Manufacturing Industries (HESA), Qods Aviation Industries, the IRGC Aerospace Force Self-Sufficiency Jihad Organization, Shahed Aviation Industries, and Oje Parvaz Mado Nafar (often shortened to simply "Mado").

Iran's drone program emerged in the 1980s during the war with Iraq, when it began using small, radio-controlled model aircraft equipped with off-the-shelf cameras to surveil developments on the front lines. Since then, Iran's drone fleet has grown to include numerous models, including several MALE drones capable of carrying munitions, such as the Shahed-129 and the Mohajer-6. However, Iranian drones are not as capable in terms of range and endurance as their foreign counterparts, even if some appear to be reverse-engineered versions of models obtained from abroad.

Rawnsley described how Iranian drone development in recent years has proceeded along two separate tracks. On one track, Iran is developing increasingly sophisticated drones for use in its own armed forces and to sell to other countries. On the second track, Iran is developing "proxy-first" drones and other loitering munitions that are designed to be easier to covertly transport, assemble, and be operated by non-state groups. One example is the "358" loitering munition, which is produced in Iran and has been transferred to the Houthis in Yemen, but has not been publicly displayed by Iran's own armed forces.

Our discussion also covered Iran's drone exports. Although Iran may not offer the cutting-edge capabilities that some other drone producers can (notably Israel, Turkey, and the United States), it has found customers over the years, including in Sudan, Venezuela, Ethiopia, and now Russia. Moreover, Iran announced in June 2022 that it was opening a production line for its Ababil-2, a small tactical drone with a range of about 200 km and a flight time of roughly 1.5 hours, in Tajikistan. These recent developments are indications that Iran is seeking to expand its customer base beyond its traditional Axis of Resistance partners—and doing so with some success.

The final part of the discussion turned toward Western efforts to constrain Iran's drone development through export controls and sanctions. Gettinger suggested that, in some ways, supply-side controls have worked, given Iran's longstanding struggle to procure advanced components for its drones. However, Iran's illicit supply networks are diverse and have drawn on many foreign sources, making it difficult to

close off every path completely. Both Gettinger and Rawnsley pointed to the role of China as a direct supplier of components to Iran and as a transshipment location for such components. China's dual role remains a weak point in international efforts to enact more stringent supply-side controls against Iran.

Expert Bios

Dan Gettinger is the Director of Publications and Communications at the Vertical Flight Society. Before that he was the founder and co-director of the Center for the Study of the Drone at Bard College where he authored the Drone Databook. He tweets at @gettdan. Adam Rawnsley is a reporter at *Rolling Stone* and a Fellow at the Foreign Policy Research Institute. His work focuses on the intersection of technology and security, and he's been doing in-depth investigations into Iranian drone proliferation for about a decade. He tweets at @arawnsley.

Related Resources

- *The Drone Databook*, Dan Gettinger, Center for the Study of the Drone, 2019.
- *Unmanned Combat Aerial Vehicles: Current Types, Ordnance and Operations*, Dan Gettinger, 2021.
- "The Clues Hidden in the Drones that Attacked Saudi Arabia," Adam Rawnsley, *Daily Beast*, 2019.
- "Inside the U.S.-Iran Drone War," Adam Rawnsley, *Daily Beast*, 2019.
- "Remotely Piloted Vehicles in the Third World: A New Military Capability," U.S. Central Intelligence Agency, 1986.
- *Evolution of UAVs Employed by Houthi Forces in Yemen*, Conflict Armament Research, 2020.

Drone Strikes Forever: The Problems with Over-The-Horizon Counterterrorism and a Better Way Forward

By Andy Forney

Source: https://mwi.usma.edu/drone-strikes-forever-the-problems-with-over-the-horizon-counterterrorism-and-a-better-way-forward/

Oct 28 – The targeted killing of Ayman al-Zawahiri in Kabul last July felt like the end of . . . something. It should have at least; Zawahiri was al-Qaeda's number two at the time of the 9/11 attacks, subordinate only to Osama bin Laden. And while some may argue about the relevance of Zawahiri within al-Qaeda—then and now—one has to work hard to quibble with the fact that, as the current leader of al-Qaeda and the deputy during the 9/11 attacks, his killing represented the culmination of over twenty years of counterterrorism and intelligence efforts. President Joe Biden stated as much. During his press conference in the wake of the strike, he linked Zawahiri's killing to the 9/11 attacks and characterized it as the too-long-delayed full redemption that was

only partially realized by the killing of Bin Laden in 2011. It seemed prime time for a bookend moment that, as the counterpart to the initial attacks nearly twenty-one years before, would mark the passing of an era.

And yet, the president instead used the occasion of Zawahiri's killing to double down on the "over the horizon" counterterrorism strategy that he announced almost exactly a year before in his comments regarding the Afghanistan troop withdrawal. To ameliorate fears regarding the possibility of Afghanistan becoming another haven for terrorists, the administration proposed a counterterrorism approach that emphasized intelligence-informed over-the-horizon strikes from outside of terrorist safe havens, requiring no boots on the ground. The administration has executed this plan, plus some. In the months preceding and following Zawahiri's killing, the United States struck terrorists, insurgents, and rogue militias in Iraq, Somalia, and Syria. In Iraq and Syria, these strikes often targeted Iranian-backed militias that had attacked deployed US forces. Raids by special operations forces in Syria killed multiple ISIS leaders and their eventual successors. And in Somalia, the Donald Trump administration's withdrawal of US forces did not end counterterrorism operations, and the Biden team's redeployment of forces into Somalia appears to have accelerated them. Just this month, the United States announced that airstrikes killed a senior al-Shahaab leader.

In word and action, the current strategic policy of the United States regarding counterterrorism seems the full realization of the over-the-horizon approach. Going forward, there appears no impetus to change this model; the president intimated that this approach would continue, ad infinitum, in his comments following Zawahiri's killing. Technology—drones, digital intelligence collection, globe-spanning, near-instantaneous communications—enabled the execution of these operations, representing a generational leap in counterterrorism execution. This new reality might explain the number of ambivalent responses defense intellectuals and commentators provided following Zawahiri's killing. The death of yet another al-Qaeda leader effectively drew a lot of shrugged shoulders.

In several ways, this new counterterrorism strategy resembles the Israel Defense Force's "mowing the grass" operational approach to counterterrorism campaigns in the Palestinian territories and southern Lebanon. Facing an intransigent terrorism threat, Israeli forces regularly execute strikes and raids intended to decapitate leadership and destroy critical capabilities. Some strategists in the United States have advocated for such an approach for US counterterrorism efforts, and it would appear that, in the over-the-horizon strategy, they found their match.

The chief question that should animate this discussion, however, seems always left out: *To what end?* The obvious answer remains to protect the United States and its allies and partners from terrorist attacks. The sublimation that takes place, however, is the assumption that this can only be done through drones and airstrikes. More importantly, the assumption seems so set in stone that no other solutions exist for the current reality. Better to simply keep killing terrorists and accept the fact that, from Central Asia to the Horn of Africa, this approach now defines a significant portion of our foreign policy.

This strategic shoulder-shrug that assumes there's little more we can really do, need not dominate our counterterrorism thinking. It is time for a counterterrorism strategy that truly examines the nature of the terrorist threat and determines how best to manage the instability that terrorism creates rather than simply perpetuating an eternal game of global Whac-A-Mole. Yes, a role for American military power will always exist. We should better demarcate the role for its use, however, while also looking for ways to empower those frontlines states most likely to be targeted by terrorist attacks. By anchoring in our allies and partners, the United States can build capacity and resilience while freeing resources to orient toward other challenges. We must recognize, and enhance, the counterterrorism capabilities of our allies and partners, while lessening the forward-deployed footprint of the US military and looking for opportunities to integrate successful US interagency counterterrorism efforts.

With allies and partners in the lead of counterterrorism efforts, the United States can shift to a supporting role while maintaining flexibility to operate in times of crisis, thereby adapting our policy approach for a wide swath of the globe. The foundation of this new approach entails a movement away from a US-led counterterrorism effort defined by drone- and airstrikes that prioritizes continued violence in the absence of a discernible strategic end state. At the strategic level, this means moving toward a partner-led effort, where the United States supports frontline partners with intelligence sharing, acquisition, and—in extreme cases tied to direct threats to the United States, our citizens, or our interests—military force. Over-the-horizon counterterrorism is just a set of tactics. A partners-forward approach would be a strategy.

A Strategy Bridge to Nowhere

As first described in 2013, Israel's "mowing the grass" approach sought to align its use of military force with the reality of the post-Intifada security environment and Israel's strikingly poor performance against Hezbollah in southern Lebanon in 2006. Resigning themselves to violent, nonstate actors on their border for an indeterminate period, Israeli defense strategists abandoned the idea of a decisive victory against terrorism. Instead, they argued for a regular application of military force against the nonstate actor leadership and their more advanced capabilities—particularly rockets and command-and-control nodes. By assuming away a decisive political settlement, Israel agreed to a permanent state of quasi war, a simmering brew of near violence at times punctuated with blockades, airstrikes, and targeted raids by ground forces.

Early advocates of Israel's counterterrorism approach lauded the nation for its inherent realism: Hamas and Hezbollah would never accede to the existence of Israel, so better to occasionally decapitate and defang the military branch of each organization. Assuming away any future settlements and accepting a new reality of regular, sporadic violence, Israeli strategists focused on using military force to protect their nation from attack, hoping that options to better resolve this instability would present themselves in the future. As the decade wore on, though, observers began to question the efficacy of the strategy. By the early 2020s, no marked change in Israeli-Palestinian relations (and some argued Israeli escalation) meant that the Israel Defense Forces continued this regular campaign of strikes and raids, with no end in sight. Some argued that the "mowing the grass" approach ushered in a self-perpetuating cycle of violence that reinforced Hamas's and Hezbollah's anti-Israeli rhetoric, continued to destabilize Israel's neighbors, and enabled further access for Iran in the Levant.

These critiques did little to impact the US counterterrorism discourse. In Afghanistan, both Trump administration and its predecessor under Barack Obama emphasized drones and airstrikes as a means to continue to pressure terrorist groups in the country as they sought a scaled-down presence of boots on the ground. In Iraq and Syria, the eventual retaking of Mosul and the sharp decrease in the size of ISIS-held territory only partially slowed the continued blitz of drones, airstrikes, and raids. In the Horn of Africa, the prospect of the expansion of al-Shabaab led to continued drone and airstrikes. Charged with executing these missions, the special operations and intelligence communities became proficient at "servicing" targets, even in the face of increased civilian casualties.

As noted earlier, the Biden administration maintained the same approach; what it has not done is assess its effectiveness. Several recent reports have shown a lack of correlation between continued strikes and relative stability in terrorist safe havens. Operationally, terrorist groups have adjusted their practices in an attempt to avoid detection and enable the rapid replacement of slain leaders. Also, the US approach has yet to deny safe geographic haven to terrorist groups. Recently, DoD's under secretary of defense for policy noted that ISIS-Khorasan could execute expeditionary operations from Afghanistan within six to twelve months and al-Qaeda within eighteen to twenty-four. Operations in Syria degraded ISIS significantly but have yet to set the conditions for their eventual termination, nor have they helped stabilize the political-military situation in that country. Further, although some have argued that "mowing the grass" in Somalia provides our only option, this approach has so far yielded little to make one think that Somalia is on a pathway to better security and governance.

What is the desired strategic end state for each of the ongoing campaigns? Clearly a safer United States is at the top of that list, but have we proven the correlation between a continued campaign of "mowing the grass" and increased security? While American national security should never defer to purely coin-counting, it is fair to ask, in a period of changing priorities and limited resources: How effective is our current approach, how do we measure it, and could we find further efficiencies? Our current approach still requires the regular forward deployment of critical capabilities (intelligence, surveillance, and reconnaissance capabilities, tankers, protection assets) and formations (special operations forces, intelligence personnel, cyber teams) that could be reoriented toward threats elsewhere. Understanding the priorities, and the critical decisions required to meet them, is an important first step.

Anchoring in Allies and Partners

The 2022 National Defense Strategy calls out explicitly the benefits of the United States' alliance and partnership network in meeting the multiple challenges in the contemporary security environment. In the same vein, our alliance and partnership network provides further opportunities, some tapped and some currently untapped, in our counterterrorism approach. Presently, US counterterrorism strategists look to our allies and partners primarily for access, basing, and overflight. Our current approach still prioritizes the application of US military power against terrorist threats, requiring proximity and protection. Going forward, we should look to emphasize and expand our combined counterterrorism capabilities with our allies and partners, while we deemphasize and demarcate the role of unilateral American military force.

This approach should make sense to our allies and partners. The most likely target for future terrorist attacks will be those states closest to terrorist safe havens, both in the Middle East and in southern Europe. Building a robust counterterrorism capability among them allows the United States to support those frontline states facing the prospect of attack. Further military-to-military engagement goes a long way toward building partner capacity, generating resilience within our partners' security establishments, and providing access to infrastructure in the event of crises, be it against terrorist groups or regional threat actors.

Several current challenges present themselves to this approach. Issues with overclassification create a huge barrier to fast and accurate intelligence sharing. Intelligence professionals and planners must create a culture of counterterrorism intelligence sharing in their organizations, looking first to set conditions for sharing while protecting crucial intelligence-collecting capabilities and access. At the same time, the Department of Defense must speed the acquisition of key capabilities through foreign military sales and financing, global train-and-equip initiatives, and intelligence institution capability building. For those allies and partners slated to play critical counterterrorism roles, these key capabilities should be prioritized above other, nonessential military items. Finally, we should have a clear view of those we deal with. Many authoritarian-leaning governments may view capability growth within their counterterrorism forces as a tool to be used for maintaining regimes and suppressing dissent. The United States must make clear that such

actions will end any ongoing training, support, and sustainment activities currently funded by the United States and close the door to future sales, capability transfer, and partnerships.

This approach acknowledges that some cases will require the application of military force, either through support (targeting, transportation, sustainment) or direct action (drones, airstrikes, targeted raids). In these instances, the target should either represent a direct threat to the United States or US citizens, be of a nature that precludes partner activity (either due to sensitivity or capability), or be of such a critical relation to US national security that national decision makers dictate a leading role for US military force. Counterterrorism planners must ensure that the application of American military power aligns with regional goals outlined by the Departments of State and Defense and the intelligence community. Planners should view the use of force with a discerning eye toward future intra- and interregional impacts. Force should be proportional to the intended target or outcome, foregoing target overkill. Operations should emphasize temporary deployments of small teams with a light footprint, relying on "warm" bases maintained by mixed US and partner teams over an enduring presence. Warm bases would require little to make them "hot"—power generation, protection, secure data links, temporary barracks—and can reenter warm status quickly after mission completion. This approach deemphasizes the current tendency toward permanent, forward-deployed basing needed to support the counterterrorism strike complex that, unintentionally, presents targets for future attack.

Some may critique this approach as little-changed from what the US military has done in the past, or even what US forces are executing now. Both are true, to an extent. The US military and intelligence community trained Afghan counterterrorism forces throughout the course of the war, right up until 2021. By most accounts, these forces proved very effective in their counterterrorism role (although when the Afghan government used them outside of that role, they suffered from attrition and low morale). In Iraq, counterterrorism forces provided the foundation to rebuild the Iraqi Army after its collapse against ISIS in 2014, and helped lead the offensive to retake Mosul. In Somalia, the Danab Brigade has bucked the trend of combat ineffectiveness in the Somali armed forces and proven itself capable of both combined and unilateral operations. While good examples of what training and resourcing can do at the tactical and operational levels, each of these formations still relied, or continue to rely, on a robust US presence, and often serve in secondary roles with US military force in the lead. Going forward, the United States should look towards these models as an initial blueprint for building partner capacity, then determine how best to enable their further development, resourcing, and training in a manner that allows them to take the lead in the counterterrorism fight and, ultimately, lessen the US role.

Aligning Against Other Challenges

Some make the argument that the current over-the-horizon approach to counterterrorism serves as an apt economy-of-force mission for the United States as it shifts to prioritization of the Indo-Pacific. They are right, but only to a degree. No longer in Afghanistan and with smaller footprints in Iraq and Syria, the Department of Defense has lessened the capabilities and formations in these regions. This drawdown has not fallen equally across the force, however. Although the current counterterrorism approach limits forward-deployed boots on the ground, it still relies on support from critical capabilities and formations deployed in the Middle East and Africa, particularly intelligence, surveillance, and reconnaissance capabilities, tankers, air and missile defense systems, and special operations forces. With limited capacity and redundancy, these capabilities and formations expend readiness at an alarming rate, reducing overall US capabilities in the event of an unexpected crisis elsewhere. At the same time, continued near-constant intelligence and special operations focus on counterterrorism targets, while important, comes at the expense of large segments of these formations gaining in-depth knowledge and building relationships in priority regions, a key element undergirding each of these groups.

An approach that focuses on the role of allies and partners and the strengthening of their counterterrorism capabilities, over time, frees these critical capabilities and formations for redeployment and reorientation to priority missions. In the process, it identifies interoperability shortfalls with our allies and partners to address with future training, development, and, potentially, acquisition. This serves to further integrate the United States with its allies and partners at the operational level and provides greater flexibility for the United States in times of crisis, either from counterterrorism or regional aggressors. The United States and its partners can work together to stymie terrorist attacks while strengthening the international security environment.

At the same time, a smaller role for American military power should create space to better integrate the interagency in our counterterrorism approach. While several successive administrations have made this claim, the preponderance of military power, and its reach, led to the Department of Defense's (and to an extent, the intelligence community's) domination of the counterterrorism discourse. The concrete removal of military capabilities from the region, and clear guidance on demarcating the role of military force, set the conditions for counterterrorism planners to think differently on how to use the full range of national power to lessen the risk of a terrorist attack against the United States and US citizens. Since 9/11, the interagency has made clear gains in terms of stopping terrorist financing, combating online radicalization, utilizing international law enforcement, and hardening US embassies. With the military and intelligence communities in a supporting role, the interagency should look to scale up these efforts while investigating untapped resources, expertise, and approaches. Ultimately, the United States should explore creating an interagency task

force, at the strategic level, to monitor terrorist developments, share information with allies and partners, and, when needed, support the targeting of terrorist groups and actors through military and nonmilitary means.

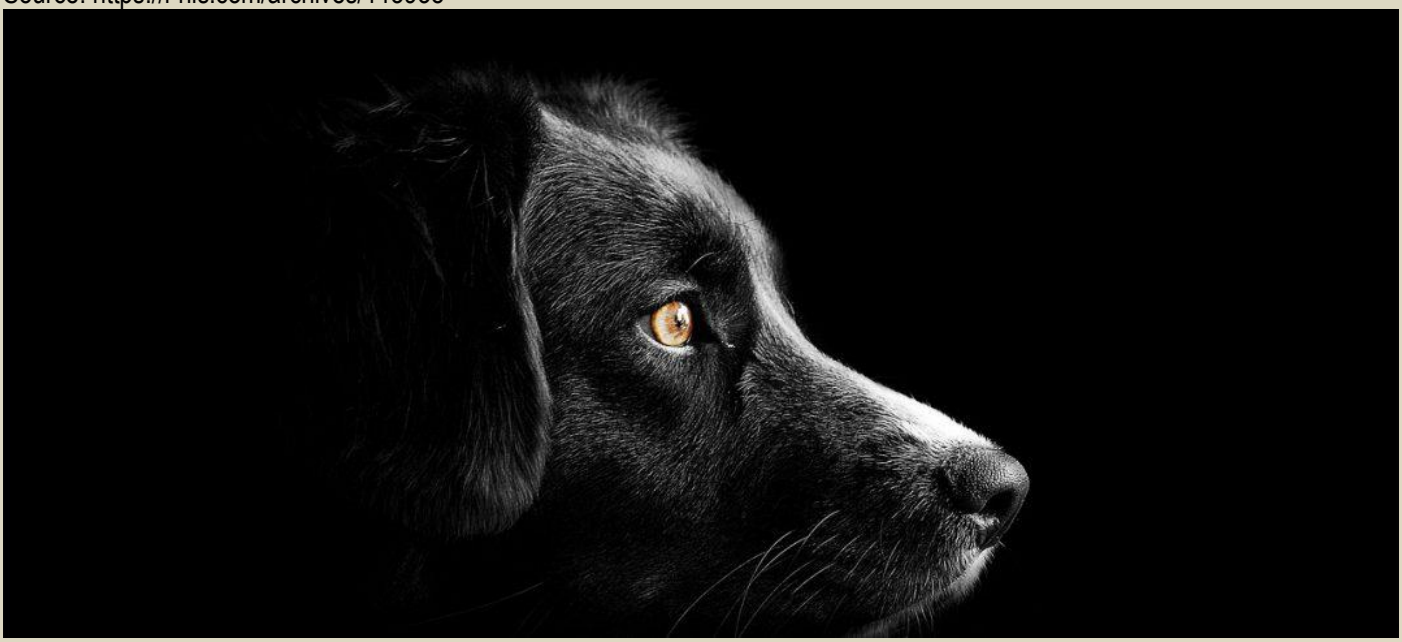
This, too, might seem at first blush to be little different from what has been tried in the past—the counterterrorism mission for years was littered with interagency task forces and countless interagency coordination mechanisms. And yet despite this, we still too often ended with the same outcome: military solutions to counterterrorism problems. That fact does not negate the fundamental importance of an interagency approach to counterterrorism; rather, it is an argument for greater emphasis on such an approach specifically at the strategic level. This level, where policymaking and planning take place, is where over-the-horizon approach emerged from—an approach that relies on the indefinite application of hard power with military capabilities and resources. A true strategy, then, one that leverages all instruments of national power and is tied to the accomplishment of US strategic objectives, must deliberately involve the participation of strategic-level stakeholders who wield nonmilitary instruments of power.

Some will argue that this proposed approach misunderstands the nature of the terrorist threat and is consequently too utopian. Maybe. It does recognize the continued threat from terrorist organizations, however, and does acknowledge that the United States, and its technology and capabilities, will play a role in the counterterrorism fight for years to come. This approach looks to right size US counterterrorism to the geographic reach of these groups, though, recognizing that those most likely to feel the brunt of future terrorist attacks are those frontline states in the proximity of terrorist safe havens. By augmenting their counterterrorism capabilities, we not only help them to protect themselves, but we also strengthen the strategic and operational ties that bind us together while guaranteeing partnership and access in times of future crisis. More importantly, this approach seeks to change the course of a current counterterrorism strategy that, in reality, is no strategy at all. Given the ability to constantly target and kill terrorists at a near-global scale, we did just that, not asking if there was another way. Now faced with rising challenges in Europe and the Indo-Pacific, it seems time to question a self-perpetuating strategic approach that provides little hope of resolution.

Colonel Andy Forney is an Army strategist that most recently served within the Strategy and Force Development Branch in the Office of the Under Secretary of Defense for Policy. His previous assignments included Special Operations Joint Task Force–Afghanistan, Army Futures Command, and the Department of History at the United States Military Academy. He holds a PhD in history from Texas Christian University.

A Man's Best Friend – Even In The Heat of Battle

Source: https://i-hls.com/archives/113938

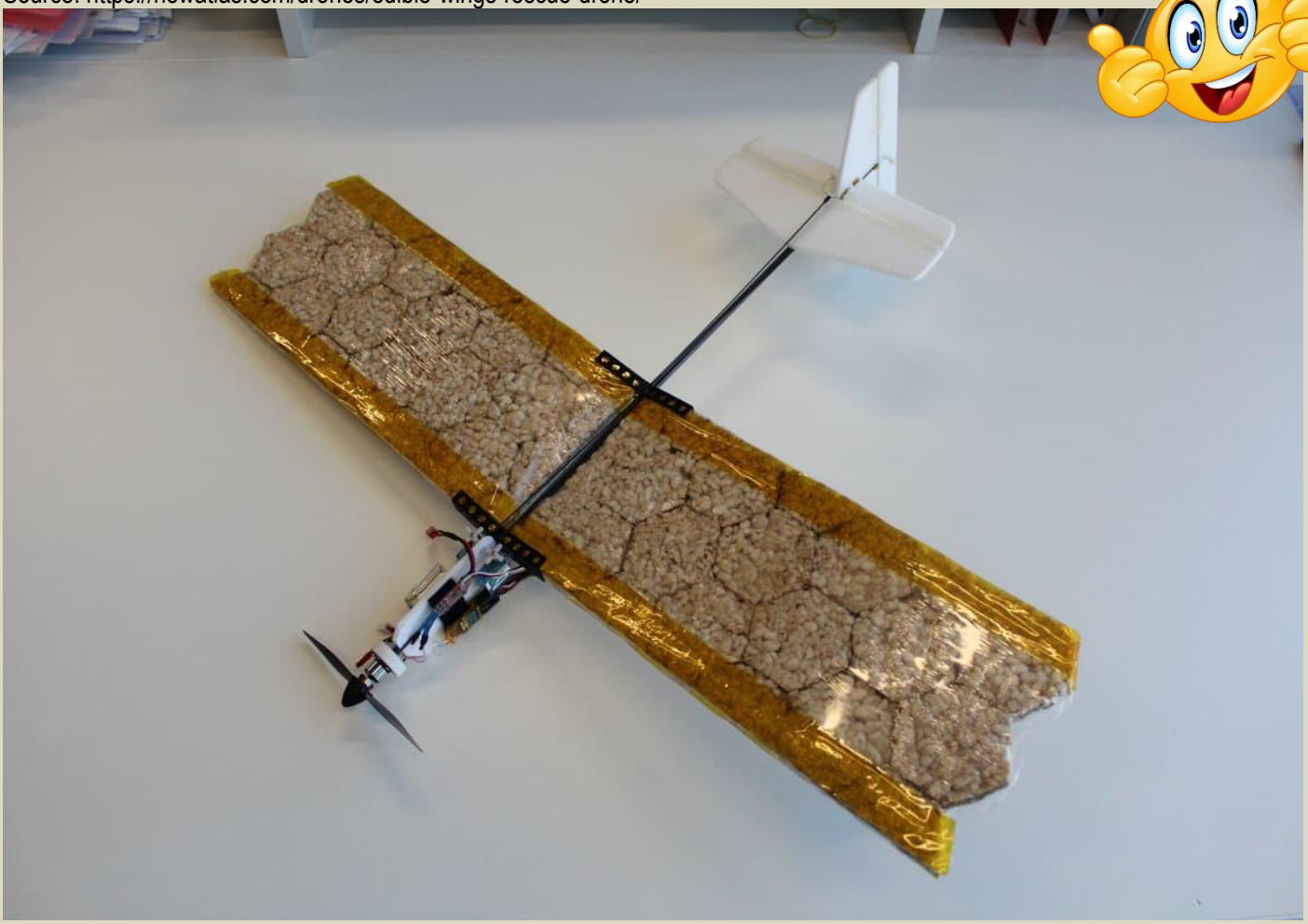


Oct 27 – One of Singapore's largest technology companies is experimenting with soldiers and robot dogs cooperating during combat missions. ST Engineering plans to upgrade the Vision 60 robot created by Ghost Robotics, an American robotics firm. Even though the robots are not yet ready for combat, scientists in Singapore are coming up with a strategy to make it possible for them to accompany soldiers and especially keep them away from front-line dangers.

To ensure that the four-legged robot can assist soldiers in combat, the Singaporean company will study a number of ways to integrate software technologies, sensors, and remote controls into the system.
With the understanding that more advanced sensors would enable robots to move around easily, the possibility of adding lidar sensors (which use a laser beam to detect objects) is being explored as part of the program. As well as enabling robots to detect obstacles, they will also be able to move almost as easily as a dog, in open spaces as well as very small spaces, allowing them to maneuver more accurately. Moreover, the researchers are exploring the possibility of integrating gesture response, vocal cues, and eye movements into the robot, thus improving communication between the robot dogs and soldiers during various missions.

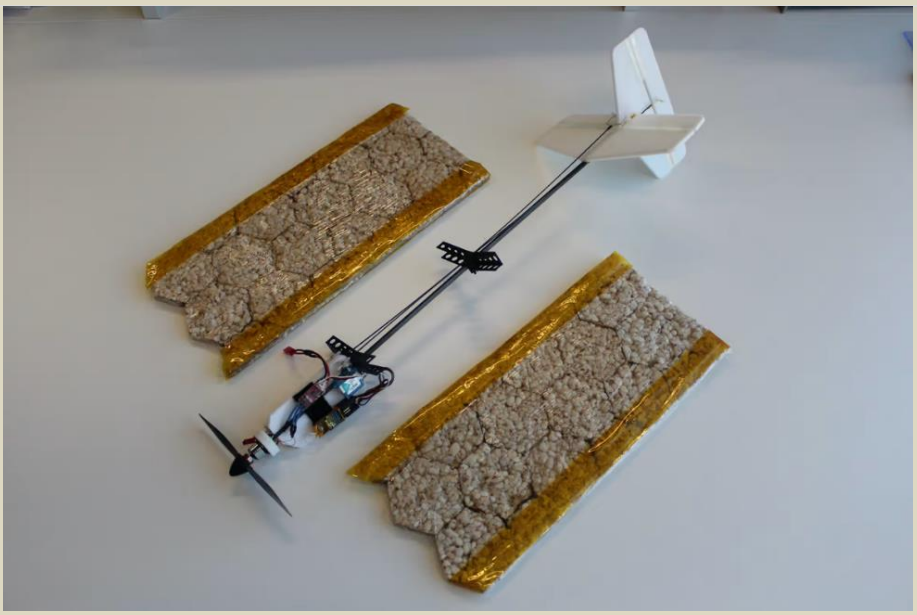
Potentially life-saving drone features edible rice-cake wings

Source: https://newatlas.com/drones/edible-wings-rescue-drone/



The prototype edible-wing rescue drone (Bokeon Kwak)

Nov 03 – Imagine if someone such as a stranded mountain climber needed food, but could initially only be reached by drone. Scientists have developed a proof-of-concept system of getting that food to them, in the form of a drone with edible wings.
First of all, there are already various groups using multicopter drones to deliver packages of food from stores or restaurants to clients' homes. Why not just use one of those? Well, while such drones have enough battery range for use within cities, they might not be able to cover the long distances that would be involved in getting food to people lost at sea, in the wilderness, or in other remote locations. A longer-range fixed-wing drone would be better for that purpose, although according to scientists from Switzerland's EPFL research institute, commercial models can generally only carry about 10 to 30% of their own mass as a payload.
In an effort to increase that percentage, an EPFL team led by postdoctoral researcher Bokeon Kwak set about designing a fixed-wing drone that was actually partially edible. And no, it wouldn't be reusable – it would make a one-way trip to the person in need, providing them with sustenance until they could be reached by rescuers. The scientists focused their efforts on the wings, as they usually occupy the largest volume on a fixed-wing drone. If providing food weren't an issue, those wings would normally be made of



a light but strong material such as expanded polypropylene (EPP) foam. After some experimentation it was decided that puffed rice cakes provided a good edible alternative, as their mechanical properties are similar to those of EPP.

In its current incarnation, the drone's wings provide about as much food energy as a single serving of breakfast (Bokeon Kwak)

In order to build the rectangular wings, the puck-shaped cakes were laser-cut into hexagonal pieces, which were then glued together along the edges using an edible gelatin. Corn starch and chocolate were also tried as adhesives, but the gelatin proved to be stronger. Once assembled, the wings were covered in a removable non-edible plastic, to protect the rice cake material from humidity. The resulting model has a wingspan of 678 mm (26.7 in) and it does indeed fly – at a speed of 10 m (33 ft) per second – and carries 50% of its own mass as an edible payload. Additionally, the researchers estimate that it could carry 80 grams of water in an onboard container. **Its two wings pack a combined 300 kilocalories of food energy, which is roughly equivalent to one serving of breakfast.** Needless to say, a larger version – or multiple smaller drones sent to one location – could provide a greater amount. Further research will focus on making more parts of the drone edible, and on boosting the nutritional value of the edible material.

"Until now, the amount of food that existing drones could carry was restricted to the payload," the team stated in a paper that was presented last week at the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) in Kyoto. "However, an edible drone can distinctly overcome this payload limitation, owing to the recreation of some body structures with food materials."

EDITOR'S COMMENT: Glorious human mind!!!

Unmanned aerial vehicles in chemical, biological, radiological and nuclear environment: Sensors review and concepts of operations

By Júlio Gouveia-Carvalho, Wilson Antunes, Tiago Gonçalves, et al.

The 12th International Symposium "MINE ACTION 2015"- 27th to 30th April 2015, Biograd, Croatia

Source:https://www.academia.edu/21524442/Unmanned_Aerial_Vehicles_in_CBRN_environment_Sensors_review_and_concepts_of_operations

Recent crisis like the use of chemical warfare agents in Syria and the Fukushima accident, presents a need for new technologies, which may lead to the deployment of unmanned aerial vehicles (UAV) to detect chemical, biological, radiological and nuclear (CBRN) threats in the future. Unmanned aircrafts are an ideal choice when operations are required in environments that would be hostile to a manned aircraft or its crew. Airborne sampling or observation missions related to CBRN threats would be ideally suited to unmanned aircrafts. Sensors can be fitted to a range of types, from a small man-portable system for local tactical use, to large aircraft-sized systems for global monitoring. This review aims to describe some trends on CBRN sensors and integration on UAV platforms and also to identify concepts of operations involving the use of UAV in a CBRN scenario.

From the technical perspective the biggest challenge is to combine the avionic flight system of the UAV, the sensor systems and the wireless communication link while guaranteeing the absence of any mutual interference. Another issue that is addressed is related to the need for decontamination of the platforms after an operation in a "hot zone". Modular approach with disposable components or the use of low-cost systems could be a solution where smaller systems can be disposed in a safe area once data has been gathered rather than having to recover to an airfield where it would have to be decontaminated, or risk contaminating personnel and other equipment. The knowledge of CBRN sensor technologies, future trends and concepts of operations are some of the main issues that should be addressed for identifying research and development (R&D) opportunities for further development of UAV for CBRN operations.

New mini-drones or not?[1]

Western Tech in Iranian Drones Is Helping Russia in Ukraine

By Natalie Sedletska, Maksym Savchuk, Kyrylo Ovsyaniy, and Carl Schreck

Source: https://www.homelandsecuritynewswire.com/dr20221105-western-tech-in-iranian-drones-is-helping-russia-in-ukraine

Nov 05 – Over the past five years, Iranian officials and state media have touted the "indigenous" ingenuity in the Islamic republic's mass-produced Mohajer-6 combat drone, which Russia has deployed in its war against Ukraine.

But a new investigation by Schemes, the investigative unit of RFE/RL's Ukrainian Service, has found that electronic components underpinning Tehran's production of the Mohajer-6 are far from homegrown.

The Mohajer-6 drones contain components produced by companies from the United States and the European Union, both of which have sanctions restricting the export to Iran of such technology that can be used for both civilian and military purposes – dual-use technology.

The presence of these components in the Mohajer-6 does not mean their producers are in violation of U.S. or EU sanctions, and RFE/RL does not have evidence that this is the case.

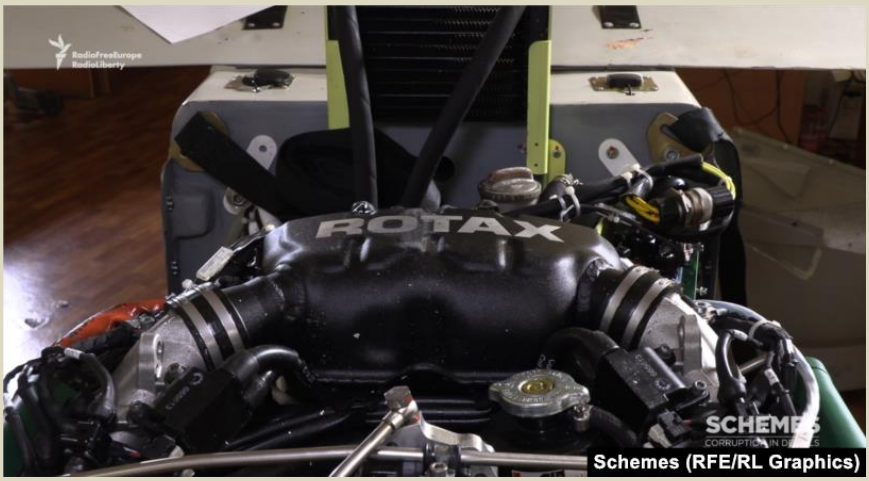
[1] A terrestrial Orchid native to Asia, ***Habenaria radiata*** produces exquisite white flowers on flower spikes that are generally 5-9 inches long, occasionally longer. The plants grow from fleshy tubers and produce strap-like, dark green leaves. They are slow to emerge in spring.

The investigation also found Mohajer-6 components produced in China, including a real-time mini-camera made by a Hong Kong firm that said it was "very sorry" that its products were being used in war.
At least one major foreign-produced component of the Mohajer-6 has previously been identified by reporters in a Mohajer-6 recovered from the battlefield by the Ukrainian military: an engine made by the Austrian manufacturer BRP-Rotax GmbH & Co KG, a subsidiary of the Canadian company Bombardier Recreational Products.
But Ukrainian intelligence assesses that the Iranian combat drone contains components from nearly three dozen different technology companies based in North America, the EU, Japan, and Taiwan, the Schemes investigation has found. A majority of these companies are based in the United States.
A Schemes reporter who personally inspected the foreign-made drone parts identified components produced by at least 15 of these manufacturers.
These include parts made by the U.S. technology firm Texas Instruments, which said in a statement that it does not sell into Russia or Iran and complies with applicable laws and regulations.
To identify these components, Schemes reporters examined parts of the Mohajer-6 drone that the Ukrainian military shot down over the Black Sea near the Mykolayiv region coastal town of Ochakiv. They also reviewed Ukrainian intelligence records on the sources of these components.
The drone also contains a microchip bearing the logo of a California technology company and a thermal-imaging camera that Ukrainian intelligence says may have been produced by a firm based in Oregon or China.
Both Western officials and experts on illicit technology transfers say Iran has built a broad, global procurement network using front companies and other proxies in third countries to obtain dual-use technology from the United States and the EU.
"Exporters will look at the request coming from the [United Arab Emirates] or another third country, and they'll think that they're selling to an end user based there, when really the end user is in Iran," Daniel Salisbury, a senior research fellow with the Department of War Studies at King's College London, told RFE/RL.
In September, the U.S. Treasury Department imposed sanctions specifically targeting Iranian companies that Washington links to the production and transfer of unmanned aerial vehicles (UAVs) to Russia for deployment in its war on Ukraine. Fighting rages with no sign of an end more than eight months after Russian President Vladimir Putin launched an unprovoked invasion on February 24.
"Non-Iranian, non-Russian entities should also exercise great caution to avoid supporting either the development of Iranian UAVs or their transfer, or sale of any military equipment to Russia for use against

Ukraine," U.S. Undersecretary of the Treasury for Terrorism and Financial Intelligence Brian Nelson said in a statement announcing the sanctions.

Chinese Cameras, California Chips

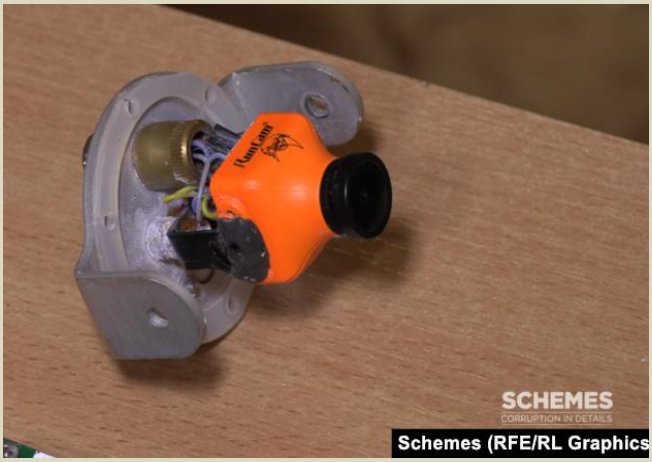
Development of the Mohajer-6, the latest model in a series of drones Tehran has used since the 1980s Iran-Iraq War, began in 2017, while mass production began the following year. During a ceremony commemorating the Islamic Revolution, then-Iranian Defense Minister Amir Hatami said that the new tactical drone could perform surveillance, reconnaissance, as well as help destroy targets. Hatami extolled what he described as the drone's domestic design, a portrayal echoed in later reports by Iranian media.



An engine of the Austrian company Rotax was found in the Mohajer-6 drone.

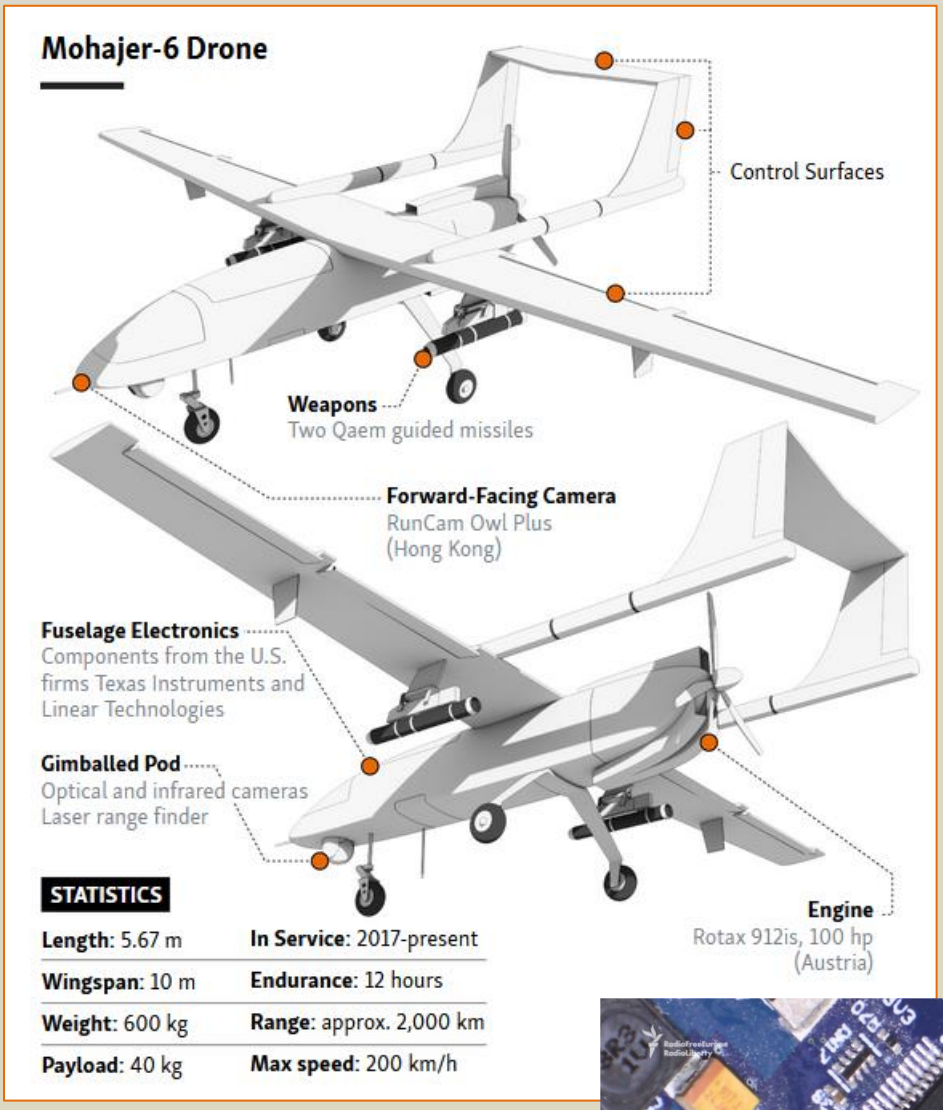
"The homegrown drone was made through cooperation among the army, Defense Ministry, and Quds Aviation Industries," the English-language Tehran Times quoted an Iranian military official as saying in July 2019.

The dismantling of the Mohajer-6 drone recovered by the Ukrainian military shows that the UAV is packed with foreign components.
One of these parts is a bright-orange real-time mini-camera produced by the Hong Kong-based company RunCam Technology. Documents seen by Schemes show that Ukrainian intelligence has also identified RunCam as the producer of the camera, which likely assists in remote guidance of the drone.



This camera of the Hong Kong company RunCam was found in the Iranian drone.

Founded in 2013, RunCam is involved in the development and production of so-called "first-person-view" real-time cameras. "Our users are our friends," the company's website states. The site says that RunCam has two authorized Iranian dealers. Reached by Schemes for comment about the use of its camera in the Iranian drone deployed by Russia in its war on Ukraine, RunCam said in an e-mailed response: "We are very sorry to know that RunCam's products were used in warfare. RunCam is specialized in producing products for model aircraft hobby. We never contact any customer related to military."
The provenance of the Mohajer-6 drone-s thermal-imaging camera is more difficult to determine. A Ukrainian intelligence assessment reviewed by Schemes indicates it could be the Ventus Hot model produced by Sierra-Olympic Technologies, based in the U.S. state of Oregon, but that it also resembles a cheaper analog available for sale by the Chinese company Qingdao Thundsea Marine Technology.
Qingdao Thundsea Marine Technology said in an e-mailed statement that the company did not "have any business with Iran," because "it will affect our business." The company said it specializes in marine services and is not involved in manufacturing. It also said that it did not have a single successful order for its online advertisement of the thermal-imaging camera resembling the one recovered from the Iranian drone.
Sierra-Olympic Technologies did not respond to a request for comment on the possible use of its thermal-imaging cameras in Iranian combat drones in time for publication.
Microchips recovered from the drone also featured the logos of the California-based company Linear Technology Corporation and its parent company, the Massachusetts-based semiconductor company Analog Devices, Inc. (ADI). ADI did not respond to an e-mailed request for comment on the possible use of its technology in the Iranian combat drone.



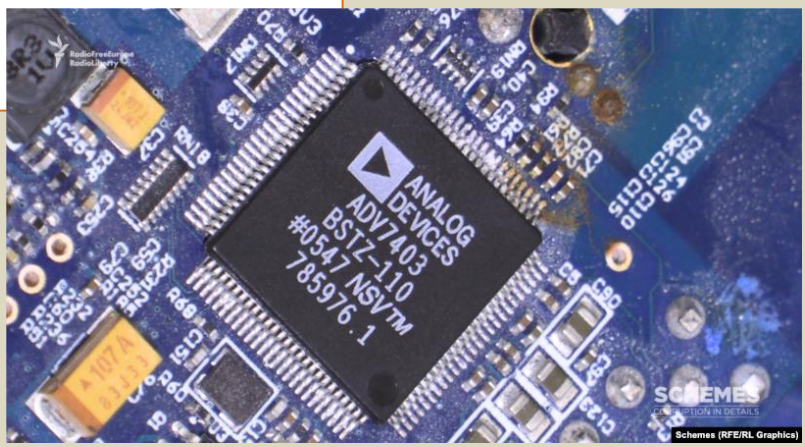
Schemes reporters also observed among the components of the Iranian drone a voltage step-down converter produced by Texas Instruments. The company said in an e-mailed statement that it "does not sell into Russia, Belarus, or Iran."

"TI complies with applicable laws and regulations in the countries where we operate, and does not support or condone the use of our products in applications they weren't designed for," Texas Instruments said.

Schemes reporters also saw several components produced by the California-based technology manufacturer Xilinx, whose parent company is the multinational semiconductor company Advanced Micro Devices (AMD), also based in California.

According to Ukrainian intelligence, one of these Xilinx components was integrated into a video data-link module located in the wing of the Mohajer-6 that helped carry out attack missions.

"This module transmits information from the board to the missile head. That is, guidance for the missile. With the help of this module, it was possible to guide the missile to the target," a Ukrainian military intelligence representative told Schemes.



A microchip of the U.S. company Analog Devices was found in the Mohajer-6 drone.

AMD did not respond to a request for comment in time for publication.

'No Authorization'

Previous media reports about the components of the Mohajer-6 drone, including by CNN, have shown evidence that its engine was produced by the Austrian manufacturer BRP-Rotax GmbH & Co KG, whose parent company is the Quebec-based Bombardier Recreational Products (BRP).

The Canadian company responded to the reports on October 21, saying in a statement that it "has not authorized and has not given any authorization to its distributors to supply military UAV manufacturers in Iran or Russia."

"As soon as we were made aware of this situation, we started an investigation to determine the source of the engines," BRP said. .

But Schemes reporters found that the authorized Rotax distributor listed on the Austrian manufacturer's website advertised itself as a Rotax aircraft engines distributor for Iran as recently as December 2020.

The distributor, the Italian company Luciano Sorlini S.p.a., has posted multiple magazine advertisements on its websites in which it describes itself as a Rotax distributor for numerous countries. Prior to January 2021, Iran was listed among these countries.

The Rotax website also lists a Tehran-based company — MahtaWing — as an official service center for its engines. The company, known in Persian as Mahtabal, conducts repairs of Rotax engines, including the Rotax 912 iS, the engine that was found in the Mohajer-6 combat drone recovered in Ukraine.
BRP said in an e-mailed statement on November 4 that while Luciano Sorlini S.p.a. is the appointed distributor of Rotax aircraft engines in Iran, "since 2019, no Rotax engines have been sold in Iran, and we will not sell any engines to Iran moving forward."
The Canadian company said it had "internal controls" that "significantly" restrict the sale of its products for military purposes.
"For example, the sale of any BRP product to operators with any military activity in Iran, Turkey, and Russia is strictly prohibited," BRP said. "We conduct our business in compliance with all EU, Canadian, and U.S. applicable regulations."
BRP described the Iranian company MahtaWing as a "local service center" that "offers maintenance services for previously sold aircraft engines."

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Shahriar Siami of *RFE/RL*'s Radio Farda contributed to this report.

●▶ **Read also:** https://www.rferl.org/a/ukraine-russia-drones-iran-western-technology/32115733.html

EDITOR'S COMMENT: The main conclusion is that despite wars and sanctions global businesses continue as usual!

Counter-Drone Legislation Needs a Major Overhaul

By Mary-Lou Smulders
Source: https://defenseopinion.com/counter-drone-legislation-needs-a-major-overhaul/286/

Nov 04 – Pressure is mounting in Congress to update legislation that guides the use of defensive systems that protect against aerial drones. At present, the legislative framework underpinning the use of these systems needs major revision because it was formulated at a time before the widespread proliferation of drone technology. The Preventing Emerging Threats Act, the law providing the authority to stop dangerous or threatening drones in flight to a select group of federal agencies, was set to expire in October. Congress was faced with a choice of letting it expire, extending or "reauthorizing" the law as is or further limiting or expanding authorities to state, local, tribal and territorial governments. Congress chose to extend the law until mid-December 2022, after the midterm elections.

The hope is that Congress in its lame duck session will tackle this mostly bipartisan security issue by the end of the year.

Restrictive rules governing drone defense

As a general rule, companies and government agencies can legally deploy systems designed to detect, track and identify drones and their operators as long as they are not decoding the communication between the drone and the remote, because doing so is considered a violation of the federal Wiretap Act. Additionally, the law is restrictive concerning drone detection at airports, requiring that the systems be completely passive – they can emit no electronic output because that might interfere with airport operations. As a result, drone detection systems that use radar are forbidden at airports. Also, with few exceptions, any technology that can read the serial number of a drone or can take complete control over a drone is illegal today in the U.S. As for stopping a threatening drone once detected, many of the same technologies that detect drones, including Dedrone's, can also integrate with another system to mitigate that threat, either by physically interfering with, hacking or jamming it. But under current law, drones are considered aircraft, so U.S. law protects a drone at the same level as an airliner loaded with people. Consequently, only the Department of Justice, Department of Energy, Department of Defense and the Department of Homeland Security have authority to use technology to stop drones in flight. These agencies cannot delegate that authority to local or state law enforcement agencies.

A push for legislative changes

Fortunately, pressure is building to update current laws given the spread of drone technology, with the White House leading the way. In April, the White House published a Domestic Counter-Unmanned Aircraft Systems National Action Plan urging Congress to expand mitigation authorities through a pilot program with state, local, tribal and territorial agencies. And in August, the White House sponsored the Advanced Air Mobility Summit, which included leaders from industry and government.

Current legislation lags behind technology and a change in the current laws is clearly needed. The suggestions proffered from the White House include:

- Creation of a five-year pilot program for selected local law enforcement agency participants to perform drone mitigation activities.
- Establishment of an authorized equipment list for authorities to use for drone detection and for drone mitigation so authorities know what they can and cannot use.
- Authorization of critical infrastructure sites to invest in mitigation equipment to be installed onsite and used by those with authority to do so.
- Creation of a national, federal database tracking drone incidents in order to better understand the threats pose.

The pilot program is the most intriguing of these suggestions. By allowing local agencies the authority to mitigate dangerous drones and offering guidance on approved technologies, law enforcement at all levels can get a better understanding of how to best use detection and mitigation technologies to protect their communities, increasing adoption rates overall. With all this in mind, a next step could be a focus on passing a measure under consideration in the Senate called the Safeguarding the Homeland from the Threats Posed by Unmanned Aircraft Systems Act. In its current form, the act takes some cues from both earlier legislation and the White House's action plan. It would extend authority to the TSA to protect transportation infrastructure from drone threats, which can cost airports, airlines and passengers dearly. Drone threats aren't going away. The FAA estimates that more than 2.3 million drones will be registered by 2024, to say nothing of the drones that go unregistered. The growth also means that the potential for someone or some group employing drones for nefarious purposes also is growing. Local authorities need to be ready — and Congress must act soon to increase the safety of our skies and the people and critical infrastructure below.

Mary Lou Smulders is chief marketing officer for Sterling, Virginia-based Dedrone, which delivers world-class drone detection and mitigation solutions used in 38 countries.

This Smart Glass Will Revolutionize Robotics

Source: https://i-hls.com/archives/105004

Nov 12 – A new smart glass development will contribute to various commercial and security applications, ranging from imaging to advanced robotics. Photodetectors, also known as photosensors, convert light energy into electrical signals to complete tasks such as opening automatic sliding doors and automatically adjusting a cell phone's screen brightness in different lighting conditions.

A team of Penn State researchers in ACS Nano seeks to further advance photodetectors' use by integrating the technology with durable Gorilla glass, the material used for smart phone screens that is

manufactured by Corning Incorporated. This could lead to the commercial development of "smart glass," or glass equipped with automatic sensing properties.

"There are two problems to address when attempting to manufacture and scale photodetectors on glass," said principal investigator Saptarshi Das, assistant professor of engineering science and mechanics (ESM). "It must be done using relatively low temperatures ..and must ensure the photodetector can operate on glass using minimal energy."

To overcome the first challenge, the team determined that the chemical compound molybdenum disulfide was the best material to use as a coating on the glass.

Then they used a chemical reactor at 600 degrees Celsius — a low enough temperature so as not to degrade the Gorilla glass – to fuse together the compound and glass. The next step was to turn the glass and coating into a photodetector by patterning it using a conventional electron beam lithography tool.

If developed commercially, smart glass could lead to technology advances in wide-ranging sectors of industry including in manufacturing, civil infrastructure, energy, health care, transportation and aerospace engineering, according to the researchers. The technology could be applied in biomedical imaging, security surveillance, environmental sensing, optical communication, night vision, motion detection and collision avoidance systems for autonomous vehicles and robots.

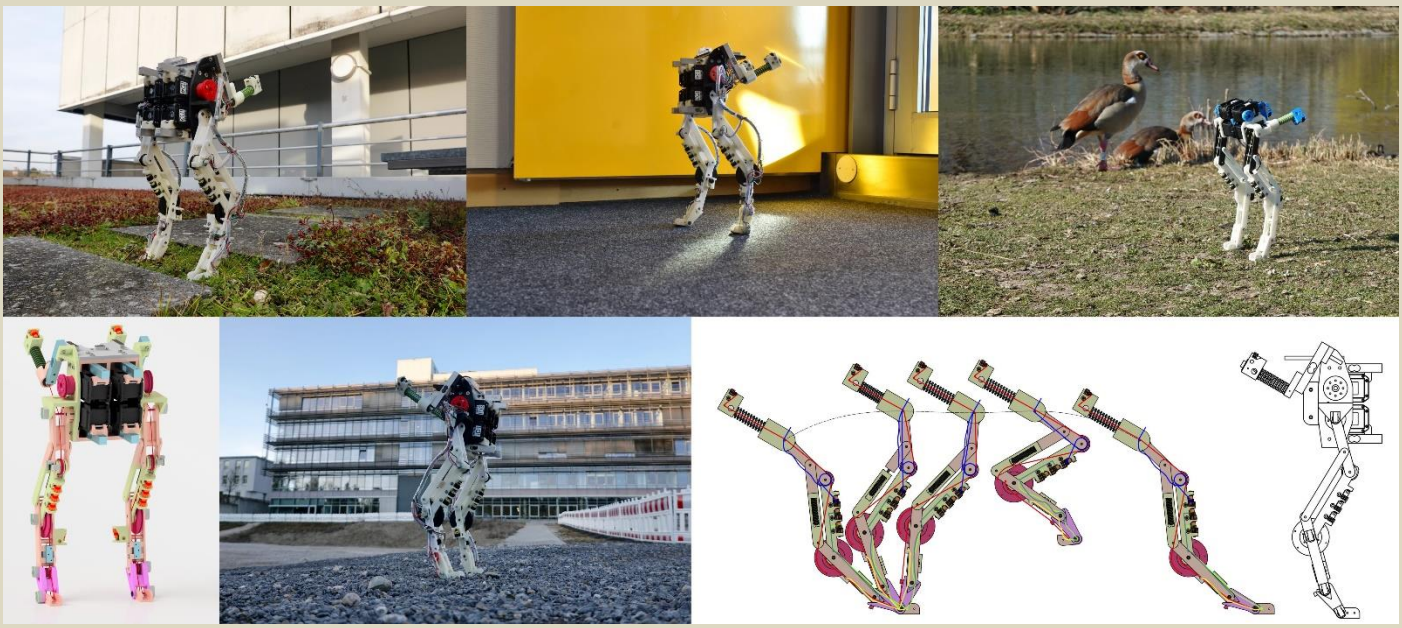
Other uses could include car windshields that will adapt to oncoming high-beam headlights when driving at night by automatically shifting its opacity using the technology, aircraft windows that can automatically dim sunlight by pilots and passengers, and more, according to news.psu.edu.

Animal Inspired Technology Creates New Form of Robots

Source: https://i-hls.com/archives/113875

Nov 10 – Many birds spend most of their energy in flight, though they are able to walk when speed is not as critical, but other birds, like the ostrich, excel at running. Birds' knees are opposite those of humans and more like those of animals that walk on all fours. Researchers from the Max Planck Institute in Germany have studied bird joint designs over millions of years of evolution. With tendons stimulated by

cables and pulleys, their smart joint system contributes to dramatic resource savings, as BirdBot requires only two motors (while robots have required each joint to have a motor).



As robotics advances, the way in which we use robotics will change. According to screenrant.com, to increase the efficiency of robotic systems in the future, it is essential to design more efficient and resource-efficient walking mechanisms. Different conditions may make charging impossible, and high energy capacities contribute to weight. Therefore, the BirdBot is designed so that its legs don't consume energy while it's standing (relaxing), in addition to the knee motor that helps to save additional energy while the BirdBot is moving.

After millions of years of natural selection, the BirdBot utilizes nature-inspired solutions, which are also showing success in the laboratory. It is possible that such developments may result in reducing the costs of manufacturing and developing robots in the future, as well as leading to further development of two-legged robots.

Microdrones: the AI assassins set to become weapons of mass destruction

Source: https://www.telegraph.co.uk/global-health/terror-and-security/drone-assassins-micro-killing-machine/

Nov 14 – Drones are in the news again, but not as we have come to know them. In August, Britain announced it was sending 850 Black Hornet "microdrones" to Kyiv for use in close-quarters combat.

The idea was (before the spectacular Russian collapse in recent weeks) that they would lend Ukrainian troops a crucial edge in the vicious urban fighting that was expected as they sought to liberate their towns and cities.

These machines are a far cry from the large unmanned aerial vehicles (UAVs) associated with the war on terror, the ubiquitous Predator and Reaper drones that delivered death from the upper skies with almost god-like insouciance.

Black Hornets are actually more like a child's toy. Measuring just over six inches and weighing a little less than a plum, they will literally peer round corners and sneak through windows.

Black Hornets are more like a child's toy than military weapon Credit: Ben Stansall/WPA Pool/Getty Images

Due to their minimal rota noise, they can creep right up on the enemy, entering Russian compounds and defensive positions (any that are left) and beam back high-definition footage and stills via three cameras mounted in the nose.

The Hornet is piloted by a frontline soldier via a small iPad-style screen and a hand controller that would not look out of place on a 1990's games console. At £10,000 a pop, but bound to get cheaper, it offers

what soldiers since before Thermopylae have craved: situational awareness and the ability to "see over the hill" – without having to send some poor blighter to the top of it.

Dominic Nicholls, The Telegraph's Associate Editor, knows only too well the value of a remote pair of eyes. He used drones, big and small, on numerous operations, including in Iraq and Afghanistan.

Ukrainian soldiers launch a drone in northern Kherson Credit: HANNIBAL HANSCHKE/EPA-EFE/Shutterstock

"The drones I worked with allowed us to make decisions based on the best available real-time information," he says. "That might have been selecting the best helicopter drop-off points for soldiers assaulting a position, or talking other assets on to potential threats."

Just as in civilian life we will shortly be using small drones to deliver our packages, militaries are now finding uses for them that a few short decades ago would have been written off as science fiction.

Ukraine in particular offers a very public demonstration of their versatility – and a glimpse of the future.

The first major war to be played out in real-time on social media, the conflict has sparked a small revolution in drone innovation, with commercial and domestic models – many of them donated by the West – hacked and modified to deliver lethal force.

It is now commonplace to go onto Twitter and see footage of an adapted drone, which last year might have filmed your wedding, dropping a grenade onto a bivouac of sleeping Russian infantry, or through the hatch of a tank. Intelligence suggests this has been somewhat bad for morale. The invaders feel hunted, spending as much time looking up as forward.

In short, drones are having a very good war. They are clearly the future. And if the machines can help technologically advanced nations like the West and its allies win battles while sparing their troops, what's not to like?

'A moral line is being crossed'

Well, if a growing movement of really quite eminent scientists is anything to go by, rather a lot. What, they ask, if the machines are becoming too effective?

For the apparently positive example of Ukraine, they might well counter with those of Libya and Gaza. That's because these are locations where – amid all the usual horrors – small drones are recently suspected not only to have killed people, but to have done so autonomously, independent of human control.

Minor blips on the radar, you could argue. But across the world a moral line is being crossed. We are entering the much prophesied age of the killer robot – a march put on steroids by the availability of increasingly cheap and effective unmanned flying machines and the artificial intelligence driven by the demands of the smartphone.

The question is, do we know what we unleashed? And, by the time we've worked it out, will it be too late?

To illustrate the point, it is worth understanding what systems like Black Hornet cannot do.

Announcing the UK's aid package, Defence Secretary Ben Wallace described them as "cutting-edge". But even a lowly computer science graduate student would roll their eyes at that. Why? Because it ignores the fact that the Hornet still requires a soldier to put him or herself in danger by getting close enough to the enemy (less than 2km) to pilot it into position, and that once there the drone can only act passively, as a reconnaissance tool. In short, it cannot think for itself and it cannot kill.

But that is changing rapidly.

In 2017 a short film was premiered at a United Nations diplomatic conference in Geneva which, to put it mildly, ruffled some feathers. Titled Slaughterbots, it portrayed a fictionalised slick, Steve Jobs-style tech presentation introducing a microdrone small enough to fit in the palm of your hand.

The audience laughed and clapped as the machine playfully dodged the presenter's attempts to grab it. Even when he didn't try, it seemed to dance in the air, apparently displaying its "stochastic motion" anti-sniper function.

The best part? "It's all AI," the presenter says smugly, in the film. "Its processor can react 100 times faster than a human." In other words, it controls itself. He goes on: "Just like any mobile device these days, it has cameras and sensors, and just like your phones and social media apps, it does facial recognition."
He then reveals that inside the tiny four-rotored drone, which has by now landed gently in his hand, is three grams of "shaped" explosive.
He throws it into the air, whereupon it swiftly recovers its orientation and charges like a bolt of lightning at a nearby mannequin, blowing a small hole in its forehead. "That little bang," we are told, "is enough to penetrate the skull and destroy the contents."

Pretty terrifying: a small, inexpensive drone using facial recognition to select and kill a target, free from any direct human control.

A still from the short film, showing a human target in the crosshairs of the fictional microdrone Credit: Slaughterbots/The Future of Life Institute

Slaughterbots, of course, is not a documentary. But how close are we to the real thing?
Stuart Russell is professor of computer science at the University of California, and was a sponsor of the 2017 film, which has now been viewed more than 75 million times.

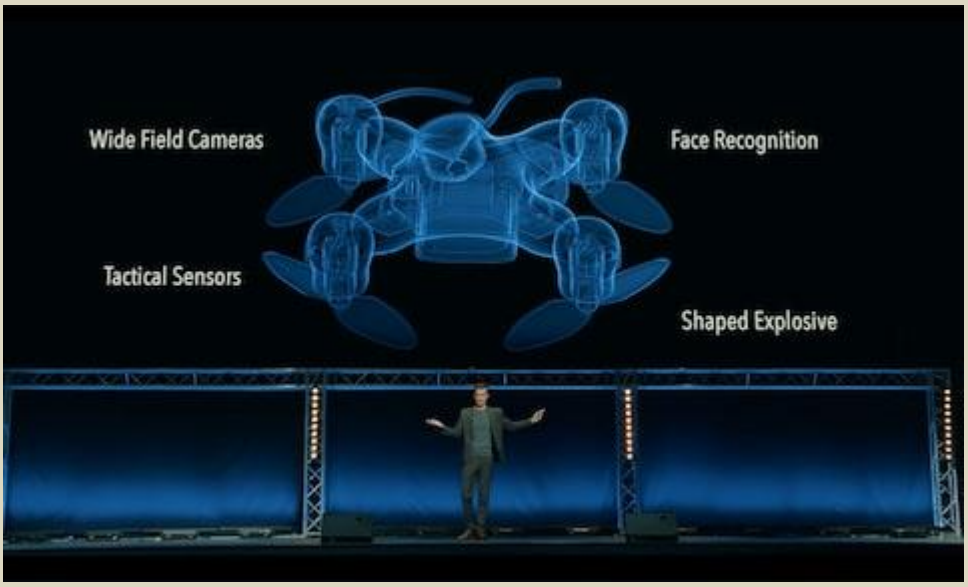
Perhaps it's his measured British accent, or the box of PG Tips visible in his Berkley office as we talk via Zoom, but he doesn't come across as a common or garden doom monger. In fact, he is one of the world's leading brains in this field and delivered last year's Reith Lectures on the subject of living with artificial intelligence.
The key point, he says, is that the technologies required for a lethal microdrone of the type portrayed in the film already exist. They just need to be improved in some areas, shrunk down and integrated.

A still from the film shows plane releasing a swarm of microdrones Credit: Slaughterbots/The Future of Life Institute

"There are some technical issues in miniaturisation which have to do with batteries and range and how much onboard power you need to support the computer processing you need to have a fully autonomous system," he said. "But really that's an engineering task. There's no science fiction stuff that needs to happen. On most of that we're already there."
To build a truly high-performing microdrone, you would probably design your own lighter and more power-efficient computer chip, known as an Application-Specific Integrated Circuit (Asic), rather than using a general purpose chip. But that's perfectly doable.
The fictional Slaughterbots presenter said it himself: a lot of the tech that would enable that microdrone to find you and then decide whether or not to kill you – cameras, facial recognition, geolocation – already exists in your smartphone.

Had the film ended there it would have been unsettling enough. But it goes on to show the devices operating as part of a pack, or "swarm", hunting down a bunch of supposed bad guys. And this is really the whole point of the armed microdrone concept. On its own, one could be very nasty, but as part of a coordinated group, an absolute nightmare.
AI computer systems could be "trained" to operate multiple drones as a team, penetrating buildings, trains, cars, pretty much immune to bullets and less vulnerable to electronic jamming because they're not being controlled remotely.

'No measure of security'
Just picture it: a couple of the team attach themselves to an air duct on the side of a building, blow themselves up, and the rest swarm in through the filtration system, perhaps programmed with facial, iris or even gait recognition software.
Dominic Nicholls imagines their use in war. "Once let loose across enemy lines to hunt for specific targets, no senior commander, no matter how close to the action, will ever feel any measure of security on the battlefield."
Again, we are not there yet, but if this scenario is futuristic, then it's the near future.
For years now, drones have been working autonomously in teams for tasks like search and rescue and cleaning up oil spills. And the first signals of their use for lethal force are beginning to emerge.



Programming drones to attack gun-carrying humans in military uniforms is technological 'child's play' Credit: Slaughterbots/The Future of Life Institute

In 2020 a skirmish in Libya involved the possible use of a Turkish-made autonomous lethal drone called Kargu-2. According to a UN report, this was used to hunt down and engage a logistics convoy affiliated to the warlord Khalifa Haftar, marking the known battlefield debut for that class of weapon.
Last year, meanwhile, it was reported that the Israel Defence Forces deployed a swarm of drones to locate, identify and attack Hamas militants, thought to be the first time a swarm has been used in combat.
None of these strictly speaking were microdrones. But the proof of concept, particularly in the case of the Gaza incident, is clear enough.
"So what?" you might ask. After all, the history of warfare is in one sense defined by the introduction of new and unpleasant weapons that make it easier to kill the enemy. Aren't microdrones merely the latest?
Yes and no. The crucial factor, according to Professor Russell, is "scalability" – not a particularly sexy word, but one with potentially era-defining implications.
Let's return to Slaughterbots, the short film he backed that has gained such currency among LAWS (Lethal Autonomous Weapons Systems) sceptics. In its second act we leave the imagined tech presentation theatre (with its deceased mannequin) and pan instead to a large military cargo plane in flight.
"We are thinking big," the voiceover states. "A $25 million order now buys this…Enough to kill half a city – the bad half."
With that the rear door of the aircraft opens and thousands of microdrones tumble out, activate in the air and begin buzzing towards the ground like malevolent wasps. This is a swarm, but on a different scale. The microdrone has effectively become a weapon of mass destruction.
If that sounds over the top, consider that only a few years ago the Black Hornet cost around $80,000 a unit; now they're an eighth of that price.
It is astronomically difficult to build your own nuclear weapon, or even to buy one, if the international community disapproves. Just ask Iran. But as autonomous drone technology proliferates as an increasingly mainstream aspect of commercial and recreational life, the same will not be true of swarms.
How hard would it really be for a malign state to set up a super factory that pumps out hundreds of microdrones a week, or a terrorist group like Isis or Al-Qaeda simply to buy the machines on the open market?

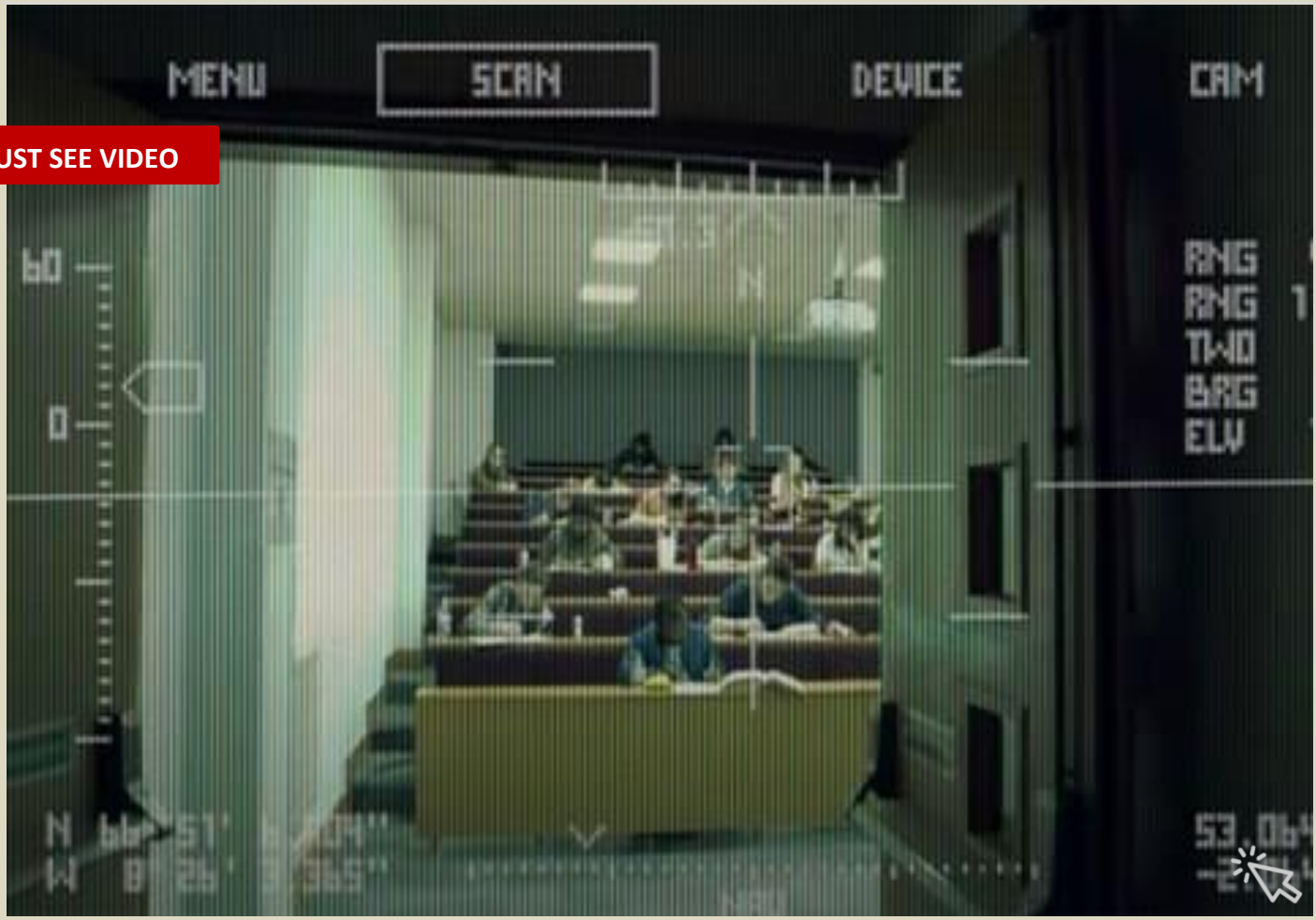
Most observers believe – albeit perhaps wishfully – that Vladimir Putin will not resort to a nuclear attack for fear of the international response. But would the man who shows no compunction in flattening civilian areas with artillery hesitate to use a mega swarm of killer microdrones to re-take Kharkiv or Izium?
Programming drones to attack gun-carrying humans in military uniforms is technological child's play. But why stop there? Why not also automatically track mobile phone use and take out civilians who have posted pro-Kyiv content on Twitter or Instagram?
This kind of integrated capability may still be years away; military procurement (the F-35 fighter, for example) is normally measured in decades. Equally, it could be much closer.

'Easier than a Manhattan project'
Professor Russell says there are clear parallels with the creation of the atom bomb. By the end of the 1930s, much of the theoretical heavy lifting, such as identifying which uranium and plutonium isotopes to enrich, was in place.
But a big push was needed to engineer this into a working reality. In 1943 the US government opened its chequebook, gathered the nation's finest scientists in Los Alamos, New Mexico and diverted one per cent of the country's entire electricity supply to their endeavours. Two years later they had their bomb.

Just a few years ago the Black Hornet cost around $80,000 a unit; now they're an eighth of that price. Credit: Luke MacGregor/Bloomberg

"It's a matter of will," he says. "If we wanted to create that kind of weapon, I think we could do it in 18 months. It's easier than a Manhattan project."
These concerns are not confined to the university campus.
Chris Cole is a softly spoken, thoughtful kind of chap. He runs a website called Drone Wars UK from his home in Oxford which aims to document and warn against the use of armed drones, and particularly British involvement.
"There's an ethical issue when machines decide who to kill," he said. "That line is being corroded all the time. We are getting to the stage when humans are rubber-stamping decisions being made by machines."
Mr Cole and his team spend much of their time organising public meetings and mass letter-writing campaigns, as well as occasionally taking to law to challenge alleged government secrecy on the subject.
If that sounds familiar, perhaps it's because his organisation has firm links with the Campaign for Nuclear Disarmament and various anti-arms trade bodies. But that in itself is revealing: the potential for nuclear armageddon remains, but its longtime opponents now appear to view the rise of small plastic robots as a comparable threat.
Might we be entering a new arms race similar to that of the 1940s and 50s?
The west is in a quandary. Its leading military powers clearly view autonomous weapons as the future of warfare. But they are understandably sensitive about public reaction to the idea of fully-independent killer robots. Many of us grew up on the Terminator movies, after all.
The US Department of Defence has since 2012 operated under self-imposed Directive 3000.09. It's vague. Some understand it to mean that a human has to be present in the decision-making "loop", although others disagree, or say this stipulation is easily overridable anyway.
Look carefully and the direction of travel appears plain. Announcing an update to its CODE (Collaborative Operations in Denied Environment) program some years ago, a DARPA (Defence Advanced Research Projects Agency) official said: "Just as wolves hunt in coordinated packs with minimal communication, multiple CODE-enabled unmanned aircraft would collaborate to find, track, identify and engage targets, all under the command of a single human mission supervisor."

MUST SEE VIDEO



Leading military powers view autonomous weapons as the future of warfare Credit: Slaughterbots/The Future of Life Institute

The fundamental nature of battle in the middle part of this century and beyond depends upon exactly what that supervision entails. Some countries see the direction of travel and want it to halt: since 2014 dozens have signalled their support for a treaty banning the use of autonomous killer robots. Others want to get ahead.

These are big players. Neither the US, China, India, nor Russia has arguably shown much real willingness to sign up. Nor, for that matter, has Britain. This year the RAF killed off its Project Mosquito drone (swarm) program, under the auspices of 216 Squadron, but only in order to move forward with plans for a better replacement.

'Window to act is closing fast'

"This is one of the few areas where the US, UK and Russia are all in agreement: that we should create this new class of weapons," Professor Russell chuckles ruefully (needless to say, he supports a ban). His frustration is evident. "I think the UK could have a significant role to play if it were to engage seriously with the issue. The window to act is closing fast."

Approached ahead of this article, the Ministry of Defence denied that the UK possessed fully autonomous weapons systems, i.e. those without "context-appropriate" human involvement, or that it intended to use them.

It said its strategy was to promote "safe and responsible" military development of AI in concert with allies and push for compliance with current international law, which it described as "highly effective".

Perhaps, as with nuclear, there is no halting the march of technology. And is it not natural, indeed humane, to seek ways to keep soldiers out of the line of fire?

Major General Jonathan Shaw has seen the bloody cost of conflict up close, first as a platoon commander with the Parachute Regiment in the Falklands, later commanding a multi-national division in southern Iraq. "Why are people interested in the air?" he asks. "It's because in the army we're always asking ourselves 'what's over the hill'?" Microdrones, he says, "allow you to fight a war without human costs."

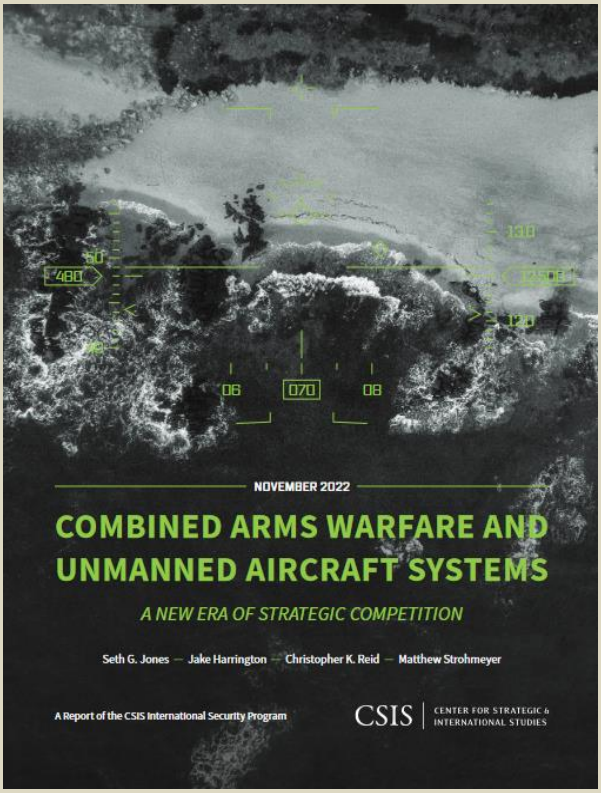
Although not expressing a view on the question of automation, he said that with drones "you're killing more of the enemy without any extra cost to yourself, and that's always the goal. They would have been really useful in the Falklands. There were numerous casualties."
As a simple statement of fact, which is no more than the General intended, it's difficult to argue with. But perhaps this view begs a certain question.
Artificial Intelligence – robots, in other words – are demonstrably better than humans at a large and growing range of activities, from playing chess to piloting aircraft. But, if you take into account the crucial moral factor, can they ever be better at deciding who gets to live and who should die?
Remember, the introduction of self-driving cars is currently snagged on just this dilemma.
For all their many messes and controversies, the Predator and Reaper drone strikes that we became so familiar with after 9/11 were, as far we know, fully controlled, not just "supervised", by people.
"There's no euphoria after a drone strike," says Dominic Nicholls. "I'd describe the overwhelming emotion as one of relief. You have to trust the intelligence that has taken you to the point of deciding to use lethal force against an individual. But once that decision is taken you want the act to be carried out in as efficient a manner as possible.
"I never saw anyone punch the air or in any way take delight in the violent death we had just brought about. Most people, if they expressed any thoughts at all, were measured, professional and glad all parts of the system had worked."
It's not perfect. But it is human.

Combined Arms Warfare and Unmanned Aircraft Systems

A New Era of Strategic Competition

Source: https://www.csis.org/analysis/combined-arms-warfare-and-unmanned-aircraft-systems

Download the Report



Nov 10 – Unmanned aircraft systems (UASs) have played an important role in warfare over the past two decades, including to conduct counterterrorism operations. But there has been a growing debate about their utility for competition and interstate war. To better understand the utility of UASs, this report adopts a comparative case study approach and examines the Nagorno-Karabakh war in 2020, Ukraine war in 2022, and Northern Edge-21 exercise in the Indo-Pacific in 2021. These cases demonstrate that UASs have been increasingly integrated into combined arms warfare, a major change from the past. In addition, UASs are likely to play an increasingly important role in several types of missions as part of strategic competition and warfare with such countries as China and Russia, including early warning, domain awareness, targeting for standoff attacks, strike, electronic warfare, and information operations.

Drone taxi take first spin in air traffic near Paris

Source: https://www.reuters.com/lifestyle/science/drone-taxi-take-first-spin-air-traffic-near-paris-2022-11-10/

Nov 10 – An electric helicopter with multiple rotors took its first flight in conventional air traffic near Paris on Thursday as it prepares for commercial flights from 2024.
The Volocopter test aircraft, which resembles a large drone with **eight rotors**, took off with a passenger on board from the Pontoise-Cormeilles airfield outside Paris and briefly circled around while other aircraft were in the vicinity.
German company Volocopter CEO Dirk Hoke said that in the next 18 months it will prepare its craft for certification and said he hopes to launch short commercial flights by 2024, when Paris holds the Summer Olympic Games. The company wants its **two-seater aircraft** to eventually take to the skies fully automated, with only passengers aboard, but admits that a lot of work was still needed in terms of infrastructure, airspace integration and public acceptance.

Test pilot Paul Stone said that the craft's digital fly-by-wire system and multiple rotors make it much easier to fly than a traditional helicopter. "In a helicopter, when you move one control, three things happen, and it's like patting your head and rubbing your tummy - it's a coordination exercise. In this aircraft, they take away all that difficulty, and it's very simple controls in each axis, that's what makes it easier to fly," he said. Valérie Pecresse, president of the Ile-de-France region around Paris, said the region had provided financial support for the initiative as she wants the first passenger flight in a vertical takeoff and landing aircraft to take place here. "The development of low-altitude aviation for urban air mobility is an adventure full of promises," she said in a statement.

EDITOR'S COMMENT: An excellent carrier for a suicide bomber!

Israel's Elbit Systems unveils its tiny but powerful search and attack drone

Source: https://interestingengineering.com/transportation/lanius-search-and-attack-drone

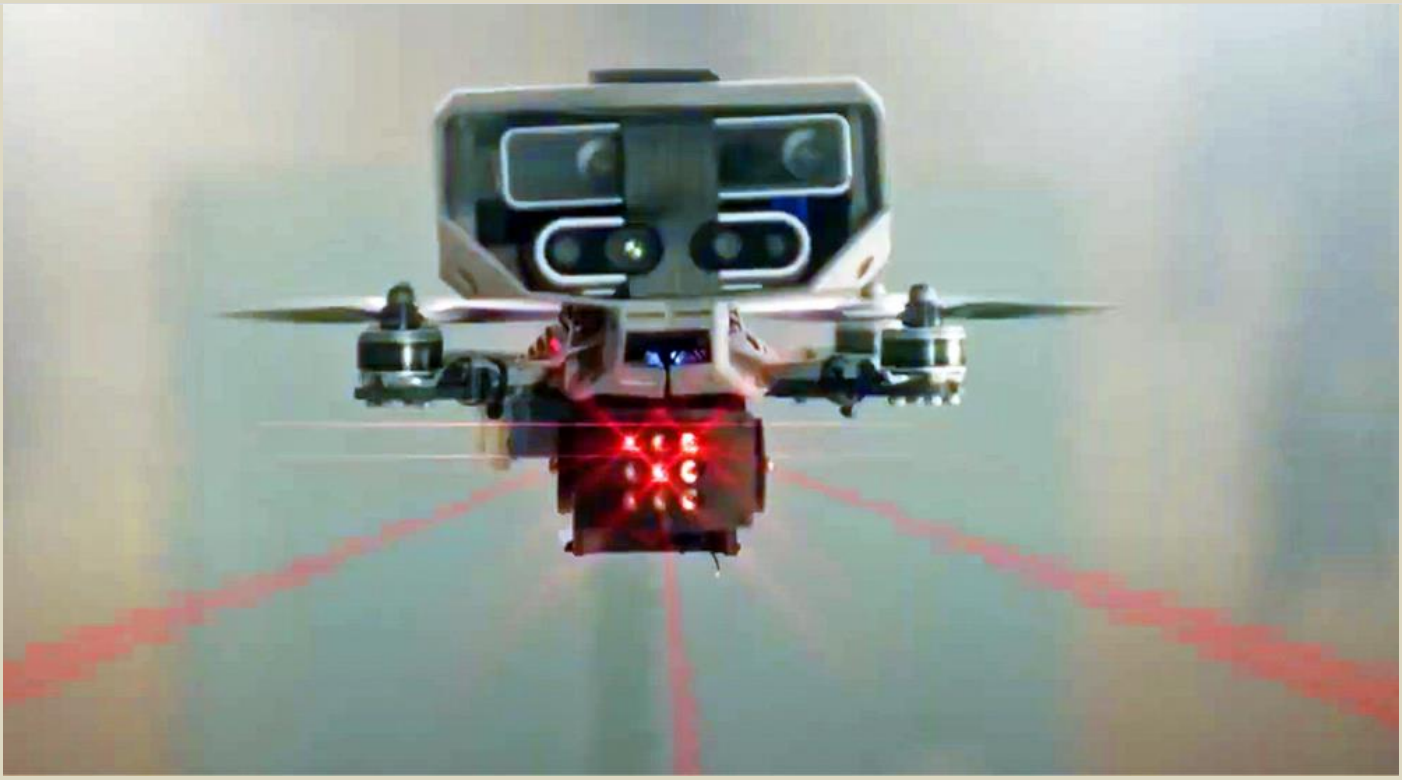
Nov 15 – Lanius, a novel drone-based search-and-attack loitering munition, is built for short-range operation and can be deployed manually or by a multicopter, which is Legion-X compatible.

The autonomous networked fighting system Legion-X is built on robotic platforms and diverse swarms. The creative modular solution offers a comprehensive, all-in-one system for planning, operating, and managing all sorts of unmanned platforms and missions and enables tactical supremacy at all levels, improves efficiency, and transforms capabilities in multi-domain conflict. By allowing the coordinated deployment of swarms of networked, heterogeneous autonomous platforms and payloads, Legion-X offers an advantage in peer/near-peer enemy warfare scenarios.

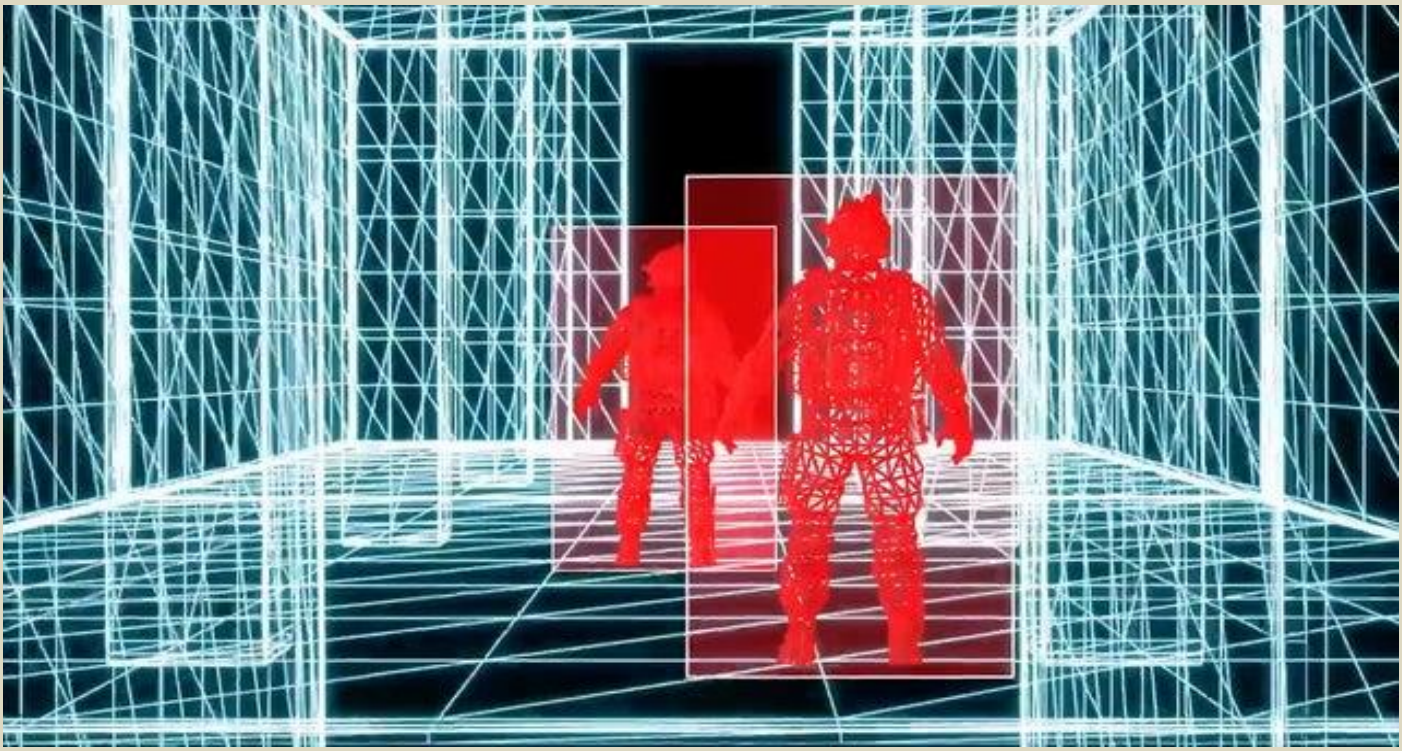
The system can identify, categorize, and sync to Elbit Systems' Legion-X solutions while autonomously scanning and mapping buildings and places of interest for potential threats. Lanius can conduct a wide range of mission profiles for special forces, the military, law enforcement, and HLS and can carry lethal or non-lethal payloads.

With a top speed of 45 mph

Lanius has a top speed of 45 mph (72.4 kph), a maximum takeoff weight of 2.75 pounds (1.25 kg), a limited flight time of seven minutes, and an operational speed of up to 65.6 feet (20 meters) per second in an outdoor setting. Lanius can transport either lethal or non-lethal payloads, though Elbit has not yet revealed the precise nature of those weapons. While Elbit extensively highlights Lanius' capacity to work with a



man-in-the-loop, the drone can also autonomously carry out a full flight profile without assistance if necessary. Lanius can communicate over Wi-Fi or a software-defined radio.



Because of its racing drone-inspired design, Lanius may use its incredible speed and agility for rushing a target before detonating. According to the manufacturer, the highly maneuverable drone is made to perform GPS navigation, scanning, and mapping tasks in challenging urban combat scenarios. This capacity is made possible by the drone's artificial intelligence (AI) systems, which are driven by an NVIDIA Jetson TX2 CPU. The drone can create a 3D map of its surroundings and transmit it to the operator through a handheld remote.

Up to three Lanius drones can ride on the back of a mothership drone, or they can be physically carried by operators in the field (Elbit Systems)

A lethal search, map and destroy combat drone capable of operating autonomously, either alone or in swarms (Elbit Systems)

Drones Employed in the Ukraine War

By Amos Chapple

Source: https://www.rferl.org/a/ukraine-russia-invasion-drones-war-types-list/32132833.html

Nov 17 – Unmanned systems have revolutionized modern warfare – and pilotless aircraft have had a significant impact in the war in Ukraine. Here are some of the drones known to be in use above the battlefields of Ukraine.

Aerorozvidka R18

The Ukrainian-made R18 octocopter is specifically designed for bomblet drops. The drone has been stripped of everything but the bare essential components in order to maximize its payload capacity of around 5 kilograms. Even landing legs have been deleted, meaning it requires a special platform to take off and a human "catcher" to land.

The R18 can fly without lights in the dark for total visual stealth, while using thermal-imaging cameras to spot enemy troops and vehicles. Videos captured by the octocopter show Russian tanks being wiped out by cheap, armor-piercing grenades fitted with 3D-printed tail fins.

Eight-propeller octocopters such as the R18 offer more reliability than the more common quadcopters. Even if one motor fails or gets shot away, an octocopter can continue flying.

Twenty crews operating the R18 drones are reportedly on the front lines of the war in Ukraine.

Kvazimachta

This nonlethal drone, which Russia dubs a "hardware-raising system," is designed to hover in place and cannot roam beyond the length of the electrical cable attached to a command station on the ground that feeds the drone power. That tether limits the altitude of the coffee-table-sized quadcopter to around 70 meters, but allows it to stay aloft for a claimed period of three days before it must land for maintenance checks.

The Kvazimachta carries a camera and telecommunications hardware that allow it to serve as a kind of hovering "mast" that can be rapidly relocated and is less vulnerable to artillery attacks than a fixed telecoms tower.

DJI Mavic series

Chinese drone manufacturer DJI designs its drones mostly for filmmakers and photographers, but both sides in the Ukraine conflict use DJI copters for reconnaissance, artillery correction, and for dropping small antipersonnel grenades.

The latest Mavic (pictured) is fitted with a low-quality telephoto lens, which allows for surveillance of targets from beyond earshot, and a more crisp wide-angle lens. The quadcopter is powerful enough to carry and drop single grenades fitted with impact fuses.

But the out-of-the-box versions of the drones come with a high risk for operators in conflict situations. DJI, the maker of the drones, also sells a radar system specifically designed to detect DJI copters. Users of the Aeroscope anti-drone radar can pinpoint the exact location and flight path of a DJI copter and the person flying it, meaning artillery can quickly and precisely target drone pilots even if they are hidden from view.

A Ukrainian volunteer told RFE/RL in July that the Aeroscope detection system is believed to be in use by Russian forces. The volunteer said that "unfortunately, examples exist" of Ukrainians being killed by artillery aimed with the help of the radar.

DJI has stopped sales of its drones in Ukraine and Russia, but easy importing from neighboring countries makes the move largely symbolic.

Orlan-10

The airplane-shaped Russian drones are catapulted into flight, then kept aloft for up to 16 hours by a noisy, fuel-powered engine. The fixed-wing drones use cameras and sensors mostly to correct artillery barrages

and prowl for enemy movement, but the aircraft have been documented dropping multiple bomblets from pods beneath their wings. Orlans are also reportedly capable of jamming local cell-phone towers and "SMS bombing" of enemy troops. Since 2014, frontline Ukrainian soldiers fighting Russia-backed separatists began receiving grim text messages warning them to lay down their arms.

Bayraktar TB2

The Turkish-made drones were initially seen as a game-changer for Ukraine when videos showed the Bayraktars destroying valuable Russian hardware with baseball-bat-sized "micromunitions" during the chaotic first days of the Russian invasion.

A song about the Bayraktars became a popular tune for buskers on the streets of Ukraine, and European civilians fund-raised to supply more of the aircraft to Ukraine. But as the Russian invasion slowed and layers of air defenses were established in occupied areas, the drones became increasingly vulnerable. The noisy, Cessna-sized aircraft are easily spotted with radar and slow enough to be sitting ducks for antiaircraft weapons.

As early as June, Ukrainian fighter pilots were describing the Bayraktars as "almost useless," and they are reported to now be largely used for special long-distance reconnaissance missions.

Kronshtadt Orion

The Russian Orion has a similar silhouette to the American-made Reaper combat drone. A distinctive V-shaped tail reduces the aircraft's radar signature by avoiding radar-catching right angles, and its slender 16-meter wingspan is narrow enough to boost fuel efficiency for a flight time of up to 24 hours. The aircraft has been filmed firing guided air-to-air missiles.

Orions recorded several strikes on Ukrainian vehicles in the weeks after the February invasion, but one was shot down by Ukrainian forces in April, which observers say would have dealt a significant blow to Russian tactics.

Switchblade 300

These American-made "suicide drones" weigh just 2.5 kilograms, and the entire system can be carried in a backpack. Switchblades are deployed from a mortar-like tube that pops them into the air before their wings flick into place and their propeller buzzes to life. Switchblades use a live video feed to zero in on targets up to 10 kilometers away at a speed of up to 160 kilometers per hour. The flying bomblets are fitted with a grenade-sized warhead capable of killing enemy fighters and damaging unarmored vehicles.

In October, Iran revealed what appears to be a direct copy of the Switchblade.

Geran-2

The Iranian-made, Russian-branded suicide drones are launched in small "swarms" of five or more that can be enough to overwhelm some air defenses. The flying bombs shocked the world when several slammed into Kyiv in mid-October in full view of international journalists, killing at least five people, including a pregnant woman and her husband.

Soon after the harrowing October attacks, Ukraine received advanced Western air-defense missile systems. A crowdfunding campaign was also launched in the Czech Republic to purchase mobile antiaircraft guns specifically for Ukrainian use against suicide drones.

Amos Chapple is a New Zealand-born photographer and picture researcher with a particular interest in the former U.S.S.R.

China's new loyal wingman drone to greatly change air combat: designer

Source: https://www.globaltimes.cn/page/202211/1278930.shtml

Nov 08 – China's FH-97A loyal wingman, a type of unmanned aerial vehicle (UAV) that can accompany manned aircraft and provide it with intelligence, information and firepower support, made its debut at the Airshow China 2022 held in Zhuhai, South China's Guangdong Province in early November, with its chief designer saying that this new technology is expected to greatly change conventional air combat.

Developed by Feihong Company under the Ninth Academy of the state-owned China Aerospace Science and Technology Corporation, the FH-97A loyal wingman drone is exhibited to the general public for the first time at the Airshow China 2022.

"Loyal wingman is a key hot topic in the field of UAVs in recent years, and is widely considered to be an important part of the future unmanned combat system," Deng Shuai, chief designer of the drone, told the Global Times in an exclusive interview at the event.

It is the drone industry's general belief that loyal wingmen are expected to greatly change the pattern of conventional manned air combat by creating a new niche in the air combat system, Deng said.

Based on this cutting-edge combat concept, the FH-97A loyal wingman drone is designed as a new type of autonomous UAV formation system. It can form a dense formation and efficiently coordinate with manned combat aircraft to perform air superiority operations, air defense suppression, and air escort missions, the Global Times learned from the drone's developers.

It can solve not only the problems of limited service scale of manned aircraft and aging aircraft, but also build a pattern of unmanned cooperative combat.

The FH-97A can carry out collaborative reconnaissance with special mission aircraft, as it can detect potential threats and provide early warning by flying ahead of the manned aircraft, or it can also extend the reconnaissance time and scope taking advantage of its long endurance and range.

When cooperating with a fighter jet, the FH-97A can carry out air defense suppression by carrying electronic reconnaissance and jamming payloads and conduct close-in reconnaissance and interference tasks, which can allow the fighter to penetrate the enemy defense and also constantly paralyze the enemy's air defense system.

In another scenario working together with a fighter jet, the FH-97A can carry reconnaissance payloads and fly ahead of the flight formation to make contact with the enemy first, provide fire control guidance data to the fighter, allowing the latter to fire faster than the enemy.

"The FH-97A is not only a sensor, but also an ammunition depot, and also an intelligent assistant for pilots. It can extend a pilot's situational awareness and scope of attack, and by using FH-97As in large numbers, each loyal wingman drone can become an intelligent node in the air combat system, obtain local combat information, and filter and integrate to form a wider battlefield situation, assist pilots to make decisions, and liberate people from dangerous and highly tense combat environments, so that in addition to being traditional pilots, the pilots can become more of commanders of a flight formation." Deng said.

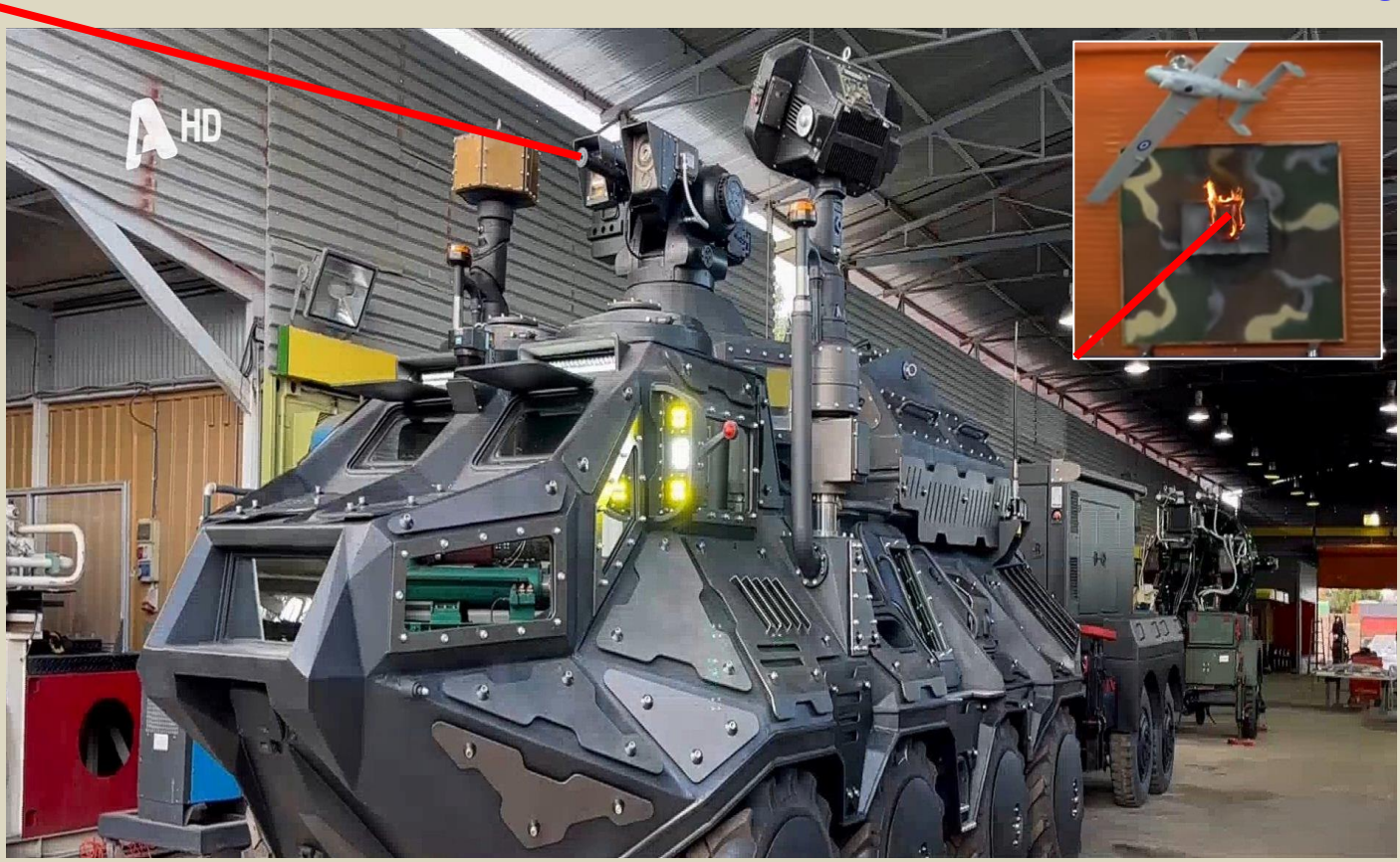
In Airshow China 2021, Feihong company exhibited a new generation of high-speed stealth multi-purpose UAV system called FH-97, which adopts a stealth design and can quickly reach combat zones within a radius of 1,000 kilometers. It can conduct all-day, all-weather, and all-territory battlefield situational awareness missions for more than 6 hours, and is equipped with intelligent and smart ammunition. The FH-97A loyal wingman at Airshow China 2022 has undergone major changes and upgrades on the basis of the FH-97 in appearance and function.

Deng said that the FH-97A has changed compared with the FH-97 in terms of the electro-optical payload and the air intake method. "The electro-optical payload of the FH-97 is under the fuselage, while the electro-optical payload of the FH-97A is above the fuselage. The FH-97 uses an intake on the back, while the FH-97A has side intakes. In addition, there are some differences in the weapons bay, as the new FH-97A's weapons bay is designed to enhance the maneuverability and speed in air combat while the FH-97's weapons bay is designed for land attack."

The weapons bay of the FH-97A can carry eight smaller, intelligent air-to-air missiles. The drone can also carry pods with different functions, including radar jamming, reconnaissance and communications jamming, as well as fuel tanks, extra missiles and precision guided weapons.

Thanks to the embedded intelligent skin antenna, the loyal wingman drone is also difficult to jam. The UAV's low observation design and intelligent evade capability plus infrared flares and chaff jamming equipment give it a good survivability, Deng said.
The FH-97A is equipped with two engines, and Deng said this design can improve the flight speed and maneuverability of this type of UAV on the one hand, and on the other hand it improves the reliability. "If one engine fails, the other one can also ensure that the UAV can complete the task."
In addition to conventional wheeled take-off and landing on runways, this type of UAV can also use rocket booster for complete take-off and landing under special conditions, and carry out arrested recovery.
Deng said that the FH-97A could be reconfigured and become operable on vessels. The development team has reserved spaces for strengthened landing gear and strengthened tail hook among others, as maritime deployment was considered at the very beginning of the development, he said.
Although the FH-97A has excellent endurance and can accompany manned aircraft throughout the entire flight, aerial refueling is still a future development direction of this type of UAV. "In the future, the FH-97A will definitely have the capability to receive aerial refueling." Deng said. In addition, as a loyal wingman that can accompany different aircraft, the FH-97A also needs to establish contact with different models of fighters. Its airborne data link system has a multi-band format, which is compatible with various aircraft in active service and can realize cross-platform interconnection.
"This loyal wingman can build a data link system with different aircraft and can establish the internal networking of the drone formation and the collaborative networking with manned aircraft. In addition, thanks to the compatibility of the system, there is no need for additional installations and modifications to manned aircraft," Deng said.

New era in drone hunting



Greek defense company Soukos Robots presents the **Minotaur Armored Anti Drone system**. The system can be both manned and unmanned, can jam communications and fry drones through its hybrid **laser/microwave** system. The vehicle is also painted in special anti-thermal coating.

●▶ Video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Artificial Intelligence and Extremism: The Threat of Language Models for Propaganda Purposes

By Stephane Baele

Source: https://www.homelandsecuritynewswire.com/dr20221025-artificial-intelligence-and-extremism-the-threat-of-language-models-for-propaganda-purposes

Oct 25 – Recent large-scale projects in the field of Artificial Intelligence have dramatically improved the quality of language models, unfolding a wide range of practical applications from automated speech/voice recognition and autocomplete to more specialized applications in healthcare and finance. Yet the power of this tool has also, inevitably, raised concerns about potential malicious uses by political actors. This CREST guide highlights the threat of one specific misuse: the potential use of language models by extremist actors for propaganda purposes.

The Rise of Language Models

Language models are statistical models that calculate probability distributions over sequences of words. Over the past five years, language modelling has experienced massive improvement – amounting to no less than a 'paradigm shift' according to some researchers (Bommasani et al. 2021) – with the rise of 'foundation models'. Foundation models are large language models with millions of parameters in their deep learning neural network architecture, trained on extremely large and broad data, which can be adopted to a wide range of downstream tasks with minimal fine-tuning.

The development of these models is very expensive, necessitating large teams of developers, numerous servers, and extensive data to train on. As a consequence, performant models have been created by well-endowed projects or companies like Google (BERT in 2018), OpenAI (GPT- 2 in 2019, GPT-3 in 2020), and DeepMind (GOPHER in 2022), who entered a race to design and deliver the most powerful model trained on the biggest base corpus, implementing the most parameters, and resting on the most pertinent architecture. GPT-3, for instance, was trained on approximately 500 billion words scraped from a wide range of internet spaces between 2016 and 2019; its development is estimated to have costed over $15million on top of staff salaries. Microsoft started an investment in OpenAI of no less than $1billion in July 2019.

Warnings of Malicious Use

These fast developments come with excitement and hype, but also serious concerns. As Bommasani and colleagues (2021, pp.7-8) ask, "given the protean nature of foundation models and their unmapped capabilities, how can we responsibly anticipate and address the ethical and social considerations they raise?"

A series of warning signs revealed some of these 'ethical and social considerations', triggering increasing anxiety. Back in 2012, IBM noticed that its Watson model started using slurs after the scraped content of the Urban Dictionary was integrated in its training corpus. Four years later, Microsoft had to shut down the Twitter account it opened for its Tay model less than a day after it was launched after a series of users effectively fine-tuned the chatbot into an unhinged right-wing extremist (claiming, among many others, that "feminists should burn in hell" and that "Hitler was right").

These problems echo broader worries about AI in general, with other techniques like deepfakes or molecules toxicity prediction models generating critical controversies and concerns about seemingly inevitable malicious uses (Chesney & Citron 2019; Urbina et al. 2022; see Read More).

The leading AI companies have therefore attempted to typologize and explore the various potential areas/types of malicious use and ethical issues posed by large-scale language models. OpenAI, for instance, published several reviews (Solaiman et al. 2019; Brown et al. 2020), and commissioned an assessment from the Middlebury Institute of International Studies at Monterey to evaluate the risk that their model could help produce extremist language (McGuffie & Newhouse 2020).

DeepMind similarly released a report (Weidinger et al. 2021) highlighting six specific risk areas associated with their GOPHER model: 'Discrimination, Exclusion and Toxicity', 'Information Hazards', 'Misinformation Harms', 'Malicious Uses', 'Human- Computer Interaction Harms', and 'Automation, Access, and Environmental Harms'. At the same time, a scientific literature has emerged that evidences models' ingrained biases (e.g., Abid et al. 2021) and experimentally tests the credibility of texts produced by foundation models. Worrying conclusions have pointed to the production of highly credible fake news and the potential of these models for campaigns of disinformation (Kreps et al. 2020; Buchanan et al. 2021).

Across all these studies, a key claim holds consensus: the real power of language models is not so much that it could automatically produce large amounts of problematic content in one click (they are too imperfect for truly achieving that), but rather that they enable significant economies of scale. In other words, the cost of creating such content is about to plummet.

For terrorism and extremism experts, this evolution is deeply worrying: it means that much more extremist propaganda of any format can be produced in less time by less people. Yet at the exception of OpenAI's commissioned report by McGuffie and Newhouse, none of the existing explorations seriously considers this risk – even though several commentators have claimed that these models "can be coaxed to produce [extremist manifestos] endlessly" (Dale 2021, p.116).
McGuffie and Newhouse's report already provided a much-needed first exploration of how language models can be used to produce extremist content, using a series of prompts to get GPT-2 to write radical prose from various ideological flavors. Yet the real potential of language models to create truly credible extremist content of the desired type and style through fine-tuning remained unevaluated.

Extremist Use of Language Models: Key Observations and Practical Implications
We took up the task of rigorously evaluating the possibility of a foundation language model to generate credible synthetic extremist content. To do so, we adopted the idea of a 'human-machine team' (Buchanan et al. 2021) to design an optimal workflow for synthetic extremist content generation – by 'optimal' we mean the one designed to generate the most credible output while at the same time reflecting the constraints likely to restrict extremist groups' use of the technology (e.g., technological sophistication, time, pressures, etc.).
Working with various types (e.g., forum posts, magazines paragraphs) and styles (e.g., US white supremacist, incel online discussion, ISIS propaganda) of extremist content, we implemented that workflow with varying parameters to generate thousands of outputs. This systematic work immediately unfolded two main findings:

1. Even with the best variation of the workflow, the model generated a lot of 'junk', that is, content that is immediately not credible. While that proportion would shrink with bigger fine-tuning corpora, our study's commitment to a realistic setting makes the production of 'junk' inevitable. Most of the remaining synthetic content was deemed credible only after minor alterations by a lingo expert (correcting mistakes such as geographical inconsistencies), while a small minority was judged to be immediately highly credible.
2. The model is usually very good at using insulting outgroup labels in a pertinent way, and generating convincing small stories. However, as Dale puts it (in another context), the text get "increasingly nonsensical as [it] grows longer" (Dale 2021: 115). Generally speaking, the longer the generated text, the bigger the need for a post-hoc correction by a human.

Survey Results
To more rigorously test the credibility of the synthetic output beyond these two observations, we ran two survey experiments testing the credibility of a randomly selected sample of two types/styles of extremist content (ISIS magazine paragraphs in survey 1, and incel forum posts in survey 2), asking academics who have published peer-reviewed scientific papers analyzing these two sorts of language (not simply ISIS or incel communities) to distinguish fake synthetic content from genuine text used as input to train the model (Baele, Naserian & Katz 2022).
Two situations were set up. In the first situation (Task 1), the experts had to distinguish ISIS/Incel content from non-ISIS/Incel content, and did not know that some of this content was AI-generated. In the second situation (Task 2), experts still had to distinguish ISIS/Incel content from non-ISIS/incel content, but were made aware that some of the texts they faced was generated by a language model.
The results, in both tasks, clearly point to the great confusion induced by the fake texts. In task 1, for example, no less than 87% of evaluations of fake ISIS paragraphs were wrongly attributed to ISIS – this is, strikingly, 1% higher than for genuine ISIS paragraphs correctly attributed to ISIS. In Task 2, experts were only slightly better than random guessers, and with low levels of expressed confidence in their answers. These results are worrying, and echo findings from one of the authors' complementary study on audio deepfakes, which demonstrate that open-source models are able to perfectly 'clone' a voice – that is, to create fake statements that are undistinguishable to the listener from the original ones – with less than a thousand 5-seconds genuine audio chunks of that voice.
These developments lead us to infer five main thinking points for stakeholders involved in CVE:

1. Because the threat of extremists using language models is evident, CVE practitioners should familiarize with the technology and develop their own capabilities in language modelling. Among other tasks likely to become central are the detection of synthetic text and the conception of tactics to reduce the growing flow of extremist content online.
2. Yet despite their sophistication, off-the-shelf models cannot be directly used, off-the-shelf, to mass-produce, 'in one click', truly convincing extremist prose. Extremists use highly specific language (lingo, repertoires, linguistic practices, etc.) that corresponds to the particular ideological and cultural niche they occupy, so to be convincing a synthetic text ought to reproduce this specific language with high accuracy, or else it will quickly be spotted as fake. This requires the fine-tuning of a powerful foundational model, which is currently not without difficulties – but will soon become easy.
3. Even if the technology is available to them, some groups are less likely to use it. Groups that place a higher emphasis on producing 'quality' ideological and theological content may be reluctant to hand over this important job to a mindless machine, either out of self-respect and genuine concern for

ideological/theological purity, or more instrumentally because of the risk of being outed. However, even these groups may make use of the technology when facing material constraints (dwindling human resources, loss of funding, etc.) or engaging in some propaganda tasks deemed less important (quantity vs. quantity).
4. The threat of language models is not uniformly distributed: they are likely to be used for particular tasks within a broader propaganda effort. Consider a web of different online platforms and social media established by an extremist group: while the central, official website would only display small amounts of human-produced content, an 'unofficial' Telegram channel linked to on that website could be exclusively populated, at low cost, by large amounts of synthetic text.
5. The workflow structure can be used against extremist actors. For example, stakeholders willing to troll extremist online spaces in order to make them less likely to be visited may use adequately fine-tuned language models to do so more efficiently, more credibly, and at reduced cost. Alternatively, language models can be trained to generate de-radicalizing content that would be disseminated by bots.

Read more

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Will AI destroy art? Or just change it?

Source: https://thebulletin.org/2022/10/will-ai-destroy-art-or-just-change-it/

Last August, an image generated via artificial intelligence took the Colorado State Fair annual art competition prize for digital art/digitally manipulated photography. The entrant, Jason M. Allen, created the piece using a digital image creation program dubbed Midjourney. Similar to tools like DALL-E2 and Stable Diffusion, Midjourney allows users to enter descriptive text that will, with the help of AI, generate art—though not everyone agrees it should be called that.
The prize's announcement prompted discussions and generated some backlash from artists and critics, some of whom posed a question: Did Allen cheat by using AI to create his piece, titled *Théâtre D'opéra Spatial*? The prize also reignited the heated debate about whether machines will lead to the demise of visual art, a form of expression often considered—at least heretofore—as a high and singularly human achievement.

As machines comb through internet images, many uploaded by artists, to hone their algorithms and generate styles of art that are similar to those they were trained on, we are left once again to wonder if AI will destroy art or be used as a tool to evolve art, in the way that photography and mechanical reproduction did in past centuries.
We've asked experts from a variety of artistic and technical disciplines to weigh in on the ethical, economic, and artistic implications of art created by intelligent machines. AIs were not asked to contribute to the conversation.

— Sara Goudarzi
Associate Editor
Bulletin of the Atomic Scientists

Machine Learning and Data Fusion Enable Improved Decision Intelligence to Screen Asylum-Seekers and Refugees

By Noam Zitzman
Source: https://www.hstoday.us/featured/perspective-machine-learning-and-data-fusion-enable-improved-decision-intelligence-to-screen-asylum-seekers-and-refugees/

Oct 27 – Millions of people are forcibly displaced annually due to conflict, persecution, or natural disasters, and they seek asylum in neighboring countries. The refugee crisis triggered by the war in Ukraine is the latest high-profile example, but there is a trend of global events not restricted to a particular country or continent that can happen for many different reasons. These global events exacerbate the humanitarian burden placed on countries giving asylum.
Most asylum-seekers and refugees don't pose a threat to public safety, but when they arrive in vast numbers they can put considerable strain on border security processing and longer-term refugee and immigration management and tracking. Small numbers of criminals and terrorists could hide among this population and must be effectively identified and isolated for public safety – in some cases, with urgency. When there is no data or only partial data available, this makes the challenge of making decisions acute.
Border authorities need to act quickly and effectively to decide who should be allowed entry, and how and where asylum-seekers and refugees should be routed for temporary sanctuary or longer-term resettlement. Above all, fairness and accountability must be consistently maintained at all levels of the process – for the destitute, the countries that accept them, and international governing bodies tasked with maintaining humanitarian standards and equitable responsibility-sharing among countries.

Data-driven progress
Data-driven decisions take some of the guesswork and bias out of immigration management processes and help to promote overall fairness. Machine learning (ML) and data fusion technologies form the bedrock of this approach, with their combined ability to leverage big data and advanced analytics to manage the risk posed by potential asylum-seekers and refugees. This includes closer scrutiny of criminal and terrorist elements, with more efficient threat assessment and risk scoring – leading to improved prioritization.
However, there are foundational data challenges inherent to immigration management processes. The processing of asylum-seekers' and refugees' information and applications is typically done manually, and relies heavily on their own claims. Many arrive at the border with no credentials.

Compounding this issue, poor data quality used for training AI algorithms can produce equally poor outcomes. A simple example: An individual may cross the same border several times, but incomplete record-taking could result in the person being recognized in databases as different people.
Verbal statements given at the border – under great stress, in some cases – can leave a lot of data gaps. This in itself is a big challenge for border and immigration analysts – one that typically requires additional manual investigation.
Faulty face recognition is another potential impediment to effective and efficient immigration processing. Research has shown that the accuracy rates of facial recognition algorithms are particularly low in the case of minorities, women, and children. A 2018 MIT study of three commercial facial-recognition systems found they had error rates of up to 34 percent for dark-skinned women – nearly 49 times that for white men. When it comes to identity verification, a systemic failure to accurately distinguish faces in this way presents obvious problems. Lastly, asylum-seeker and refugee data privacy must be maintained according to strict guidelines where possible. For vulnerable populations, the oversharing of sensitive data can introduce several risks that can further magnify power asymmetries with immigration officials. ML algorithms should ultimately aid in decision intelligence for migration analysts seeking the most informed, efficient ways to assess risk while prioritizing human rights.

ML and data fusion benefits

At the solution level, these constraints pose many technical challenges, with broader implications for algorithmic accountability and fairness. Effective border security and immigration management requires a decision intelligence framework that is both fair to asylum-seekers and refugees, and provides a rapid, informed assessment of their threat risk for countries of first asylum/host countries. ML and data fusion play important roles here. ML can add speed and agility to the workflow, beginning at the border processing stage – it helps ensure that well-intentioned asylum-seekers and refugees aren't held in limbo. This can be achieved with faster ML-guided identity checks and data analysis for asylum and visa applications. Post border-processing, ML can aid in decision intelligence affecting how and where asylum-seekers and refugees are routed for sanctuary and/or resettlement. Improved tracking is an important part of the equation, for the purpose of quickly locating and notifying asylum-seekers and refugees on occasions when their origin country's status has changed, and it's safe/legal to return. ML and data fusion are also invaluable for risk assessment and risk scoring, to help identify asylum-seekers and refugees who pose potential security risks. The ability to harness and correlate numerous, disparate data sources ultimately provides a fuller, multidimensional understanding of threats and bad actors while helping to eliminate 'blind spots.' ML has already demonstrated effectiveness in immigration management applications. For example, the German Federal Office for Migration and Refugees has tested automatic face and dialect recognition, name transliteration and analysis of mobile data devices for identity verification to support decision intelligence in the asylum determination process. Meanwhile, UK police forces use predictive policing algorithms such as PredPol, Sweden has used migration algorithms to forecast future migration flows, and Switzerland has tested an algorithm to improve refugee integration (source).
Improved decision intelligence for border security and immigration management in turn helps streamline asylum-seeker and refugee processing and can help with the enforcement of essential humanitarian protections. ML and data fusion enable government and border control entities to accelerate border processing workflows and make better, faster decisions regarding security threats.
Over the longer term, ML and data fusion technologies can be used to help better situate asylum-seekers and refugees according to their needs and ability to contribute. They can also predict waves of migration and help countries collaborate and prepare for them. Lastly, they can improve data sharing among countries, in part to democratize this process globally and to improve fairness and accountability across the board.

Noam Zitzman is Chief of Intelligence for Cognyte's Analytics Platform. Noam was previously the head of the Intelligence Methodology Group for Cognyte's web intelligence platform. Prior to joining Cognyte, Noam led the strategic analysis group in Terrogence, focusing on research into global terrorism, propaganda and recruitment methods. With more than 20 years of operational experience in Israeli intelligence agencies, in the intelligence wing of Israeli Ministry of Foreign Affairs, and in the Israel Defense Force intelligence corps, Noam combines his previous experience with strong academic proficiency. He is also a research associate in the Van Leer Jerusalem Institute, Forum for Regional Thinking, where he regularly publishes articles. His book, "Soundtrack of Revolutions," was published in 2017.

Deep Learning is in Danger

Source: https://i-hls.com/archives/115259

Nov 04 – While deep learning algorithms may be looking promising for identifying and characterizing cybersecurity intrusions, various attacks can cause them to provide inaccurate information, or even upset their entire plan of operations. Research shows that cybercriminals have been developing new attacks

against different deep learning systems, such as those used for image analysis and natural language processing. Previous research has shown the efficacy of various adversarial approaches in causing deep neural networks (DNNs) to deliver untrustworthy and inaccurate predictions.

Researchers from the cyber security company Citadel have recently shown that current deep learning-based solutions for identifying certain cyberattacks, such as DDoS DNS, have substantial weaknesses and vulnerabilities. Certain attack techniques are capable of creating corrupted data that DNNs would misclassify, therefore delivering false information.

The Citadel researchers developed a DNN capable of detecting cyber-attacks, and then assaulted it with adversarial data to trick the DNN into arriving at false conclusions. The findings of these experiments clearly showed that a DNN can be deceived by malicious attacks and ignore or falsely report on DDoS DNS attacks. DDoS DNS amplification attacks use weaknesses in DNS servers to magnify requests sent to them, eventually flooding them with data and taking the servers down. These assaults have the potential to significantly impair internet services provided by both large and small multinational corporations.

According to Marktechpost.com, the work of this Citadel team of researchers may inspire the creation of more effective technologies for detecting DDoS DNS amplification assaults in the future, which can recognize and categorize hostile data.

When AI And IOT Collaborate

Source: https://i-hls.com/archives/107583

Nov 05 – Internet of Things (IoT) devices use the internet to communicate, collect, and exchange information. It's only natural that as these device numbers grow, the swaths of data will too. That's where Artificial Intelligence (AI) steps in — lending its learning capabilities to the connectivity of the IoT.

The IoT is empowered by three key emerging technologies:

- ✓ AI – Programmable functions and systems that enable devices to learn, reason, and process information like humans.
- ✓ 5G Networks – Fifth generation mobile networks with high-speed, near-zero lag for real time data processing.
- ✓ Big Data – Enormous volumes of data processed from numerous internet-connected sources.

Together, these interconnected devices are transforming the way we interact with our devices at home and at work, creating the AIoT – Artificial Intelligence of Things – in the process.

There are four major segments in which the AIoT is making an impact:

- ✓ Wearables – Wearable devices such as smartwatches continuously monitor and track user preferences and habits.
- ✓ Smart Home leveraging appliances, lighting, electronic devices and more, bringing in more efficiency.
- ✓ Smart City – Smart technologies are improving public safety, transport, and energy efficiency in cities.
- ✓ Smart Industry – From real-time data analytics to supply-chain sensors, smart devices help prevent costly errors in industry.

According to weforum.org, there is still an untapped potential in AI & IoT convergence. The following fields are expected to bring about more advantages: Edge computing in home robots and autonomous vehicles, voice AI evolving into fields such as natural language processing (NLP) and ePayment voice authentication, and vision AI used in video analytics on the edge and super 8K resolution.

Elon Musk Unveils Two Tesla Bots at Tesla AI Day, Bumble C and Optimus

Source: https://www.autoevolution.com/news/elon-musk-unveils-two-tesla-bots-at-tesla-ai-day-bumble-c-and-optimus-200118.html

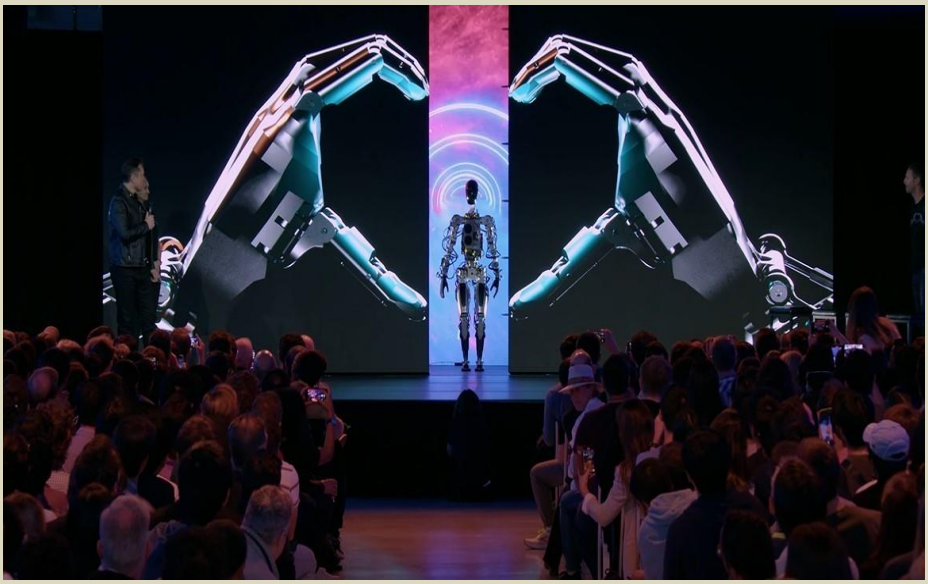
Oct 01 – Last year, at the first edition of the Tesla AI Day, Elon Musk promised a humanoid robot. Back then, he had a person dressed as a robot on stage, but this year, he brought not just one, but two robot prototypes on stage, the Bumble C (right) and Optimus (left, below).

On Friday, Tesla Inc. CEO Elon Musk introduced the prototype of its humanoid robot at the start of Tesla AI Day 2022. Over time, the prototype carried many names, having started as Tesla Bot and ending up as Optimus along the way. But this year, there were two prototypes on stage with him.

The first one, called Bumble C, was able to walk on stage by itself for the first time, no strings attached or backup support. The robot did well as it walked by itself, moving its legs and arms in a swift motion. He was also able to wave at the crowd and do some simple dance moves.

They proceeded to show some videos of it doing some simple tasks, like picking up boxes and carrying them, watering plants, or lifting metal bars at a production station.

Bumble C wasn't the main robot they wanted to show, but the latest generation of the Optimus. At the moment, it isn't able to walk yet, but Musk said it will be able to do so in a few weeks. They rolled it out on a platform and was able to do a slow wave to the crowd. The robot showed fewer cables than Bumble C and looked more compact and refined, but Musk admitted that "*there's still a lot of work to be done to refine Optimus and prove it*," adding "*I think Optimus is going to be incredible in five or 10 years, like mind blowing*."



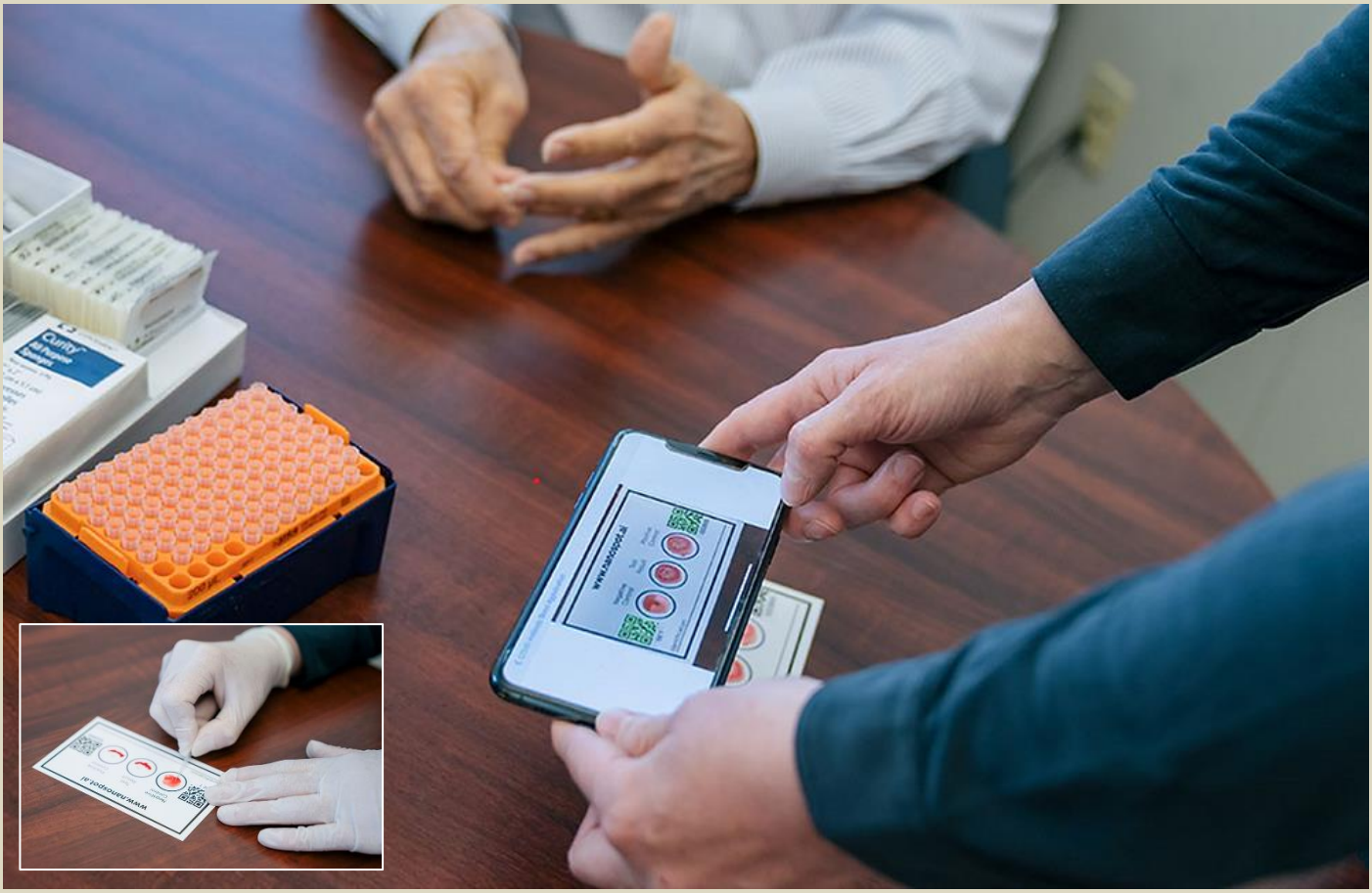
The next-generation Tesla Bot will have Tesla-designed components at its core, powered by a 2.3-kWh battery pack placed in its torso and good for about a day's worth of work, a chip system, and actuators to drive its limbs. It also comes with the same "self-driving computer" found inside Tesla vehicles. The robot is designed to weigh 161 lb (73 kg).

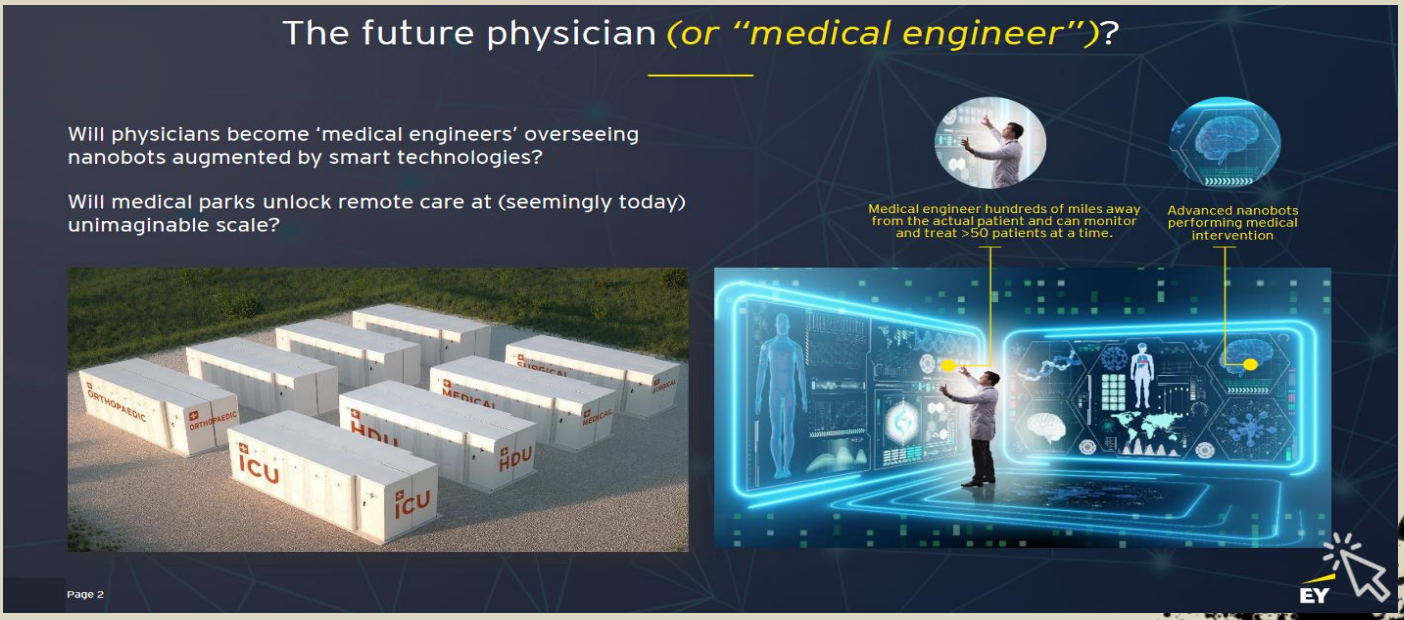
Musk predicted the humanoid robot would sell for less than a car, at around $20,000 and shared that Tesla would be ready to take orders for Optimus in three to five years.

AI-driven diagnostics in the palm of your hand

Source [+video]: https://www.nanospot.ai/

- ✓ Sample-to-answer diagnostics in under three minutes.
- ✓ Sensitivity and specificity of the system greater than 98%.
- ✓ Actionable results without expensive equipment.





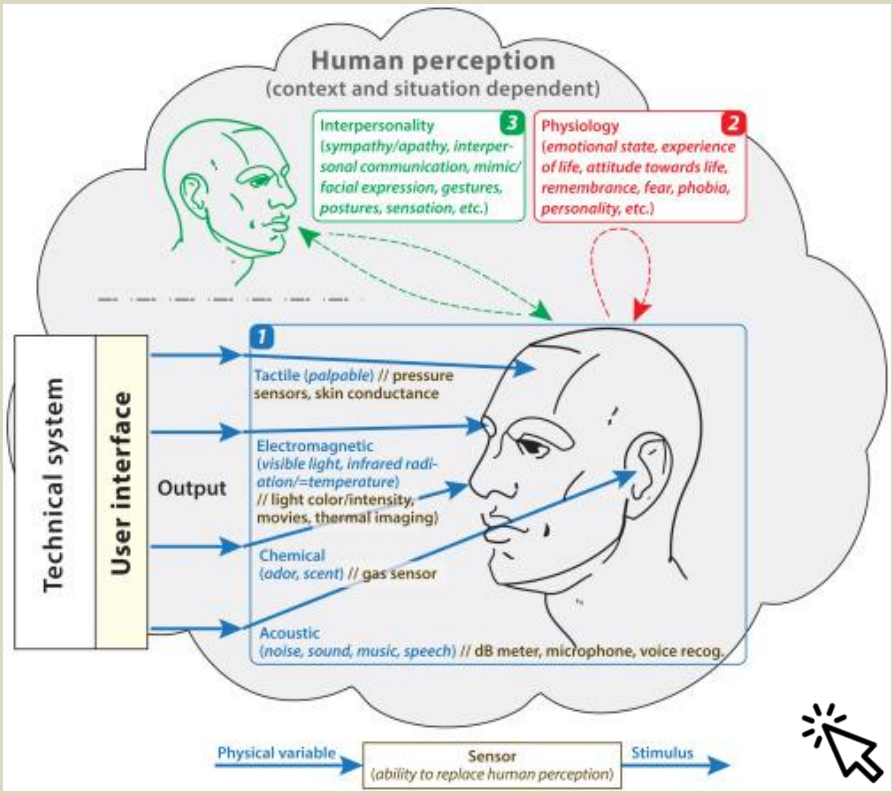
AI – How Close Are To Human Intelligence?

Source: https://i-hls.com/archives/114096

Nov 18 – There are many tools available to experts now that enable them to explain how the computerized process works, but these methods can typically only provide data on one decision at a time, requiring manual evaluation, which takes considerable time. In training, Machine Learning often deals with massive amounts of data, overcoming human limitations in terms of the time required for in-depth processing and identifying and extracting clear patterns. Research from the Massachusetts Institute of Technology (MIT) and IBM Research has recently developed a method for collecting, sorting, and evaluating individual explanations to analyze a machine learning model's behavior quickly. Shared Interest, the technique developed by the researchers, incorporates quantifiable metrics that allow a direct comparison between the model's thinking and that of humans. This allows the user to identify patterns in the model's decision-making process, for example, perhaps the model becomes easily distracted and confused by objects in the background of pictures. By analyzing these insights, the user can quickly determine if the model is reliable and ready to be used in the real world.Researchers hoped that the speeded up analysis process would help human users better understand why a model did certain things and how machine learning makes certain decisions (saliency method). When the model classifies images, the methods focus on areas in the images that are relevant to the decision-making process. Using a salinity map that overlaps the original image, data is collected for different areas. When the model classifies the image as a dog, it highlights the dog's head as these pixels were essential to the model's classification of the image. In this way, the saliency data generated by the model is compared to the ground truth data generated by humans for the same image to determine whether they are aligned. The technique can also be applied to text-based data, which will highlight and categorize keywords instead of images, according to news.mit.edu.
According to the researchers, as long as the Shared Interest method is based on reliable methods, it has good performance, and they intend to apply it soon to other types of data, such as tabular data.

Facial Expressions Are Key To Successful Human-Machine Teaming

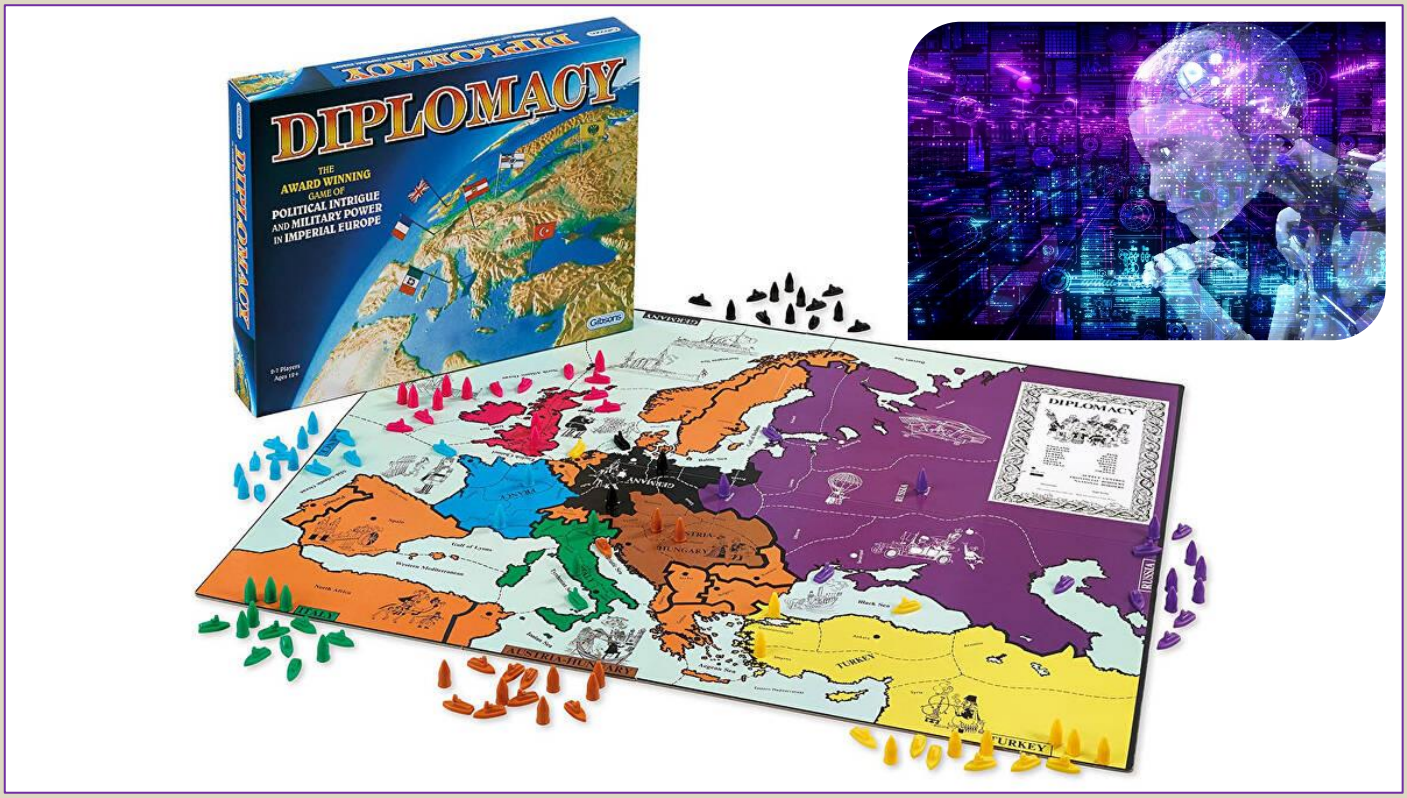
Source: https://i-hls.com/archives/105157



Nov 17 – Research at the US Army Combat Capabilities Development Command's Army Research Laboratory showed that emotional cues such as facial expressions and body language can be key factors in how machines and humans team-up. Those emotional expressions shape cooperation. "People learn to trust and cooperate with autonomous machines," ARL's Celso de Melo, a computer scientist, told armytimes.com. If a human member of the soldier-robot team is feeling particularly stressed, and the AI in the system can better read that stress and its effects, it can modify its communication to respond to the teammate.
"Human cooperation is paradoxical," de Melo said in an Army release. "An individual is better off being a free rider, while everyone else cooperates; however, if everyone thought like that, cooperation would never happen. Yet, humans often cooperate. This research aims to understand the mechanisms that promote cooperation, with a particular focus on the influence of strategy and signaling."
Whether we humans realize it or not, there's a constant back and forth going on, verbally and nonverbally, when we communicate. That's especially true when we are working in a team, toward a goal. Something as simple as the timing of a smile can change a lot about how people perceive they're being treated in a team. "We show that emotion expressions can shape cooperation," de Melo said. "For instance, smiling after mutual cooperation encourages more cooperation; however, smiling after exploiting others — hinders cooperation."

Artificial Intelligence Agent Is a Winner at (the Game of) Diplomacy

Source: https://scitechdaily.com/artificial-intelligence-agent-is-a-winner-at-the-game-of-diplomacy/



Nov 22 – According to a new study, an artificial intelligence agent named CICERO has mastered the online board game of Diplomacy. It played 40 speed games in an online Diplomacy league and scored double the average of human players. An artificial intelligence (AI) agent named CICERO has mastered the online board game of Diplomacy. This is according to a new study by the Meta Fundamental AI Research Diplomacy Team (FAIR) that will be published today (November 22) in the journal *Science*. AI has already been successful at playing competitive games like chess and Go which can be learned using only self-play training. However, games like Diplomacy, which require natural language negotiation, cooperation, and competition between multiple players, have been challenging. The new agent developed by FAIR is not only capable of imitating natural language, but more importantly, it also analyzes some of the goals, beliefs, and intentions of its human partners in the game. It uses that information to figure out a plan of action that accounts for aligned and competing interests, and to communicate that plan in natural language, the researchers say. Playing anonymously against humans in 40 speed games in an online Diplomacy league, CICERO scored more than double the average score of human players and was in the top 10% of participants who played more than one game. CICERO "passed" as a human player against 82 unique players, and the researchers saw no in-game messages to suggest that the human players believed they were playing with an AI agent.

Artificial Intelligence to help control crowds and climate at Qatar World Cup

Source: https://dohanews.co/artificial-intelligence-to-help-control-crowds-and-climate-at-qatar-world-cup/

A one-of-a-kind technological centre has been established in Qatar that employs Artificial Intelligence (AI) to monitor the spectators, foresee crowd swells, and regulate stadium temperatures, reported Aljazeera.

At the Aspire Command and Control Center, more than 100 technicians will be on duty around-the-clock, closely monitoring images that flash across their displays via 200,000 integrated units from 22,000 security cameras dispersed throughout all eight World Cup stadiums.

The technical staff at the Qatar centre believe that data aggregation enables them to predict crowd trends. They can anticipate a crowd rush because they are aware of the precise number of attendees anticipated based on ticket sales, arrival time, places of entry, or even the flow of individuals at any given moment.

"We have the crowd control team and security staff on the ground, and we have the law enforcement agencies and we are complementing their decision-making with data. So that's very unique," the centre's chief technology officer Niyas Abdulrahiman told Al Jazeera.

The 'connected stadium' idea is the first of its kind to be deployed at a World Cup.

The centre can apply a threshold and count the number of individuals in a space with the use of AI.
According to Aljazeera, the experts can identify bottlenecks, monitor the operation of the entry gates, and guarantee a smooth flow of people into and out of the stadium if there are more than 100 individuals in a single area.
With more than 1.2 million World Cup attendees anticipated, the crowds watching the World Cup 2022 matches will be displayed on hundreds of screens in the room in Doha, according to Aljazeera.
The Lusail Stadium, the 80,000 capacity arena which will play home to 10 games including the final, will have facial recognition technology allowing the crew to zoom in on fans.
Along with Qatari and FIFA representatives, experts in cybersecurity, counterterrorism, and transportation will be stationed at the centre.
Mission control will be able to monitor how each stadium is running before, during, and after the event thanks to security cameras on every corner. They are able to control the entrance gates from there, assure the water is running, and maintain air conditioning systems.
The "connected stadium" idea, according to the organisers, is the first of its kind to be deployed at a World Cup. By sharing information with security personnel, AI will allow technicians to foresee crowd increases and respond to overcrowding rapidly.
It is intended to prevent instances like the mayhem that broke out outside the Stade de France in Paris when police fired tear gas and pepper spray on spectators seeking to enter the Champions League final between Liverpool and Real Madrid.
Last month in Indonesia, a stampede that resulted from police firing tear gas at supporters streaming onto the field and people dashing into shut exits as they attempted to leave the stadium claimed the lives of more than 130 people.
The technologists, some of whom have worked behind the scenes at the 2006 Asian Games, told Aljazeera that this is the way sports will be broadcast in the future, as they have access to a lot more technology now to prevent such incidents.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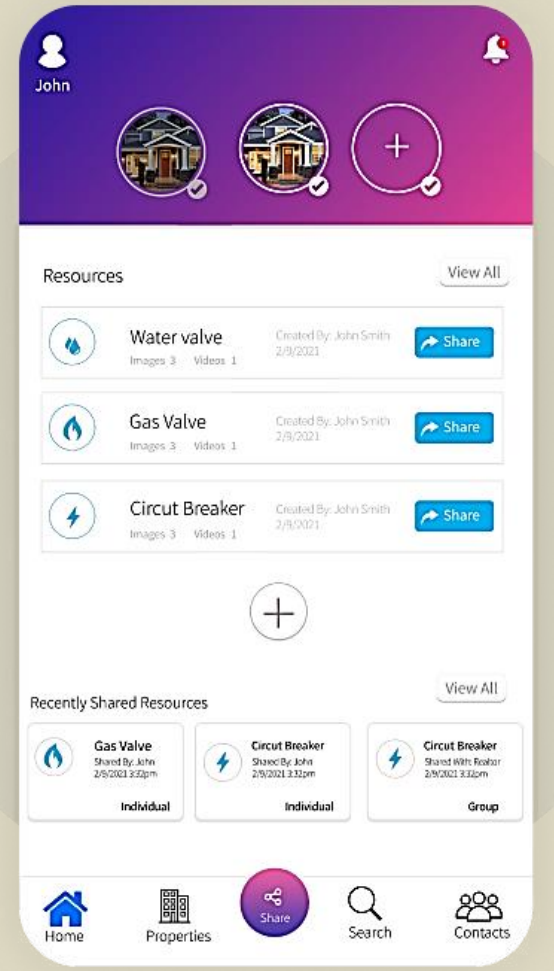
New App Can Be a Public Safety Guide During an Emergency

Source: https://www.govtech.com/em/preparedness/new-app-can-be-a-public-safety-guide-during-an-emergency

Oct 21 – As a firefighter, Andrew Leith used to teach the Community Emergency Response Teams (CERT) how to prepare for disasters. That morphed into teaching classes for the everyday citizen on being prepared — and that meant delivering the eye-opening news to most of them.

He said he would ask the classes, "Who do you think is coming to help if your house is on fire during an earthquake?" The answer? Nobody. In that scenario, it could prove critical that the resident understand how to turn off the gas. And guess what? Most people don't know how. So, he developed an app to show them.



The Dwell Secure app is available for free now to anyone with an Android or Apple device.

The app allows the user to enter information on a home or building, upload photos or videos of where things are located, like the gas meter, water meter and electrical panel, and can include sample images on how to turn off utilities.

Upgrades are available for a small cost, which allows the user to include multiple residents or buildings, as well as reminders on when things need to happen.

For instance, Leith includes reminders on his phone about when his wife's grandmother's utilities need to be addressed. The reminders pop up on his phone as well as his wife's and grandmother's. "I know if I don't go and address the furnace filter, my wife will bug me about it at dinner," he said.

When people have a broken gas meter, they usually just call 911, and the fire department responds and turns off the gas.

But that's not always possible. Where Leith works, at Shoreline Fire Department in Washington, with fewer than 20 fire personnel to serve about 55,000 people, they can't stop at individual houses during an earthquake. The department has to be out surveying bridges, roads and other infrastructure.

The Dwell Secure app has been available for about two months now, and about 700 people have downloaded it. A few have paid the small fee to upgrade, but Leith recommends waiting until early next year to upgrade when he improves the app.

With the updated version next year, users will be able to include "everything in your house," Leith said. "Your appliances, your furnace, your water filters, and you can take photos of all of those and make notes."

So users get the app and create an account. They may have to call a home inspector, friend or someone else to come over and find all the utilities for them initially. They can then take photos or videos showing how to turn the utility off ahead of time before it's too late.

Leith has instructions on his wife's phone about how to operate the generator in case she has to if he's not home. He also has a well on his property, and if there is a problem, his wife can open the app, open "water" and it will show her where the valve is, how to shut it off and who to call for more help.

All the info is stored on the phone and in the cloud so if a user loses their phone they can still easily repopulate the app on a new one.

And Leith said there doesn't necessarily have to be a disaster in the offing for the app to be useful. "Like in Texas a few years ago, whenever they froze and thawed, there was water leaking all over the place," he said. "And people didn't know how to shut off their water. That's why marking locations would be really nice."

Qatar – MoPH, WHO hold second Mass Casualty Management program

Source: https://thepeninsulaqatar.com/article/23/10/2022/moph-who-hold-second-mass-casualty-management-program

Oct 23 – The Ministry of Public Health (MoPH), in partnership with the World Health Organization (WHO) recently concluded the second phase of the Mass Casualty Management (MCM) training program.

The training is part of the three-year 'Sport for Health' partnership between MoPH and WHO, in collaboration with FIFA and the Qatar Supreme Committee for Delivery and Legacy (SC).

The initial phase of the innovative program started in March 2022 by training Hamad Medical Corporation emergency department staff and accrediting a number of local health providers as MCM trainers.

The second phase involved healthcare providers working in governmental, semi-governmental, primary health centers and private hospitals. The training focused on equipping these teams with the best clinical and administrative practices for managing patients in the critical initial 30 to 45 minutes following an incident in which there have been many casualties.

The training included interactive discussions, workshops and tabletop exercises simulating Mass Casualty Incidents. In addition, the training was an opportunity for different healthcare facilities and teams to review their emergency plans.

Director of Health Emergency Department at the MoPH, Dr. Mohammad Al Hajri said the Mass Casualty Management Program was developed by the WHO Academy, the organizations state-of-the-art lifelong learning center.
"This program introduces best practices based on experience gained from the responses of healthcare systems around the world who have dealt with such incidents," Dr. Al Hajri said. "Being able to share this knowledge and best practice with our teams here in Qatar has been invaluable."
Nearly 45 healthcare providers participated in this training. In addition, six regional healthcare providers attended upon the recommendation of the WHO enhancing Qatars reputation as an emerging recognized regional center offering WHO courses.
The course was conducted by accredited local instructors who were trained by way of previous courses in addition to international experts from the WHO Academy.

After Seoul's Halloween tragedy, South Koreans are searching for answers

Source: https://www.npr.org/2022/10/31/1132795290/seoul-itaewon-south-korea-halloween-stampede

Oct 31 — Forty-eight hours after Saturday's deadly Halloween stampede, the country is mourning the victims and searching for answers.
A crowd surge in a narrow alley in the capital's Itaewon district killed more than 150 people and injured more than 140 on Saturday evening. The victims were mostly young adults, and **among the dead are 26 foreigners from 14 countries.**
President Yoon Suk Yeol on Sunday declared a weeklong national mourning period, the second in the country's history. National flags fly at half-staff, and many public events are canceled or delayed. The police launched a 475-strong investigation team and scoured the scene with forensics officers on Monday.
On Monday, local governments set up public mourning sites. Jeong Hye-yoon, 35, visited an altar near the scene. As a young woman living in a nearby neighborhood, she finds it "unbelievable and surreal" that a disaster of such magnitude happened in the heart of the city.

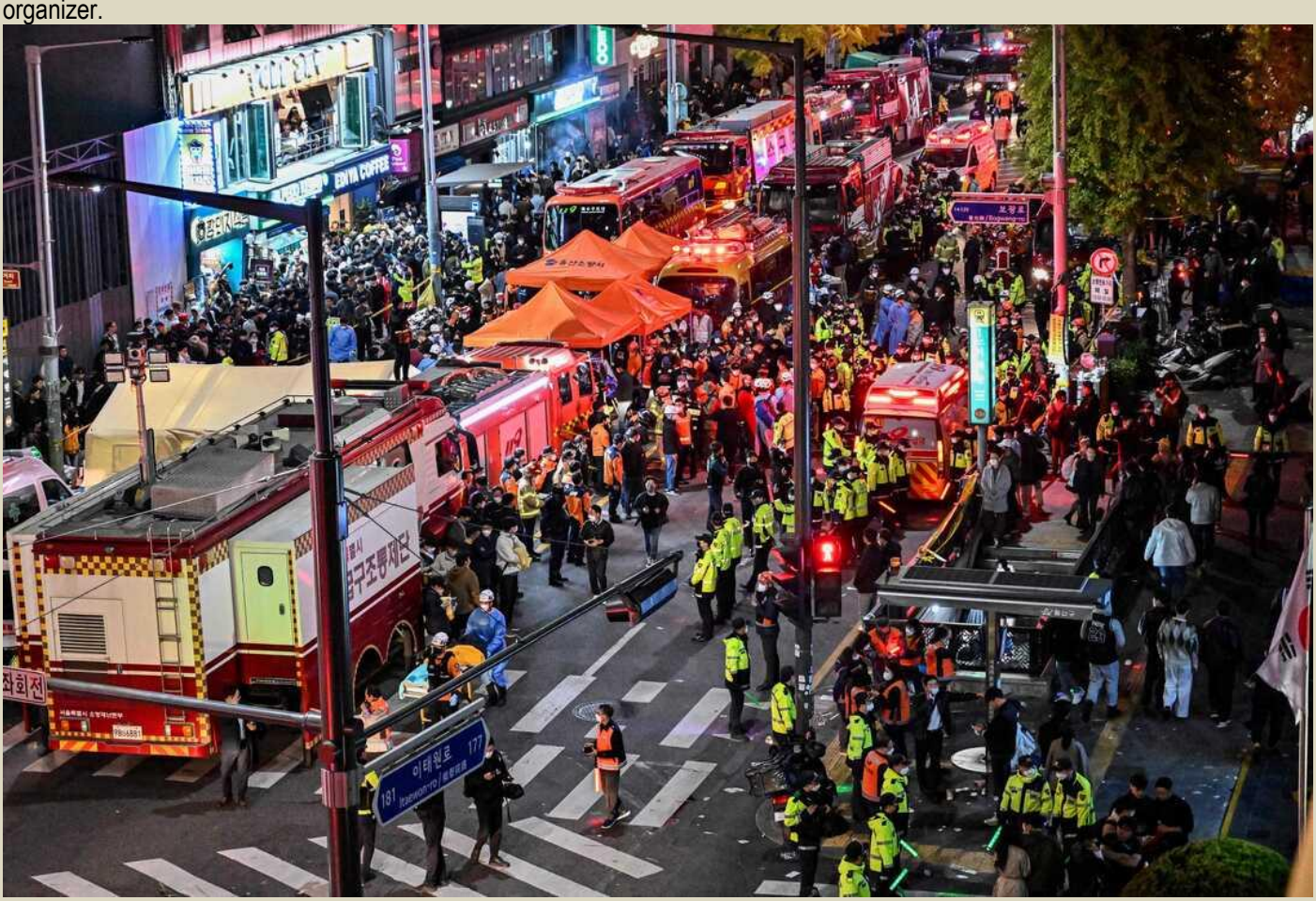
Mourners pay tribute in front of a joint memorial altar for victims of the deadly Halloween crowd surge, outside city hall in Seoul on Monday (Jung Yeon-je/AFP / Getty Images)

Witnesses are lamenting the lack of crowd control measures

"Large crowds gather in this area every year. But they were left on their own without any preparations to prevent a huge accident from happening," Jeong says.

The multicultural neighborhood of Itaewon has attracted hundreds of thousands of revelers looking for Halloween festivities each year. The police had estimated that over 100,000 people would visit the district this year as people celebrate the first Halloween free from pandemic-related restrictions. Over 130,000 passengers used the Itaewon subway station on Saturday, according to Seoul Metro Corp.
In videos filmed earlier that evening and posted on social media, the sloping 10-foot-wide alley is seen packed with people trying to move in both directions. The alley starts just steps away from a subway exit on the main street and connects to a narrower street lined with popular restaurants and clubs.

Many eyewitnesses lamented lack of crowd control measures. The National Police Agency on Monday said a total of 137 police officers were dispatched to the district on Saturday. And they were tasked with curbing crimes, not crowd control.
Hong Ki-hyun, chief of the agency's Public Order Management Bureau, admitted the police failure to predict mass casualties and expressed "regrets" about their judgment. He said the police do not have a manual for large gatherings that take place with no clear organizer.



Onlookers, police and paramedics gather in response to a stampede during Halloween celebrations in the popular nightlife district of Itaewon in Seoul on Saturday (Jung Yeon-je/AFP / Getty Images)

Public safety experts emphasize that the gathering's spontaneous nature cannot be an excuse for inaction. Moon Hyeon-cheol of Soongsil University's Department of Police Science says the police and local authorities "could have blocked car traffic off the street near the site during this past weekend or had the subway pass Itaewon station without stopping."

Families of victims of a 2014 ferry disaster say this tragedy seems all too familiar
To one group of mourners who visited the Itaewon site on Monday, the massive loss of young lives and the failure to prevent it seem tragically familiar. They are the parents who lost their children in the 2014 Sewol ferry disaster.
The ferry sank and killed over 300 passengers, including 250 high school students, partly due to government failures and inappropriate safety measures.
Jeong Boo-ja, who lost her son in the ferry disaster eight years ago, says the parents "believed South Korea would have taken a lesson and not repeat the same" after their tragedy.
In the wake of the accident, the government restructured its disaster management system, strengthened safety regulations and increased related budgets. But according to Interior Ministry data from 2020, the number of disasters such as fires, chemical leaks and ship or train accidents has continued to grow — after a brief decline in 2015.
Jeong Boo-ja struggles to find words of condolence for the victims' families.
"There will be truly painful times ahead. I myself don't know how I passed the past eight years. And even though I share the same experience, I don't know how I can console the bereaved families," she says.

"I hope they stay strong and not be consumed by their own grief. I hope they can say sincere goodbyes to their son or daughter when they can. They will regret it if they don't."

EDITOR'S COMMENT: **AFTER! AFTER! Always AFTER!** This is a vivid example that local police did not perform well and did not make a threat analysis most probably because it was a "happy" mass gathering where nothing bad was expected to happen. If they had analyzed the worst-case scenario things might be different and many people alive. May this very unfortunate incident become a lesson learned for the future. **No more flowers for the dead! Enough!** It was very impressive, as shown in many videos, the big number of volunteers able to provide CPR to those who suffocated during the stampede. This is a fine example to copy and paste!

Expert Explains Why Seoul's Tragic Crowd Surge Turned So Deadly

Source: https://www.sciencealert.com/expert-explains-why-seouls-tragic-crowd-surge-turned-so-deadly

Nov 01 – Crowd surging – the deadly phenomenon that claimed more than 150 lives in South Korea – is explained by simple physics, an expert told Insider.

At least 154 people died in Seoul on Saturday when a Halloween street party caused a crowd so dense it crushed people to death.

The crush took place in the busy Itaewon neighbourhood of Seoul, a popular nightlife spot that attracted tens of thousands of people on Saturday, *The Guardian* reported.

There was no single event planned, per Reuters. But crowds from bustling bars and nightclubs poured into a narrow, sloped alley connecting a subway station to a main street.

Sometime after 10 pm, the street became full beyond capacity. Social-media accounts of the night, compiled by Reuters, said that people near the top of the alley lost their footing and fell into crowds below, starting a fatal crush.

The tragedy prompted national mourning in South Korea and questions of whether more could have been done to prevent it.

Medhi Moussaïd, a research scientist at the Max Plank Institute in Berlin who studies crowd dynamics, spoke to Insider about when crowding turns deadly

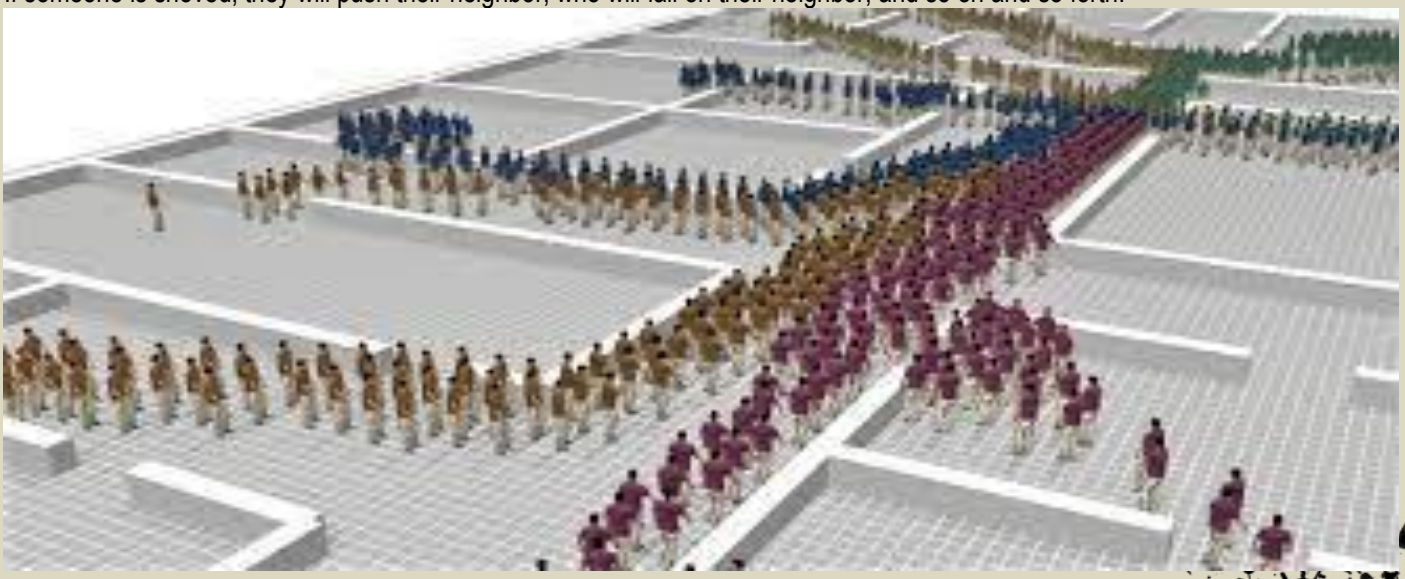
"Most people don't realize the danger," he said, arguing that people should be better informed as cities become denser and big crowds more common.

Crowds acting like waves

Crowd surging is driven by a simple principle. If a group of people becomes dense enough – more than six or seven people per square yard – a crowd starts acting like a fluid.

At this point, the people inside largely lose the power to control their own movement.

If someone is shoved, they will push their neighbor, who will fall on their neighbor, and so on and so forth.



"Then this movement is transmitted," Moussaïd said. It is a little like a ripple through water, as these movements spread, they grow bigger.

The pressure from the wave can be too intense to bear for people in the crowd, especially if they are pushed into an obstacle. As seen in Seoul, it can be fatal.
"Those waves are pretty dangerous because people can be compressed against the walls and also against one another. And whenever two waves cross, people can feel the pressure from both sides," said Moussaïd.

What to do if you get caught in a crush
In the overwhelming majority of cases, crowded events will be safe. But Moussaïd listed some things that could help if things ever turn dangerous.
The main thing is awareness: **if you feel too crowded, you're probably right.** Move away quickly to a less dense spot. This can protect you and also relieve the pressure on others.
"If just a small part of people start doing that, it reduces the density and solves the problem," he said.
Once the crowd reaches that critical threshold, however, the pushing wave can build very quickly. Then it is a case of survival, said Moussaïd.
"If you feel the pushing wave, don't try to resist. Go with it and keep your balance."
Do your best to stay standing. If one person falls over, it will create a wave of people toppling. Those at the bottom of the pile are then likely to be crushed by the weight of the bodies above them.
Hold your arms up against your ribcage like a boxer to make it easier to breathe. The pressure from the wave can cause people to faint and fall.
Don't struggle against the flow of the crowd. If you push back, the pressure in the system will grow, which will make the situation worse for the next couple of seconds to minutes, Moussaïd said.

Information is key
This is not the first time crowd surging has killed. Previous examples include the Love Parade in Germany in 2010 where 18 people died and Travis Scott's Astroworld Festival in Houston last year where eight people died.
With events like these, proper planning can reduce the risk by ensuring that too many people don't gather at once.
But Moussaïd said the event in Seoul was different because it was a spontaneous gathering in the streets. It would have been very difficult to prepare for.
According to Reuters, authorities had expected a crowd of about 100,000 but did not think the area required more planning than a normal Halloween weekend.
"Many people gather for Halloween every year," said an unnamed woman who identified herself to Reuters as living nearby.
"But there were just so many last night, incomparably more than before COVID," she said.
As the world population grows and more and more people are packed into urban areas, this could happen more often, said Moussaïd.
"An easy fix would be letting people know that crowds can be dangerous."

Panic Buttons, Automatic Locks, and Bulletproof Windows Top the Proposed Safety Rules after Uvalde Shooting

By Brian Lopez
Source: https://www.homelandsecuritynewswire.com/dr20221105-panic-buttons-automatic-locks-and-bulletproof-windows-top-the-proposed-safety-rules-after-uvalde-shooting

Nov 05 – The Texas Education Agency announced Thursday a plethora of proposals that would, among other changes, require public schools to install silent panic alarms and automatic locks on exterior doors.
Other proposals include inspecting doors weekly to make sure they lock and can be opened from the outside only with a key. Two-way emergency radios would also have to be tested regularly. Schools would need to add some sort of vestibules so visitors can wait before being let in, and all ground-level windows would have to be made with bulletproof glass.
These proposed requirements come about five months after a gunman killed 21 people, including 19 children, at Robb Elementary School in Uvalde. The gunman entered a door that had been closed by a teacher, but the automatic lock failed.
If approved, schools would have to start putting in place these safety measures starting in 2023. Before the end of this year, the education department will collect public comments on the proposed rules.

The state has allocated $400 million for increased safety measures that will be disbursed to districts. In the coming weeks, the education department will make a grant application available to districts. Districts will receive those grants based on enrollment, while smaller, rural schools will receive the minimum $200,000.
Proposing these safety measures is the latest action the state has taken to secure schools in the wake of the Uvalde shooting. In June, the education department announced that it would check all the locks on exterior doors prior to the start of the 2022-2023 school year and review every district's school safety plans.
As Texas moves forward with different safety measures, experts have said there is no indication that beefing up security in schools has prevented violence. Rather, they can can be detrimental to children, especially Black and Hispanic children. Black students are overrepresented in all types of disciplinary referrals and are more likely to have their behavior addressed by school police officers than their white peers.
Advocates and Uvalde parents have criticized the state's response in the months after the shooting, demanding state lawmakers raise the minimum age to purchase a semi-automatic rifle in the state from 18 to 21 years old.
They have called on Gov. Greg Abbott to call a special session to make this happen. Abbott, who has signed legislation to expand gun rights, hasn't budged.

Brian Lopez is the Public Education Reporter for The Texas Tribune.

EDITOR'S COMMENT: I am sure that additional measures were proposed as well but I would like to add four more: (1) Fortify classroom doors; (2) Install intermediate doors in corridors that can isolate certain areas of the premises; (3) Have several "human screeners" surrounding the school during working hours – could be parents, retired police/military officers; (4) Enrich first aids kits with modern equipment such as *QuikClot* or *Celox*[2] (hemostatics), chest seals, and tourniquets (e.g., C-A-T Gen7).

The Role of Faith in Disasters

By Michael Prasad
Source: https://www.domesticpreparedness.com/resilience/the-role-of-faith-in-disasters/

Nov 09 – When people feel powerless in times of extreme stress, they may turn to a higher power to help them get through the situation. This can be true for those who have been directly impacted by the disaster and those who are called to help others. Many faith-based organizations (FBOs) have disaster response and recovery components as major elements of their own missions – and not just for the benefit of their own followers. By helping others through disasters, FBOs create a valuable force-multiplier role in disaster response and recovery as well as in the other key national preparedness mission areas of prevention, protection, and mitigation.
According to The 2020 Census of American Religion released in July 2021, roughly 77% of American adults affiliate with some organized religious group. Americans utilize faith to help get through disasters that impacted them and faith in others to help respond to and recover from them as well.
With their own response and recovery components, many faith-based groups can support disaster response efforts, plus provide mental health and spiritual care.
Many FBOs view outward charity as a combination of faith and hope. Academic and theologian Martyn Percy described this relationship between FBOs and society as an ecclesial canopy. That outward charity can exist to help any survivors of disasters, regardless of their own faith or lack thereof. Poet and satirist Alexander Pope said, "In Faith and Hope the world will disagree, but all mankind's concern is Charity." FBOs active in disaster charitable work are not just those associated with Christianity. In Judaism, the word for charity is *tzedakah*, and it is a *mitzvah* (good deed) equal to the sum of all other good deeds:
Charity is an act of love, kindness and compassion. It is also a duty, a privilege, a right, an act of justice, a humbling experience (even more for the giver than for the recipient) and a badge of identity.
The concept of charity in Islam – *zakat* (mandatory requirement for almsgiving – one of the faith's five pillars) and *sadaqat* (voluntary giving) – is very strong: "zakat and sadaqat are performed by believers not just as moral obligations to society, but as sincere

[2] Not to be used to victims with known allergy to shrimps

endeavors to gain God's pleasure." Buddhism has a required action called *dana*, which "includes giving [including one's time and talents, or *sweat dana*], sharing, and selfless giving without anticipation of return or benefit to the giver."

FBOs as Part of a VOAD/COAD Relationship With Governmental Organizations

Many FBOs are components of Voluntary Organizations Active in Disaster (VOAD) and Community Organizations Active in Disaster (COAD), which can help with governmental operations of Category A (debris removal) and the "locally executed, state managed, and federally supported" Category B (emergency protective measures) work of Public Assistance in Response, and most (if not all) of the Recovery Support Functions:

- Economic,
- Community planning and capacity building,
- Housing recovery,
- Health and social services,
- Infrastructure systems, and
- Natural and cultural resources.

FBOs are a key element in a whole-community approach to emergency management. Emergency managers must cultivate these relationships during the preparedness phase of the disaster cycle to be able to activate them during the response and recovery phases. Many FBOs support government missions – across the entire disaster phase cycle – without bias or proselytizing (i.e., promoting their faith or beliefs as part of their collaborative disaster missions). Incorporating FBOs into the community's emergency planning supports not only the emergency management's Diversity, Equity, and Inclusion (DEI) initiatives for public service, but the whole community for the emergency response and recovery work itself.

In New Jersey, for example, FBOs collaborate and coordinate on disaster readiness within the state in at least three forums:

- New Jersey has an Interfaith Advisory Council, sponsored by the State's Office of Homeland Security and Preparedness (OHS&P), which provides a two-way communication connection between government and FBOs for site protection/prevention and disaster preparedness. This council also provides information and expertise on obtaining state and federal support such as non-profit security grants.
- For small (undeclared) and large-scale disasters, FBOs can play a critical role in the rollout of multi-agency recovery/resource centers (MARCs). For example, FBOs who provide financial assistance, donations of goods and cleanup supplies, or services to disaster survivors can be organized in a "one-stop shop" for survivors to avoid having to travel to multiple aid organizations for assistance. These resources from nongovernmental organizations to disaster survivors are generally available regardless of citizenship status or income level. In 2021, multiple MARCs were established in New Jersey after Hurricane Ida struck most of the state (and were located independent of the FEMA Disaster Recovery Centers for maximum exposure). In October 2022, a MARC was established for a multi-family fire in Passaic County, which displaced nearly 60 residents permanently from their homes. For nongovernmental organizations supporting disaster-impacted families of any size – especially FBOs – a MARC can effectively centralize recovery resources available to families in need.
- During full activations of the state's emergency operations center, OHS&P staffs a private-sector desk, which includes the New Jersey VOAD that represents the state-level VOADs/COADs, including FBOs. The New Jersey VOAD also helps the state's voluntary agency liaison coordinate with the FEMA voluntary liaison. During Superstorm Sandy in 2012 in New Jersey, VOADs/COADs provided more than $116 million in direct non-governmental financial assistance, assisted nearly 30,000 households with disaster case management, helped more than 3,000 families rebuild and restore their own homes, and contributed more than 350,000 hours of voluntary service.

Coordinate Locally & Support the Restoration of FBO Sites

Disasters start and end locally – and their partnerships with FBOs should be the same. With houses of worship in almost every community, these FBOs know how their own organizations operate disaster support missions and can provide in-roads to residents that government may not be easily able to penetrate with preparedness messaging. Emergency managers should be part of their county/parish/tribal entity COAD group, support ecumenical councils in and around their communities, and be supportive at the state level for their VOAD. Some FBO groups operate at a multi-community level, meaning that they support smaller disasters locally and larger disasters regionally and that their physical presence may not be in every community – for example, the Salvation Army and Catholic Charities support the entire nation, but do not have physical offices or sites in each municipality. Although the American Red Cross is not an FBO (nor is it a governmental organization), it is sometimes mistaken as one because of its globally recognized emblem. The Red Cross is a founding member of the VOAD movement and supports/partners with various FBOs on their own disaster response and recovery missions.

Although the concept of "separation of church and state" is generally about not endorsing one faith group over another, it also translates into the private-public distinction for financial and other governmental

assistance for recovery. However, when an FBO's site is used as a critical infrastructure's key resource as a pre-established part of a community's emergency plans – and is available without bias or discrimination to all the public – that FBO's site should be supported through governmental and non-governmental assistance. For example, if a house of worship's fellowship hall is used as a shelter or point-of-distribution, it should count as a Public Assistance Category B resource – and fall under FEMA's Private Non-Profit (PNP) criteria, which states that it: *"[M]ust demonstrate the facility provides a critical service or provides a non-critical, but essential government service and is open to the general public. A facility that provides a critical service is defined as one used for an educational, utility, emergency, or medical purpose."*
This does not mean that tax dollars go toward restoring houses of worship. However, in many communities as with their public schools, FBOs have a much larger non-disaster role in community housing, community planning and capacity building, and community health and social services. Those elements are key recovery support functions for any community.

Mental Health/Disaster Spiritual Care
Finally, disaster trauma is a serious health concern for families impacted by disasters and the responders who help them. The federal government recognizes this and supports disaster grants on presidentially declared disasters through the Substance Abuse and Mental Health Services Administration (SAMHSA) of the U.S. Department of Health & Human Services. SAMHSA also has resources dedicated to emergencies and first responders. FBOs can help communities before, during, and after disasters with mental health and disaster spiritual care. FBOs also help balance equity needs for any community, especially when cultural and religious rituals need to be maintained and conducted, for example, grief and bereavement activities associated with disaster-caused fatalities. The American Red Cross recognized this as a national gap in the recovery process for individuals and families early in 2020 during the COVID-19 pandemic. To respond, they created a virtual family assistance center to help guide people through to behavioral health, spiritual care, and disaster health services support from partners – including from FBOs. FBOs who are VOAD/COAD members should be considered whole-community partners by emergency managers. They bring tremendous breadth and depth to the table through coordination, cooperation, collaboration, and communication. Along the same lines of working with non-FBO VOAD and COAD groups, emergency managers need to empower, endow, educate, and entrust the FBOs they work with to the benefit of the public.

Michael Prasad is a Certified Emergency Manager and is the executive director for the newly formed Center for Emergency Management Intelligence Research. He is also the chair of the International Association of Emergency Manager's (IAEM) Children and Disasters Group and the vice president for the IAEM-USA's Region 2. He holds a Bachelor of Business Administration degree from Ohio University and a Master of Arts degree in Emergency and Disaster Management from American Public University. Views expressed do not necessarily represent the official position of any of these organizations.

Public perception of the risk of disasters in a developing economy: The case of Saudi Arabia

By Saud Alshehri, Yacine Rezgui and Haijiang Li
Natural Hazards 65(3) | February 2013
Source:https://www.researchgate.net/publication/257632908_Public_perception_of_the_risk_of_disasters_in_a_developing_economy_The_case_of_Saudi_Arabia

Saudi Arabia has in recent years experienced frequent disasters, including flooding, epidemics, and dust storms, while many parts of the country are subject to regular earthquake and volcanic activity. The paper examines public perception of the risk of disasters in this interesting socio-cultural and regional environment not already covered by existing literature. A wide national survey conducted between March and May 2012 resulted in 1,164 responses across the 13 regions of Saudi Arabia. **The study showed that the majority of the participants have faith that God is in control of the world and that disasters may be a punishment from him. However, this does not hinder their desire to be prepared to cope with disasters.** It also highlighted that direct experience with such disasters does not directly influence perception. The research findings lead to the emergence of a number of recommendations regarding raising awareness of hazards and the risk of disasters, including education, training, encouraging voluntary work, and improving public access to vital information resources. A requirement for research into resilience also emerges, to prepare communities to cope with disasters; this is the focus of the authors' future research.

●▶ **NOTE:** In the URL link above, there is a number of similar studies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