**AT: Russia War Good**

**2AC – Nuke War Causes Extinciton**

**[b] Even small loss of plankton causes extinction.**

Dr. **Goodheart 14.** Editor of the AGR. 03-20-14. “Scripps Institute; Global Oxygen Levels Are Dropping In Major Cities And Oceans From A High Of 35% In Geological History; How To Measure Oxygen Levels In Air, Nuclear Energy Creating Acid Oceans.” A Green Road Journal. http://www.agreenroadjournal.com/2014/08/global-oxygen-levels-are-dropping-to-as.html

Cyanobacteria have been involved in all 5 mass extinction events. We are at critical mass. We are losing the Earth. Although much information is available, Phil Plait presents at a unmatched level of understanding. Clear, precise, and on a lay-mans level. Via Marushka France oxygen levels gave rise to life forms that needed oxygen...declining oxygen levels will, therefore, see declines in populations that need oxygen... http://en.wikipedia.org/wiki/Great\_Oxygenation\_Event Great Oxygenation Event - Wikipedia, the free encyclopedia The Great Oxygenation Event (GOE), also called the Oxygen Catastrophe In other words, as oxygen levels drop, the balance of life shifts to life forms that don't need oxygen to survive and thrive. The dead zones in the ocean do have life in them, just not the kind of life that thrives in oxygen. PERCENT OXYGEN IN AIR l live in an 'ocean' of air, just like sea creatures live in an ocean of water. All living creatures, plants, animals and humans live in the troposphere, which is the lowest level of atmosphere that surrounds the Earth in a very thin and fragile layer. The amount of oxygen is delicately balanced with the amount of CO2 in a mysterious formula that has taken millions of years to evolve to where it is today. Upsetting that balance creates havoc in all kinds of ways, in many directions. Video; https://www.youtube.com/watch?v=xQNl2EdteDE 7 min. The web of life depends on a healthy and high level of oxygen in the atmosphere, which sustains almost all life on Earth. WHAT IS THE NORMAL AMOUNT OF OXYGEN IN THE ATMOSPHERE? Professor Ian Plimer of Adelaide University and Professor Jon Harrison of the University of Arizona concur. Like most other scientists they accept that oxygen levels in the atmosphere in prehistoric times averaged around 30% to 35%, compared to only 21% today – and that the levels are even less in densely populated, polluted city centres and industrial complexes, perhaps only 15 % or lower. http://www.theguardian.com/commentisfree/2008/aug/13/carbonemissions.climatechange What is accepted and known by most scientists, is that oxygen levels are dropping, and that CO2 levels are rising in both the air and oceans all around the world. Atmospheric Oxygen Levels Are Dropping Faster Than Atmospheric Carbon Levels Are Rising http://disinfo.com/2013/01/atmospheric-oxygen-levels-are-dropping-faster-than-atmospheric-carbon-levels-are-rising/ HISTORICAL OXYGEN LEVELS Oxygen has made up as much as 35% of global atmosphere in terms of geological history, but has been declining due to many causes. Recent declines are due to human intervention. Via Sandy LeonVest; The oxygen crisis; Could the decline of oxygen in the atmosphere undermine our health and threaten human survival? Around 10,000 years ago, the planet's forest cover was at least twice what it is today, which means that forests are now emitting only half the amount of oxygen. Desertification and deforestation are rapidly accelerating this long-term loss of oxygen sources. The story at sea is much the same. Nasa reports that in the north Pacific ocean oxygen-producing phytoplankton concentrations are 30% lower today, compared to the 1980s. This is a huge drop in just three decades. http://www.theguardian.com/commentisfree/2008/aug/13/carbonemissions.climatechange THE KEELING CURVE; MEASURING OXYGEN AND CO2 CONTENT IN AIR AND OCEANS The Scripps Institute reports on the decline in oxygen levels globally, both in the air and in the oceans. https://www.youtube.com/watch?t=129&v=6WFCoJgt71A 5 min. After two decades watching atmospheric oxygen levels drop, a Scripps researcher's conclusions about climate could leave one feeling light-headed. On the CO2 side, levels have crossed a negative tipping of 400 PPM. Everything in Nature is in balance, and the balance has been upset by human caused man made carbon emissions of various kinds, including radioactive carbon from nuclear plants. Radioactive Carbon 14 From Nuclear Power Plants Causing Deforestation, Fungus Infections, Disease And Death Of Trees, Humans, Animals And Plants Globally - Plus Global Warming Effect http://agreenroad.blogspot.com/2014/05/carbon-14-emitted-by-nuclear-power.html GLOBAL OXYGEN LEVELS ARE DROPPING, PER MEASUREMENTS TAKEN BY SCRIPPS INSTITUTION OF OCEANOGRAPHY AT U OF CA Scripps Institution of Oceanography (SIO), University of California at San Diego reports global oxygen levels in atmosphere are dropping slowly, but steadily. mlo O2/N2 flask data http://www.esrl.noaa.gov/gmd/obop/mlo/programs/coop/scripps/o2/o2.html The reason for the spikes is due to plants absorbing CO2 during the spring and summer and then during the winter, the CO2 levels increase, thus creating a sawtooth pattern. What the graph shows is that the plants and algae that 'eat' CO2 cannot keep up with the amount of CO2 produced by humankind through burning of 1 cubic mile of oil per year, on top of the clear cutting of huge areas of forest. The oceans also contain an important oxygen generator for the planet, and that form of life is also experiencing a mass die off due to human causation. Via Frank Mancuso ....This June it was discovered that phytoplankton is ingesting marine micro plastic. As marine plastic decomposes it absorbs PCB's spelling the demise of phytoplankton. Phytoplankton has declined by 40% and was supplying over half the worlds oxygen, but since the decline both ocean oxygen and atmospheric oxygen levels are dropping. 2 or 3 percentage points will end all life on the planet. It is irreversible and happening rapidly as evidenced by world wide beachings of toxic suffocating ocean life forms. Every estuary, river, and stream is now inundated with storm drains which drain all the filth, plastic, medical waste, oil, toxins into our oceans quite legally. This practice must be stopped TODAY, BUT government bought and paid for by CEO's block all attempts to correct this, potentially the most serious issue facing mankind today.﻿

**[c] AND, cyanobacteria -- extinction.**

Mickle **Bryan 10**. Network Administrator. 06-05-2010. “BP Oil Spill May Kill Mankind.” http://micklebryan.com/2010/06/05/bp-oil-spill-you-know-i-have-to-talk-about-it-again/

Correct me if I am wrong but, This would mean that, at this rate, in 200 years we will have no more oceans, and in less than that, the ocean would be depleted of all existent life as we know it. So to put it lightly no more algae, no more oxygen, no more life. Cyanobacteria is the building block of life on this planet. It can not live in oil. This bacteria has been called such things as “The Gods seed”. It has made our world what it is today. For many scientists it is THE building block for life on this planet. We look for water on other planets because it contains this bacteria which means life could exist. Without it, life does not exist. If algae and bacteria can not make oxygen guess what happens? You guessed it, the human race is no more. The planet is no more. Life is no more. Math never lies. You really need to take a step forward and figure out what we as a people can do about this. As far as criminal charges, get caught pouring oil into a lake, by fish and game and see what happens to you. I’m just a guy who had a really awesome Reef tank at one time a “fish nerd” if you will. I sure hope the shore line is a big enough protein skimmer to make all this bad just go away, but I can’t seem to add up how it will. Here is the truth, dispersant and all the techniques we have will never get rid of the true pollutants. This means that we may make them idle but it will not save our race. The serious impact of this is that this is an event that we do not have the technological knowledge to handle as a biological creature on this planet. This type of scenario will kill us all and it is real and it is happening now. It’s just math people, you look into it.

**[d] AND, nitrogen fixing -- extinction.**

S. A. **Iqbal &** Y. **Mido 10**. Department of Chemistry @ Safia P.G. College of Science & Education; Department of Chemistry @ Kobe University. 2010. Chemistry Of Air & Air Pollution. Discovery Publishing House.

NITROGEN Nitrogen, and its exchange between the biosphere and the atmosphere, is more essential to ecosystem survival than any other element. Nitrogen, N2, is an inert gas comprising 78 per cent of the atmosphere. N2 is crucial to nitrogen use by eco-systems, but several other nitrogen compounds are also important. Nitrogen and its compounds are essential building blocks for ecosystem and human survival. The global estimates of total nitrogen stored in atmospheric and surface locations are given in Table 3.3. The lithosphere holds far more nitrogen in storage than all the other locations combined. Stored in primary and igneous rocks this nitrogen is not accessible to any use by ecosystems. Only a very small fraction is released by weathering and other natural processes. Only small amounts of nitrogen are made available for ecosystem use, and inclusion in the active nitrogen cycle from other regions.

**2AC – CounterForce Fail**

**Counterforcing fails**

**Puzzanghera 22** [Jim Puzzanghera is a reporter in the Globe's Washington Bureau, focusing on the national economy. He spent two years as bureau chief, directing coverage of the 2020 presidential election and overseeing the Back to the Battleground series that won the 2020 Toner Prize for Excellence in National Political Reporting. He's worked as a journalist in the nation’s capital since 1998 and is a two-time National Press Club award winner for Washington reporting, 3-12-2022, After four decades and $200 billion, the US missile defense system is no match for a Russian nuclear attack, BostonGlobe, https://www.bostonglobe.com/2022/03/12/nation/after-four-decades-200-billion-us-missile-defense-system-is-no-match-russian-nuclear-attack/] Eric

The answer, **experts said, is not a very effective one.**

The US only has a limited ability to destroy an incoming nuclear intercontinental ballistic missile, a [study](https://www.aps.org/policy/reports/popa-reports/upload/MissileDefense-Report-final.pdf)released last month by the **American Physical Society concluded**. It said that “the current capabilities **are low** and will likely **continue to be low** for the next **15 years**” to protect the US against a strike from North Korea, which has an estimated 20 nuclear warheads and relatively unsophisticated missiles. The Pentagon disputes the findings and says the most recent tests show the system can handle a North Korean attack.

But the ability to defend against an attack by Russia, which is estimated to have **nearly 6,000 nuclear warheads** **and highly sophisticated missile technology**, **is practically nonexistent.** The US system is **no match** against a large number of incoming missiles — precisely the kind of attack that Russia would launch, experts said.

“This idea of an impenetrable shield against an enormous arsenal of Russian missiles is just a fantasy,” said Laura Grego, a fellow at MIT’s Laboratory for Nuclear Security and Policy who co-chaired the American Physical Society team that wrote the report. “**It’s too hard to do.”**

It’s so difficult that the US intentionally hasn’t even tried. Official Pentagon policy states that its system is only designed to protect the nation from nuclear missiles fired by a rogue state like North Korea. For a military superpower like Russia, the US depends on its own vast nuclear arsenal of about 5,400 warheads as a deterrent. It’s a doctrine known to those who grew up during the Cold War as mutual assured destruction or MAD — any nuclear attack on the US would result in a counterstrike that would annihilate both countries.

“The United States relies on nuclear deterrence to address the large and more sophisticated Russian and Chinese intercontinental ballistic missile capabilities,” according to the Defense Department’s most recent [Missile Defense Review](https://media.defense.gov/2019/Jan/17/2002080666/-1/-1/1/2019-MISSILE-DEFENSE-REVIEW.PDF).

That’s probably surprising, and frightening, to many people, experts said.

“It’s fundamentally uncomfortable, this idea that we let the other guy have the ability to take us out and we expect the other guy to let us have the ability to do that, and we’re both going to stay rational and neither of us is going to cause the other to act on it,” said Ankit Panda, a senior fellow in the Nuclear Policy Program at the Carnegie Endowment for International Peace, a Washington, D.C., think tank.

Analysts have raised concerns that [Putin has not been acting rational](https://www.bostonglobe.com/2022/03/01/nation/i-personally-think-hes-unhinged-analysts-question-putins-mental-state-after-ukraine-invasion/) in his attack on Ukraine and in statements like the one he made when launching the invasion.

“Anyone who tries to interfere with us, or even more so, to create threats for our country and our people, **must know that Russia’s response will be immediate** and will lead you to such consequences as you have never before experienced in your history,” he said in a televised speech. A few days later, he announced [Russia’s nuclear forces had been placed in “special combat readiness.”](https://www.nytimes.com/2022/02/27/us/politics/putin-nuclear-alert-biden-deescalation.html) The US downplayed the move and gave no indication it changed its own nuclear readiness level, known by another frightening Cold War-era acronym called DEFCON.

Panda said many Americans **don’t realize** the US has **little protection** against a nuclear attack.

“I’ve seen it on my Twitter mentions,” he said. “I’ve been critical of setting up a no-fly zone partially on the basis of escalation risks and people reply, ‘Well, let the Russians try to nuke us. We have a missile shield, we’ll be fine.’ It’s just a very pervasive misunderstanding.”

The US must depend on nuclear deterrence because the arithmetic of our limited missile defense system and Russia’s massive arsenal doesn’t add up, said Robert Soofer, who served as deputy assistant secretary of defense for nuclear and missile defense policy during the Trump administration. Russia can overwhelm the US system by launching many more nuclear missiles than it could possibly knock out with its small squadron of ground-based interceptors.

“There are ways that Russia can strike the United States that really makes the GBI system virtually useless,” said Soofer, a nonresident senior associate with the Center for Strategic and International Studies, a Washington, D.C., think tank. “If Russia wants to penetrate US missile defenses, they can.”

The main missile defense system protecting the United States was developed after [President George W. Bush pulled the nation out of the 1972 Anti-Ballistic Missile Treaty](https://www.nytimes.com/2001/12/13/international/bush-pulls-out-of-abm-treaty-putin-calls-move-a-mistake.html) it had signed with the Soviet Union. The move came shortly after the 9/11 terrorist attacks amid heightened concern about a nuclear attack from a rogue state like North Korea and freed the US from restrictions on deploying a national missile defense system.

In a rushed effort completed by 2004, the Ground-based Midcourse Defense system began with 30 interceptor missiles in underground silos: 26 at Fort Greely in Alaska and four more at Vandenberg Air Force Base in California. Guided by radar and satellite sensors, they’re designed to pursue an enemy missile into space. There, they release a “kill vehicle” to intercept and destroy the nuclear warhead above the atmosphere after it separates from the incoming missile.

The Obama administration added 14 more interceptor missiles at Fort Greely in 2017. Two years later the Trump administration started the process of adding 20 more missiles there with upgraded technology and the first are scheduled to be deployed by 2028.

The US has been testing elements of the system over the Pacific Ocean since 1999 with mixed results. Of the 19 attempts to destroy the target, 11 have been successful, including the two most recent ones in 2017 and 2019 that were conducted against realistic intercontinental ballistic missile targets, according to the Pentagon’s Missile Defense Agency.

“The Ground-based Midcourse Defense system is vitally important to the defense of our homeland, and this test demonstrates that we have a capable, credible deterrent against a very real threat,” Air Force Lieutenant General Samuel A. Greaves, then the agency’s director, said in a [statement](https://www.mda.mil/news/19news0003.html) after the test.

That threat is rising. North Korea in recent days has conducted two tests of a new intercontinental ballistic missile, the White House said Thursday.

But Russian nuclear missiles are **more sophisticated** than those from North Korea, Soofer said. So the US would need to fire multiple interceptors at an incoming Russian missile to destroy its warheads, and the system could quickly get overwhelmed.

“At some point, we’re not going to be able to handle the Russian threat,” he said. “If there’s an unauthorized launch, an accidental launch, and it’s one or two missiles, I hope we can do something against it. But that’s not the way the Russians are going to operate. They’re not going to just launch one nuclear missile against the United States.”

To supplement the ground-based interceptors, the US has other ballistic missile defense systems designed to protect smaller areas. One is the Aegis system, which can fire missiles from Navy ships or land-based launchers to target short- and medium-range ballistic missiles. Two others are the Patriot and the Terminal High Altitude Area Defense, or THAAD, mobile ground-based systems.

“If the Russians were to launch a modest attack against regional targets, we have some capacity for intercepting and defeating those attacks,” said Loren Thompson, a longtime defense analyst at the Lexington Institute, a Washington, D.C., think tank. “We have some reasonable prospects of intercepting nuclear attacks using shorter range missiles, but when it comes to **long-range missiles** with which Russia could attack America, **we have virtually no defense.”**

**Even GMDs don’t work – law of physics and fake warheads**

**Karlis 22** [Nicole Karlis is a staff writer at Salon, specializing in health and science, 3-3-2022, Why scientists still can't figure out how to intercept nuclear missiles, Salon, https://www.salon.com/2022/03/03/why-scientists-still-cant-figure-out-how-to-intercept-icbms/] Eric

Engineers have been grappling with this question for decades. Yet curiously, and despite **monumental advances in physics**, **computing and A.I**. in the past four decades, the engineering problem of missile interception **has yet to be solved**.

"There's no law of physics against the prospect of intercepting them, but the laws of physics make **it extremely challenging** — and create all of these constraints on how difficult it is to intercept it," James Wells, a professor of physics at the University of Michigan, told Salon.

But Wells noted that such a thing is certainly physically possible. "There's no theorem that says 'one cannot accomplish missile defense,'" he added.

Technically, the U.S. does have a defense ICBM missile system. It's called the Ground-based Midcourse Defense (GMD), and it's the only system currently deployed to defend the continental U.S., with 44 interceptors based in Alaska and California. Unfortunately, it probably doesn't work.

A [recent study sponsored by the American Physical Society](https://www.aip.org/fyi/2022/physicists-argue-us-icbm-defenses-are-unreliable) concluded the the **GMD cannot be relied on** to counter even a limited nuclear strike. The study specifically focused on ICBMs from North Korea, and determined the U.S. defense systems in place are unlikely to be reliable enough to guarantee the mission would be a success **within the next 15 years**.

Experts tell Salon that despite technological advances, as Wells noted, there are a few reasons why this is such a hard problem to solve, scientifically speaking. The primary reason is that it is simply extremely hard to intercept something so **small (about a meter long)** that **is moving so fast (15,000 miles per hour)** **in such a short span of time**. Not to mention that part of **these warheads' trajectory occurs in space.**

"It's a really very challenging task," Dr. Laura Grego, a Stanton Nuclear Security Fellow at MIT's Laboratory for Nuclear Security and Policy, told Salon. "One reason it's so hard is that the timescales of a nuclear armed ICBM attack are very short from launch until they land — it's going to be 30 or 40 minutes — your defense has to be ready and effective on those timescales." Likewise, as Grego noted, "because the stakes are so high, **it really needs to work almost perfectly the first time."**

Indeed, an ICBM's trajectory has three different phases: boost phase, midcourse phase, and terminal phase, all of which typically occur in less than an hour from launch to strike. Grego explained that engineers have long targeted the midcourse phase, when the ICBM is coasting after launch towards its destination, as an optimal time to intercept.

Grego said that ICBMs are, by design, hard to intercept. The warheads, of which there are multiples and which emerge from the cone of the missile, are "relative small," which makes it hard to attack. Some of these **warheads might be decoys**, and contain nothing. Likewise, the journey of the ICBM takes it through the vacuum of space — where, as Grego says, "you **don't have air resistance** or very little air resistance, so a light decoy isn't slowed down compared to a heavy warhead."

**This makes it difficult to decipher which one is the actual warhead, and which one or ones are fake**. Grego explained this is known as the "discrimination problem."

**Russia can easily jam our nuclear missile defense – they have the EW advantage**

**Creery 19** [Madison Creery is a columnist at the Georgetown Security Studies Review, 06-26-2019, The Russian Edge in Electronic Warfare, Georgetown Security Studies Review, https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/] Eric

The U.S. has spent **nearly two decades** dedicated to counterterrorism operations where it enjoyed significant qualitative and quantitative advantages over adversaries. In these conflicts, the U.S. was able to quickly gain local air, sea, and land superiority with relatively low risk to its armed forces.[[I]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn1) However, as the U.S. turns toward near-peer competition, the days of permissive deployments are quickly coming to an end. Instead, US forces must now fight their way through a degraded information environment on a daily basis, facing a diminished ability to synchronize and execute operations. Most concerning **are the growing capabilities of adversaries** in the realm of electronic warfare (EW). Remarkably, it is Russia that presents some of the stiffest competition, with increasing agreement among experts in the field that Russia has taken a huge, and somewhat unexpected, leap forward in its EW capabilities.[[II]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn2) Although the U.S. continues to possess military superiority in conventional weapons, Moscow **now possesses a critical** **asymmetrical advantage** that seeks to bridge this gap.[[III]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn3) In an age of renewed competition with Russia, the U.S. will need to increase its proficiency in EW missions or risk falling behind.

Electronic Warfare and the Growing Russian Threat

Electronic Warfare Basics

EW has become a common buzzword in the defense community, though it is not always well understood. Its purpose is to deny an adversary from gaining control of, and an advantage in, the electromagnetic (EM) spectrum, while still ensuring friendly and unimpeded access for oneself and one’s allies.[[IV]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn4) It is employed to **support military operations** in three ways: electronic attack, electronic protection, and electronic support. Jamming **is a key tool** in electronic attack, and one that is commonly referenced in EW literature. The goal is to emit “noise” in an over-powered signal strong enough to overload the adversary’s receivers. The result is a jamming of the signal that the receiving system is trying to detect, **interrupting communications altogether**.[[V]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn5) Electronic protection involves guarding one’s own systems from these very attacks by hardening electronic sensors and by conducting electronic emission control so it is more difficult for an adversary to locate a target. Finally, electronic support are actions that search for, intercept, identify, and locate sources of EM emissions for the purpose of enabling the previous two functions. This can also be thought of as the reconnaissance element of EW. Countries like Russia and the U.S. are concerned about EW because key objectives like gaining air superiority greatly depend on achieving EW supremacy. Without it, an adversary can disrupt and degrade the navigation systems on precision guided munitions (PGMs) and **cause missiles to go off course,** **as well as suppress a country’s air defense systems through jamming**.

Russian Electronic Warfare: A Learning Curve

Although Russia’s **EW capabilities are a daunting challenge to the U.S. today**, this was not always the case. During the 2008 Russo-Georgian War, Russian EW capabilities were limited.[[VI]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn6) While Russia’s ground forces made gains against the Georgian army, its air force was unable to suppress Georgia’s air defense systems through jamming efforts, resulting in the loss of numerous Russian aircraft.[[VII]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn7) Learning from this experience, Russia has since prioritized investing in EW tools, with Russian President Vladimir Putin ordering at least 70% of all Russian EW equipment modernized by 2020.[[VIII]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn8) According to Deputy Defense Minister Yuri Borisov, that figure is now closer to 80 or 90 percent.[[IX]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn9) In 2009, Russia also formed units entirely dedicated to EW operations.[[X]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn10) Still, the overall number of soldiers serving in EW units is relatively low, as they must undergo specialist training to become proficient in all EW tools. With contract servicemen making up roughly 55% of these units today, Russia has a goal of making all units staffed with only professional servicemen in the near future.[[XI]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn11)

Russian EW Weapons

While there are numerous systems dedicated to EW at the disposal of the Russian Armed Forces, several stick out from the rest. The first is the Borisoglebsk-2, a system designed to jam mobile satellite communications and radio-navigational units.[[XII]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn12) The Borisoglebsk-2 is most notable for the role it played in eastern Ukraine, allegedly impeding the use of Ukrainian drones by suppressing incoming GPS signals.[[XIII]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn13) Another system commonly used by Russia is the Moskva-1, the nerve center for Russia’s air defenses and other electronic countermeasure systems.[[XIV]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn14) This system monitors electronic emissions within a 400 km range in real time on all frequency ranges, carrying out electronic intelligence-gathering and **conducting jamming and electronic suppression** whenever needed. Russia’s Krasukha-2 EW system also possesses the ability to analyze signal types and then jam adversary’s radar.[[XV]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn15) However, a unique feature is its capacity to provide a false target once the system has been jammed, leading the aircraft to fly away from its original target, protecting Russian forces from attack.

Finally, a notable tool in Russia’s EW kit similar to the Krasukha-2 is Russia’s **ability to spoof signals**.[[XVI]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn16) **Spoofing is when an actor mimics, or “spoofs,”** legitimate Global Navigation Satellite System (GNSS) signals in order to manipulate positioning, navigation, and timing (PNT) data.[[XVII]](https://georgetownsecuritystudiesreview.org/2019/06/26/the-russian-edge-in-electronic-warfare/" \l "_edn17) In general, an actor conducts spoofing by relaying false positioning information to an adversary. Russia deliberately transmits the same signals on frequencies used by GNSS in an effort to prevent receivers from locking-on to the authentic GNSS signals. Once Russia’s own signal is locked-on instead of the real GNSS signal, it begins to feed the receiver false PNT information. **This is critical to U.S. operations**, **since spoofing can affect naval navigation, as well as PGM routing.**

**Nuclear subs cannot be found**

**Larsen 21** [Caleb Larson holds a Master of Public Policy degree from the Willy Brandt School of Public Policy. He lives in Berlin and writes on U.S. and Russian foreign and defense policy, German politics, and culture, 6-28-2021, How America Watches for a Nuclear Strike, 1945, https://www.19fortyfive.com/2021/06/yasen-the-russian-stealth-submarine-even-the-u-s-navy-cant-find/] Eric

The Whole Shebang

The Severodvinsk **is incredibly advanced** and leverages some technologies that the Soviet Union researched in the 1980s. It has a large spherical sonar array in the bow that is thought to be very sensitive.

Because of the sonar’s large size, the torpedo tubes were moved from the nose to a position amidships near the submarine’s sail and are aimed at a forward angle. The Severodvinsk’s torpedo tubes are a mix of standard 533 millimeter and 650-millimeter heavyweight torpedos.

The Severodvinsk’s [**hull**](https://news.usni.org/2014/10/28/u-s-navy-impressed-new-russian-attack-boat)**is made of non** or low-**magnetic steel**, which either significantly reduces or **eliminates** the Severodvinsk’s magnetic signature.

Soviet (and now Russian) submarines have favored a double hull design in the past in which a hydrodynamic outer hull encapsulates a stronger inner pressure hull. The Severodvinsk uses a hybrid design, the outer hull only partially covers the inner hull.

There is a high degree of automation in the [Severodvinsk](https://nationalinterest.org/blog/buzz/russian-submarine-more-match-us-navy-123081), and the sub’s crew complement is consequently small—just sixty-five sailors and officers.

In addition to missiles, the Severodvinsk has twenty-four tubes aft of the sail that can carry the P-800 Onyx anti-ship missiles or nuclear-capable Granat missiles.

The Severodvinsk will be armed with [Zircon](https://nationalinterest.org/blog/buzz/us-military-would-lose-russian-hypersonic-missiles-89711) hypersonic anti-ship missiles, a first in submarine armament.

Silent as a Mouse

In an interview with [60 Minutes](https://www.youtube.com/watch?v=hhAaFXyy9rU), a U.S. Navy Admiral said that Russia has a “very capable submarine force,” and that increased Russian submarine activity gives him pause.

Talking about the Severodvinsk specifically, the Admiral [said](https://www.youtube.com/watch?v=hhAaFXyy9rU) that the Severodvinsk is “a brand new class of submarine, and it’s very capable, and it’s very quiet, so that’s the most important thing I think, in submarine warfare.”

Although he would not comment on reports that the U.S. Navy lost the Severodvinsk, Pentagon officials [said](https://www.youtube.com/watch?v=hhAaFXyy9rU) that the Severodvinsk went into the Atlantic Ocean in 2018—and managed to evade detection for weeks.

During peacetime, losing a Russian submarine is a headache. **During a conflict, losing track of a submarine is deadly.**

**Military officers agree**

**Gehrke 20** [Joel Gehrke is a Foreign Affairs Reporter, 02-25-2020, US has 'sufficient visibility' into Russian submarines but can't find them '100% of the time', Washington Examiner, https://www.washingtonexaminer.com/policy/defense-national-security/us-has-sufficient-visibility-into-russian-submarines-but-cant-find-them-100-of-the-time] Eric

Russian submarine forces **are operating secretly** **more often and more successfully** than they have in decades, according to a **senior U.S. general** **who** **acknowledged** that **American forces can’t always spot the undersea threats.**

“We do — but not for 100% of the time,” Air Force Gen. [Tod Wolters](https://www.af.mil/About-Us/Biographies/Display/Article/107979/lieutenant-general-tod-d-wolters/), the NATO supreme allied commander, replied when asked during a recent Senate hearing whether the U.S. military has “sufficient visibility” of the location of Russian submarines in the Atlantic Ocean.

“I don't want whatever the missing percent is to be off the coast of Maine or New York,” Sen. Angus King, a Maine independent who caucuses with the Democrats, said during the House Armed Services Committee hearing.

Wolters, who also leads the U.S. military’s European Command, testified that Russian **submarine** activity has **spiked even since last year**, continuing a trend of Moscow’s efforts to project military power in the Atlantic Ocean. His reports dovetail with the U.S. Navy’s [decision](https://www.washingtonexaminer.com/battle-of-the-budget-begins-with-trump) to [revive](https://www.washingtonexaminer.com/policy/defense-national-security/trump-misses-the-real-nato-success-story) the 2nd Fleet in light of Pentagon [assessments](https://www.washingtonexaminer.com/policy/defense-national-security/no-safe-harbors-china-plots-to-block-us-military-from-key-ports-pentagon-warns) that China and Russia have developed plans to threaten U.S. forces **even in home ports** along the east coast.

“We took note of the Russian undersea activity in the summer/fall of 2018 and compared it to what Russia executed in the summer of '19, fall of ’19,” Wolters also testified. “And what we saw was a 50% increase in the number of resources in the undersea that Russia committed to both those out-of-area submarine patrol operations.”

Russian naval forces deployed 10 submarines into the north Atlantic in October, according to reports, including eight nuclear-powered vessels.

“The aim of the massive operation is to get as far out to the North Atlantic as possible without being discovered by NATO,” the Barents Observer [reported](https://thebarentsobserver.com/en/security/2019/10/russian-northern-fleet-massive-submarine-show?fbclid=IwAR3GeJq1gfpND026DsGJ8D0JvXrDPhH6BDWULF-X1k4oBeDfEt5cCEA2SNo) at the time, citing Norwegian intelligence officials.

Those operations, along with the development of new weapons systems such as “quadcopters,” have contributed to the U.S. military’s belief that American **forces shouldn’t get too comfortable, even at home.**

“Our new reality is that when our sailors toss lines over and set sail, they can expect to be operating in a contested space once they leave Norfolk,” Vice Adm. Andrew "Woody" Lewis [said](https://www.washingtonexaminer.com/policy/defense-national-security/the-homeland-is-not-a-sanctuary-admiral-warns-russia-and-china-can-target-us-navy-in-american-ports) earlier this month. “We are seeing an ever-increasing number of Russian submarines deploy in the Atlantic. And these submarines are more capable than ever, deploying for longer periods of time with more lethal weapons systems.”

**2AC – China A/C – SuperSoilders**

**China is the “greatest threat”**

**Gabbatt 20** [Adam Gabbatt is a writer and presenter for Guardian US, based in New York. Click [here](https://www.theguardian.com/pgp/PublicKeys/Adam%20Gabbatt.pub.txt) for Adam's public key, 12-4-2020, China conducting biological tests to create super soldiers, US spy chief says, https://www.theguardian.com/world/2020/dec/04/china-super-soldiers-biologically-enhanced-john-ratcliffe] Eric

China has conducted testing on its army in the hope of **creating biologically enhanced soldiers**, according to the top intelligence official in the US.

John Ratcliffe, who has served as Donald Trump’s director of national intelligence since May,[made the claims in a newspaper editorial](https://www.theguardian.com/us-news/2020/dec/03/china-beijing-america-democracy-freedom), where he warned that China “**poses the greatest threat** to America today”.

Writing in the Wall Street Journal, Ratcliffe said: “The intelligence is clear: Beijing intends to dominate the US and the rest of the planet economically, militarily and technologically. Many of China’s major public initiatives and prominent companies offer only a layer of camouflage to the activities of the Chinese Communist Party.”

Ratcliffe said China had gone to extraordinary lengths to achieve its goal.

“US intelligence shows that China has even **conducted human testing** on members of the People’s Liberation Army in hope of developing soldiers with biologically enhanced capabilities,” Ratcliffe wrote. “There are no ethical boundaries to Beijing’s pursuit of power.”

Ratcliffe, who previously spent five years as a congressman representing Texas, said he had “shifted resources” in the intelligence budget to focus on China.

Many analysts and officials within the government’s intelligence agency have been focused on Russia and counter-terrorism efforts, Ratcliffe said: “But today we must look with clear eyes at the facts in front of us, which make plain that China should be America’s primary national security focus going forward.”

Ratcliffe’s spell as director of national intelligence is due to end in about six weeks, when Joe Biden is sworn in as president. Biden has [nominated Avril Haines](https://www.theguardian.com/us-news/2020/nov/24/who-are-joe-biden-top-cabinet-picks), previously deputy director of the Central Intelligence Agency, to the role.

The enhancement of regular humans engaged in law enforcement or military operations has captured the imagination of many film and TV directors over the years.

The film Universal Soldier, starring Dolph Lundgren and Jean-Claude Van Damme, tells the tale of soldiers who are genetically enhanced. The troops are capable of healing quickly and are stronger than normal men.

In Robocop, Peter Weller portrays a US police officer who is killed by criminals, but whose brain and body are used by scientists to create a cyborg policeman, equipped with super strength.

**2AC – China A/C – AI**

**China alt causes**

**Huang 22** [Joyce Huang reports for VOA from Taipei, Taiwan, 7-9-2022, China Boasts of 'Mind-reading' Artificial Intelligence that Supports 'AI-tocracy', VOA, https://www.voanews.com/a/china-boasts-of-mind-reading-artificial-intelligence-that-supports-ai-tocracy-/6651986.html] Eric

An artificial intelligence (AI) institute in Hefei, in China’s Anhui province, says it has **developed software** **that can gauge the loyalty of Communist Party** members – something that, if true, would be considered a breakthrough, but has sparked public outcry.

Analysts said China has improved its AI-powered surveillance, **using big data**, machine learning, **facial recognition** and AI **to “get into the brains and minds of its people**,” building what many call a draconian digital dictatorship.

Smart thought education?

The institute posted a video called “The Smart Political Education Bar,” on July 1 **to boast about its “mind-reading” software**, which it said would be used on party members to “further solidify their determination to be grateful to the party, listen to the party and follow the party.”

In the video, a subject was seen scrolling through online material that promotes party policy at a kiosk, where the institute said its AI software was monitoring his reaction to see how attentive he was to the party’s thought education.

The post, however, was taken down shortly after sparking a public outcry among Chinese netizens.

Hung Ching-fu, a professor of political science at National Cheng Kung University in Tainan, in southern Taiwan, said that the Communist Party has abused technological advances to serve its own political interests.

“It has used cutting-edge technology to empower its party state. China has upgraded from early-day facial recognition to AI programs that try to get into brains and minds (more) than meet the eye. Its adoption of advanced AI **will reinforce its total controls**,” Hung told VOA over the phone.

Hung added China’s AI-fueled police state will weigh on its people, who are likely to self-censor or live in fear.

Digital repression

But he cast little confidence in what he called China’s digital repression, which he said will likely put the Communist Party in the “dictator’s dilemma” – a political term that describes a government leader’s failure to win the hearts and minds of its people.

“The taller you build your wall [of power], the further you’re cut off from the people… This constitutes what we call the ‘dictator’s dilemma’ in politics. That is, despite their enormous powers, dictators keep out of touch with the people. I don’t think any political systems that are against human nature will sustain,” Hung added.

VOA’s calls and emails to the Hefei-based institute for comment went unanswered.

The so-called mind-reading software is but the latest digital control China has implemented.

China reportedly has long deployed facial recognition in Xinjiang to keep tabs on ethnic Uyghurs while having enhanced its surveillance in recent years with “one person, one file” software to make it easier to track its people.

Late last year, authorities in Henan province reportedly launched a similar system to track what they see as “suspicious” journalists, foreign students and women. At the same time, prosecutors in Shanghai reportedly adopted AI prosecutors, who can file indictments on eight criminal offenses, including credit card fraud and charges of picking a quarrel and provoking trouble.

Chinese online newspaper The Paper reported that a Communist Party school in Sichuan had developed “Smart Red Cloud” as early as 2017, which was already able to monitor party member reaction to its political education and “calculate” their loyalty.

Victims of China’s surveillance system

Several rights lawyers and activists told VOA on the condition of anonymity that they fell victim to China’s digital surveillance system.

A rights activist from Wuhan, Hebei, said he was once taken away by police who were able to identify him after a roadside camera captured his face while he was on the street.

A Beijing-based rights lawyer complained that he was unable to post online messages or make an online registration as a result of China’s tight censorship and digital tracking system.

Another rights lawyer revealed that China’s police have been illegally collecting biometric data from the pupils of people’s eyes, fingerprints and urine samples of those in its custody to enhance what he called a “precise but evil” surveillance.

China’s widespread application of AI technologies, however, is stimulating the sector’s innovation, according to the findings of recent research by author Martin Beraja, an assistant professor of economics at the Massachusetts Institute of Technology and three other scholars at Harvard University and The London School of Economics and Political Science.

Their research concluded, while new technology bolsters autocratic power and autocratic demand stimulates innovation, “this mutuality of advantage may even generate long-term, sustained AI innovation in China, creating what they call an ‘AI-tocracy.’”

**AI-tocracy**

“In the process of procuring that government contract, they [AI firms in China] get access to this data that allows them, of course, to innovate for the government application that has to do typically with public security or preventing crime, or the like. This has spilled over to their commercial innovation, because, potentially, they may use either the same government data or, if that’s restricted, they may use the same algorithms that were trained with that data to develop commercial products that are used in the private sector,” Beraja told VOA.

One such commercial software, for example, is used in supermarkets to track consumers as they move along the aisles, the professor added.

Beraja, however, expressed concerned over China’s AI exports, which he found in his research are likely aiding other repressive governments.

“One thing that we do observe is that the countries that are more autocratic or relatively weak democracies are indeed importing more facial recognition AI from China, more likely facial recognition AI from China than other technologies. And to me that says that there is a sense in which these technologies indeed are used for surveillance and repression,” Beraja added.

Zola, a prominent blogger from China who is now a citizen of Taiwan, said that most netizens in China oppose the country’s digital suppression although their opposition is often muted.

He questioned the sustainability of China’s AI-tocracy.

“China may be exporting these technologies to other countries. But in the long run, such a governance model will lead a society to go to extremes…repeating the irrational policymaking pattern during the (China’s) Cultural Revolution period. That will lead to its own collapse,” Zola told VOA.

**Russia War Not Inevitable---1AR**

**Military agreements check.**

Simon **Saradzhyan 20**. Founding director of Russia Matters, a project launched in 2016 by Harvard Kennedy School’s Belfer Center for Science and International Affairs and made possible with support from Carnegie Corporation of New York and the Stanton Foundation. “What Stops US and Russia From Stumbling Into War?” Russia Matters. 1-9-2020. <https://www.russiamatters.org/blog/what-stops-us-and-russia-stumbling-war> //EM

As we are all well aware, the original Cold War, which officially ended 30 years ago last month, featured a number of close calls that almost turned it into a hot war. Thankfully, neither the Cuban Missile Crisis of 1962 nor the Able Archer exercise of 1983 (nor any other perilous incidents), led to a war between Washington and Moscow. More recently, however, respected statesmen have again **begun to sound alarms**. “Not since the **1962** Cuban Missile Crisis has the **risk** of a U.S.-Russian confrontation involving the use of nuclear weapons **been as high** as it is today,” former U.S. Energy Secretary Ernest Moniz and former U.S. Sen. Sam Nunn warned in a recent article in Foreign Affairs. **I have expressed some doubts about this proposition**, but it is nevertheless worth asking what it is—other than the fear of **m**utually **a**ssured **d**estruction—that keeps the U.S. and Russia from **stumbling** into a war today or **tomorrow**. Part of the answer lies in the **bilateral and multilateral** agreements specifically designed to prevent **incidents** that could **escalate** into a war.

As is clear from the list below, there are **at least half a dozen** bilateral agreements **between Moscow and Washington** that have been **concluded** for the purposes of **prevent**ing **dangerous** military incidents. These deals include the 1972 U.S.-Soviet agreement on **prevention** of incidents on and over the **high seas** and the 1989 U.S.-Soviet agreement on prevention of dangerous military activities. Some other NATO members—including the United Kingdom, Germany, France, Italy, Norway, Spain, the Netherlands, Canada, Greece and Portugal—have **agreements** with Russia on prevention of incidents on the high seas that are **similar** to the 1972 agreement between Moscow and Washington, while Canada and Greece also have agreements with Russia on prevention of dangerous military activities. However, almost a dozen NATO members have no such agreements with Russia, even though they abut seas. These countries include Albania, Bulgaria, Croatia, Latvia, Lithuania, Romania and Slovenia. Nor are there any multilateral NATO-Russia (or NATO-Collective Security Treaty Organization) agreements on prevention of dangerous military incidents, though a NATO-Russia Memorandum of Understanding on avoiding and managing such incidents has been discussed in Track II.

**Communication channels exist.**

Vladimir **Isachenkov 21**, Associated Press journalist; “Kremlin: Putin's offer of a call with Biden was to save ties”; AP NEWS; 3-19-2021; [https://apnews.com/article/putin-offer-call-biden-us-russia-relations-a02f7e56a0fbee660b21d040730a8654//\*recut](https://apnews.com/article/putin-offer-call-biden-us-russia-relations-a02f7e56a0fbee660b21d040730a8654//*recut) SJ

Dmitri Trenin, director of the Carnegie Moscow Center, forecast that the Russia-U.S. ties will **remain** bitterly **strained** in the coming years and spoke about the need to focus on preventing any military incidents between them.

“The most important thing in **relations** with the U.S. for a foreseeable perspective is to **avoid** an **inadvertent military conflict**,” Trenin said in a commentary, adding that **Moscow** and **Washington** have the **necessary** communications **channels**. “It’s necessary to prevent **possible incidents** between the armed forces of Russia, the U.S. and its allies, their aircraft and ships, or if they still happen, **settle** them **immediately**.”

**War is not inevitable.**

Andrei **Tsygankov 16**.Professor at the Departments of Political Science and International Relations at San Francisco State University. “5 reasons why the threat of a global war involving Russia is overstated,” *Russia Direct*, 19 Feb, http://www.russia-direct.org/opinion/5-reasons-why-threat-great-power-war-involving-russia-overstated]

First, whatever the rhetoric, major powers are **not inclined towards risky behavior** when their **core interests** are at stake. This concerns not only the nuclear superpowers, but also countries such as Turkey. The prospect of confronting Russia's overwhelmingly superior military should give pause even to someone as hot-tempered as Turkish President Tayyip Erdogan. Even if Erdogan wanted to pit Russia against NATO, it wouldn’t work. So far, NATO has been careful **to not be drawn into** highly provocative actions, whether it is by responding to Russia seizing the Pristina International Airport in June 1999, getting involved on Georgia’s side during the military conflict in August 2008 or by providing lethal military assistance and support for Ukraine. Unless Russia is the clear and proven aggressor, NATO is unlikely to support Turkey and begin World War III. Second, Russia remains a **defensive power** aware of its responsibility for **maintaining** international **stability**. Moscow wants to **work with** major powers, not against them. Its insistence on Western recognition of Russia’s interests must not be construed as a drive to destroy the foundations of the international order, such as sovereignty, multilateralism, and arms control. Third, the United States has important interests to prevent regional conflicts from escalating or becoming trans-regional. Although its relative military capabilities are not where they were ten years ago, the U.S. military and diplomatic resources are sufficient to **restrain** key regional players in any part of the world. Given the power rivalry across several regions, proxy wars are possible and indeed are happening, but they are **unlikely to escalate**. Fourth, unlike the Cold War era, the contemporary world has no rigid alliance structure. The so-called Russia-China-Iran axis is hardly more than a figment of the imagination by American neoconservatives and some Russia conspiracy-minded thinkers. The world remains a space in which international coalitions overlap and are mostly formed on an ad hoc basis. Fifth, with the exception of the Islamic State of Iraq and the Greater Syria (ISIS), there is **no** fundamental conflict of values and ideologies. Despite the efforts to present as incompatible the so-called “traditional” and “Western” values by Russia or “democracy” to “autocracy” by the United States and Europe, the world **majority** **does not** think that this cultural divide is worth fighting for. Despite the dangers of the world we live in, it contains a number of important, even underappreciated, **checks on** great powers’ **militarism**. The **threat talk coming from politicians is often deceiving**. Such talk may be a way to pressure the opponent into various political and military concessions rather than to signal real intentions. When such pressures do not bring expected results, the rhetoric of war and isolation **subsides**. Then a dialogue begins.

**Russia War Not Inevitable---AT: Hypersonics**

**No hypersonics impact.**

**Lamrani ‘16** (Omar Lamrani 16. Senior Military Analyst, Stratfor, private intelligence corporation, M.A. Diplomatic Academy of Vienna, B.A. international relations, Clark University. 03-21-2016. “What the Next Arms Race Will Look Like.” https://www.stratfor.com/analysis/what-next-arms-race-will-look)

Hypersonic missiles travel at least five times the speed of sound. Only a few other manmade devices are capable of reaching hypersonic speeds, including ballistic missiles, space launch vehicles and unmanned spacecraft such as the Boeing X-37. The only manned aircraft to achieve hypersonic speed is the rocket-powered North American X-15, which broke speed and altitude records when it was introduced in the 1960s. Recently, the focus of research in hypersonic technologies has shifted toward missile development, but **several challenges** must be overcome to make hypersonic missiles a reality. First, it is difficult to create a weapon that can reach hypersonic speeds while enduring the **stress and extreme temperatures** of hypersonic flight. It is harder still to ensure that the weapon can maintain those speeds **for** an extended period — **enough time** to reach its target. Second, high velocities can make a hypersonic vehicle **sensitive to changes in flight conditions, resulting in instability** in the missile's airframe during flight. Coupled with the fact that high speeds leave **less time to course correct,** this instability can make **guidance** of hypersonic missiles **problematic**. Finally, hypersonic vehicles' actual flight paths **often do not match** the predictions researchers derive from ground tests and theoretical models, lengthening the process of development. Despite these obstacles, hypersonic missiles have some considerable advantages. Their speed enables them to reach their targets much more quickly than other missiles and to better penetrate enemy defense systems. Those with gliding capabilities can also cover great distances, enabling one country to strike at another from farther away. Guided hypersonic missiles would be more accurate than traditional ballistic missiles, and they could conceivably be armed with nuclear warheads, becoming a strike asset or a deterrent in nuclear warfare.

**CF Fails---Extinction**

**Counter-forcing causes extinction.**

**Ramanathan & Mehta 19** – \* a research analyst with the Takshashila Institution AND \*\* Programme Associate with the Strategic Studies Programme (Aditya and Shibani, “Nuclear First Use: A Critique,” *Takshashila Institution*, 06/21/2019, Accessed Online at: https://takshashila.org.in/wp-content/uploads/2019/06/TDD-Global-Nuclear-First-Use-GPM-AR-KK-2019-03.pdf, Accessed Online on 07/25/19, lasa-SI)

Climate Devastation: Even if a disarming strike was to somehow completely achieve its objectives, success could be as deadly as deadly failure. **The extreme temperatures of nuclear explosions cause long-lasting and widespread fires around the blast areas.** In the early 1980s, some scientists pointed out that once **the black soot from these fires rises into the upper atmosphere, it blocks solar radiation, causing a “nuclear winter” resulting in catastrophic crop failures and mass starvation.**14 Recent studies have estimated that even a “limited” nuclear war between India and Pakistan involving fission bombs could deplete the ozone layer and have a devastating impact on global climate.15 Indeed, the irony is that **the climatic impact of limited nuclear use could far exceed the damage caused by the initial blasts and pose an existential threat to states and societies**. While some of these estimates of climatic impact are still being debated16 , **it is clear that any attempt at a large-scale disarming strikes using nuclear weapons risks plunging the planet into a climate disaster.** A smaller-scale nuclear war between India and Pakistan would pose an existential threat to both countries. A larger nuclear war **would threaten humanity itself. These realities make bolt-from-blue strikes much less likely and in turn, reduce the imperative for pre-emptive strikes.**

**AT: AI Impact---1AR**

**Super intelligent AI is impossible---risk calculus must fight uncertainty bias.**

Eleni **Vasilaki 18** {Professor of Computational Neuroscience, University of Sheffield. 9-24-2018. ”http://theconversation.com/worried-about-ai-taking-over-the-world-you-may-be-making-some-rather-unscientific-assumptions-103561}//JM

**Should we be afraid of a**rtificial **i**ntelligence? For me, this is a simple question with an even simpler, two letter answer: **no**. But not everyone agrees – many people, including the late physicist Stephen Hawking, have raised concerns that the rise of powerful AI systems could spell the end for humanity. Clearly, your view on whether AI will take over the world will depend on whether you think it can develop intelligent behaviour surpassing that of humans – something referred to as “super intelligence”. So let’s take a look at how likely this is, and why there is much concern about the future of AI. **Humans tend to be afraid of what they don’t understand**. Fear is often blamed for racism, homophobia and other sources of discrimination. So it’s no wonder it also applies to new technologies – they are often surrounded with a certain mystery. Some technological achievements seem almost unrealistic, clearly surpassing expectations and in some cases human performance. No ghost in the machine But let us demystify the most popular AI techniques, known collectively as “machine learning”. These allow a machine to learn a task without being programmed with explicit instructions. This may sound spooky but the truth is it is all down to some rather mundane statistics. The machine, which is a program, or rather an algorithm, is designed with the ability to discover relationships within provided data. There are many different methods that allow us to achieve this. For example, we can present to the machine images of handwritten letters (a-z), one by one, and ask it to tell us which letter we show each time in sequence. We have already provided the possible answers – it can only be one of (a-z). The machine at the beginning says a letter at random and we correct it, by providing the right answer. We have also programmed the machine to reconfigure itself so that next time, if presented with the same letter, it is more likely to give us the correct answer for the next one. As a consequence, the machine over time improves its performance and “learns” to recognise the alphabet. In essence, we have programmed the machine to exploit common relationships in the data in order to achieve the specific task. For instance, all versions of “a” look structurally similar, but different to “b”, and the algorithm can exploit this. Interestingly, after the training phase, the machine can apply the obtained knowledge on new letter samples, for example written by a person whose handwriting the machine has never seen before. Humans, however, are good at reading. Perhaps a more interesting example is Google Deepmind’s artificial Go player, which has surpassed every human player in their performance of the game. It clearly learns in a way different to humans – playing a number of games with itself that no human could play in their lifetime. It has been specifically instructed to win and told that the actions it takes determine whether it wins or not. It has also been told the rules of the game. By playing the game again and again it can discover in each situation what is the best action – inventing moves that no human has played before. Toddlers versus robots Now does that make the AI Go player smarter than a human? Certainly not. AI is very specialised to particular type of tasks and it doesn’t display the versatility that humans do. Humans develop an understanding of the world over years that no AI has achieved or seem likely to achieve anytime soon. The fact that AI is dubbed “intelligent” is ultimately down to the fact that it can learn. But even when it comes to learning, it is no match for humans. In fact, toddlers can learn by just watching somebody solving a problem once. An AI, on the other hand, needs tonnes of data and loads of tries to succeed on very specific problems, and it is difficult to generalise its knowledge on tasks very different to those trained upon. So while humans develop breathtaking intelligence rapidly in the first few years of life, the key concepts behind machine learning are not so different from what they were one or two decades ago. **The success of modern AI is less due to a breakthrough** in new techniques **and more due to the vast amount of data** and computational power **available**. Importantly, though, even an infinite amount of data won’t give AI human-like intelligence – **we need to make a significant progress on developing artificial “general intelligence” techniques first**. Some approaches to doing this involve building a computer model of the human brain – which we’re not even close to achieving. Ultimately, just because an AI can learn, it doesn’t really follow that it will suddenly learn all aspects of human intelligence and outsmart us. There is no simple definition of what human intelligence even is and we certainly have little idea how exactly intelligence emerges in the brain. But even if we could work it out and then create an AI that could learn to become more intelligent, that doesn’t necessarily mean that it would be more successful.

**Too many tech barriers**

Edward Moore **Geist 15**. 8-9-2015; MacArthur Nuclear Security Fellow at Stanford University's Center for International Security and Cooperation (CISAC). Is artificial intelligence really an existential threat to humanity? http://thebulletin.org/artificial-intelligence-really-existential-threat-humanity8577.

In the 1950s, the founders of the field of artificial intelligence assumed that the discovery of a few fundamental insights would make machines smarter than people within a few decades. By the 1980s, however, they discovered fundamental limitations that show that there will always be diminishing returns to additional processing power and data. Although these technical hurdles pose no barrier to the creation of human-level AI, they will likely **forestall** the **sudden emergence of an unstoppable “superintelligence**.” The risks of self-improving intelligent machines are grossly exaggerated and ought not serve as a distraction from the existential risks we already face, especially given that the limited AI technology we already have is poised to make threats like those posed by nuclear weapons even more pressing than they currently are. Disturbingly, little or no technical progress beyond that demonstrated by self-driving cars is necessary for artificial intelligence to have potentially devastating, cascading economic, strategic, and political effects. While policymakers ought not lose sleep over the technically implausible menace of “superintelligence,” they have every reason to be worried about emerging AI applications such as the Defense Advanced Research Projects Agency’s submarine-hunting drones, which threaten to upend longstanding geostrategic assumptions in the near future. Unfortunately, Superintelligence offers little insight into how to confront these pressing challenges.

**BUT, if not, it’s thousands of years away.**

Daniel C. **Dennett 19** {Daniel C. Dennett is University Professor and Austin B. Fletcher Professor of Philosophy and director of the Center for Cognitive Studies at Tufts University. 4-10-2019. “Is Superintelligence Impossible? On Possible Minds: Philosophy and AI.” https://www.edge.org/conversation/david\_chalmers-daniel\_c\_dennett-is-superintelligence-impossible}//JM

Let’s talk about "possible" for the moment. There are lots of things that are possible, and philosophers love to talk about what’s possible, but many things that are **obviously possible are never going to be actual**. It’s possible to build a bridge across the Atlantic. **We’re not going to do it,** not now, not in a hundred years, **not in a thousand years**. It would cost too much money and would be a foolish endeavor. A lot of the imagined AI projects that are perfectly possible in principle are not worth doing. In fact, some of them are definitely things that we shouldn’t do because they’ll make more problems for us than they'll solve. Just bear that in mind. Somebody said that the philosopher is the one who says, "We know it’s possible in practice, we’re trying to figure out if it’s possible in principle." Unfortunately, philosophers sometimes spend too much time worrying about logical possibilities that are importantly negligible in every other regard. So, let me go on the record as saying, yes, I think that conscious AI is possible because, after all, what are we? We’re conscious. We’re robots made of robots made of robots. We’re actual. In principle, you could make us out of other materials. Some of your best friends in the future could be robots. Possible in principle, absolutely no secret ingredients, but we’re not going to see it. **We’re not going to see it** for various reasons. One is, if you want a conscious agent, we’ve got plenty of them around and they’re quite wonderful, whereas the ones that we would make would be not so wonderful.

**AT: Hypersonics Impact**

**BUT no impact anyways.**

Heather **Venable and** Clarence **Abercrombie 19**, Assistant Professor at Air Command and Staff College, PhD in Military History from Duke, 5-28-2019, "Muting the Hype over Hypersonics: The Offense-Defense Balance in Historical Perspective," War on the Rocks, https://warontherocks.com/2019/05/muting-the-hype-over-hypersonics-the-offense-defense-balance-in-historical-perspective/.

**\*\*quotes added for clarity**

Currently, the United States is struggling to adjust to new technological developments as it enters an era of near-peer competition. But it is critical for U.S. policymakers to take the long view of technological change. Recalling the frequent shifts in the historical relationship between offense and defense, it becomes evident that **the standard cycle of offensive and defensive weapons development will continue and that defensive solutions to the hypersonic challenge will soon be developed.** When that happens, **Chinese and Russian acquisition of hypersonic weapons will actually help to stabilize relations** — not unlike a conventional form of mutually assured destruction. **Such a development would mark a departure from a period when the United States had precision capabilities and others did not, which amplified Russian fear of the United States.** Historical perspective helps to temper the fear of destabilizing innovations in the hypersonic weapons space by U.S. rivals. During the interwar period, airpower advocates from Giulio Douhet to Billy Mitchell insisted that the bomber could not be stopped. The devastation that bombers could bring to cities would be so horrific that war simply could not last more than a few days. Airpower, they insisted, should be used as part of a “relentless” offensive. The development of radar before the outbreak of World War II, however, **helped reset the balance** between offense and defense. As legendary airman Claire Chennault insisted even before radar was developed, the bomber would not be “the first exception to the ancient principle that for every weapon there is a new and effective counter weapon.” We can point to numerous other examples of this rebalancing between new offensive and defensive capabilities, such as between armor and anti-tank missiles. More recently, anxiety about the destabilizing effects of drones has receded to some extent with the development of anti-drone technology. Today, experts worry about airpower’s limitations in light of drastic improvements in defensive capabilities, especially advanced surface-to-air missiles. Hypersonic weapons, however, offer the possibility of resetting that balance just as improvements in bombers did prior to the advent of radar. A recent War on the Rocks article described how hypersonic missiles, “which travel at speeds greater than Mach 5, shorten John Boyd’s famous observe-orient-decide-act loop, making it nearly impossible for human minds and teams to even comprehend the information, let alone defend against a short-range attack.” The article paints a compelling picture of the kind of threat the United States faces as its peer competitors diligently pursue weapons that pose a seemingly intractable problem. Hypersonic weapons have many in the U.S. military on edge. Due to their speed, they significantly reduce reaction time, have sufficient kinetic power to cause significant destruction even without a payload, and are difficult to intercept. As a result, hypersonics can bypass a country’s defense systems and strike areas within that country with little to no resistance. The U.S. Defense Intelligence Agency told Congress in its Worldwide Threat Assessment that hypersonics will “revolutionize” warfare by enabling targets to be struck faster, harder, and from farther away. Note, however, that such characteristics are far more evolutionary in nature than revolutionary. **It is important to acknowledge the limitations of hypersonics, which do, in fact, permit the development of defensive countermeasures**. While hypersonic weapons travel at an extremely fast rate of approximately 2 miles per second, the speed of the Tsirkon hypersonic cruise missile, **they still pale in comparison to the speed of directed energy weapons** (which travel at the speed of light, 186,282 miles per second). **Directed energy weapons such as lasers and high-power microwaves are gaining traction because they address the threat of hypersonics with an unconventional approach**. Throughout history, militaries have tried to defeat weapons by creating the next most advanced version of those weapons. If one country created a missile capable of traveling 10 miles, another country would create a missile capable of traveling 20. However, with directed energy weapons, the approach is to defeat the technology that makes these advanced weapons so threatening. Lasers are capable of destroying targets using a focused beam of energy, while high-power microwaves are an invisible wave of electromagnetic energy capable of frying microprocessors. Hypersonic weapons are fast, **but they are not instantaneous**. Thus, when used against moving targets beyond certain distances, the weapons lose effectiveness as the target’s speed increases and its size decreases. Such limitations require most hypersonic weapons to have some form of onboard guidance, which in turn necessitates electronic circuits to do computations and make guidance adjustments. **These circuits are highly susceptible to high-power microwave damage.** Additionally, the beam width of high-power microwaves is significantly wider than that of a weaponized laser, which requires less time to be used for targeting. Although lasers are extremely effective, when it comes to countering hypersonic weapons, they are limited by line of sight, limited range, and power requirements. For this reason, when talking about defending against hypersonic weapons, high-power microwaves are the more logical choice. Additionally, because hypersonic weapons are so fast, they struggle with maneuvers in the final seconds against small fast-moving targets. This is due to maneuverability limitations at high speeds. Hypersonic weapons, therefore, are most effective for large and slow-moving or stationary targets, such as an aircraft carrier. Areas outfitted with high-power microwaves could provide area denial capabilities for high-value target areas against hypersonic weapons. Using the equations provided in a University of Maryland study of high-power microwave technology, a source power of 9.5 megawatts could deliver the power density required to damage a hypersonic weapon at a target 25 miles away. This would be about 12.5 seconds prior to the missile reaching the transmission site, assuming the hypersonic weapon is traveling directly toward it. This may not seem like a long time, but the slightest change in trajectory in anything traveling at those speeds would result in a drastically different termination point. For example, an angular change of half a degree would result in a miss distance of 1,150 feet. Additionally, depending on the fusing method, high-power microwaves may also be able to prevent the weapon from fusing and, ultimately, deny detonation. China is one of many countries attempting to develop such directed-energy technology. Richard Fisher, an expert on Chinese and Asian security at the International Assessment and Strategy Center, stated in testimony before the U.S.-China Economic and Security Review Commission: [“]Some Chinese military experts expect that energy weapons will become more prevalent in 10 to 20 years and will dominate the battlefield in 30 years. As such, it is imperative that the United States redouble its focus to achieve technology breakthroughs needed to realize decisive energy weapon capabilities and be ready to cooperate with critical allies to accelerate co-developments. The U.S. should also retain the flexibility to deploy energy weapons from diverse platforms, including space platforms, to meet what could be rapidly emerging new Chinese energy weapon threats.[“] Lockheed Martin is now also discussing integrating the technology into UAVs for the Army, but this integration is at a tactical level while high-power microwave technology has strategic uses. Although Boeing initially led the high-power microwave field in 2012 with its development of the Counter-electronics High-powered Advanced Missile Project, or CHAMP, its use and integration has been limited to the B-52. Other countries are advancing the field. China is developing high-power microwaves not only for the purpose of deployable munitions but also for area denial for high-value targets. More integration is necessary if the United States is to remain effective in an evolving battlespace. High-power microwave technology, however, is not without its own weaknesses. Its effective range is based on the power density present at the target, a number of factors that can affect this figure, such as transmitter power, feeder loss, antenna gain, range, path loss, and the effective isotropic radiated power. These factors really boil down to two design elements: environment and range. These limitations can be used to create a versatile weapon that can defeat hypersonic weapons in most cases. As technology moves forward, someone will inevitably determine how to artificially increase the path loss to a point where the microwave drastically loses effectiveness. It is important to acknowledge each technological leap not as a permanent solution but as part of an ongoing cycle, just as has been the case for other weapons, such as the tanks discussed earlier. Many in the Army believed them to be obsolete in the 1970s until innovators stumbled upon a lightweight protective material that provided them with an important offensive advantage once again. Whether it is hypersonic weapons or high-power microwave technology, no one method or technology can exist for long without a countermeasure. Still, hypersonics and other weapons will continue to entice nations with the promise of easy answers that can reduce the fog and friction of war. For now, U.S, policymakers should invest in directed-energy technology while bearing in mind that it is not a silver bullet. Amid the return to great power conflict, it is understandable that the United States fears the rapidly increasing capabilities of its rising peer competitors. **But it is worthwhile to consider whether the U.S. investment in hypersonics needs to be rebalanced more toward developing defensive capabilities**. It is also helpful to consider those fears in historical perspective and in light of constant shifts in the technological and military balance. The United States needs offensive and defensive hypersonic capabilities for deterrence. Yet ironically, China and Russia’s acquisition of these capabilities can help to stabilize tensions because it helps them fear the United States less, and vice versa. So keep calm and innovate on.

**No Hypersonics impact.**

**Lamrani ‘16** (Omar Lamrani 16. Senior Military Analyst, Stratfor, private intelligence corporation, M.A. Diplomatic Academy of Vienna, B.A. international relations, Clark University. 03-21-2016. “What the Next Arms Race Will Look Like.” https://www.stratfor.com/analysis/what-next-arms-race-will-look)

Hypersonic missiles travel at least five times the speed of sound. Only a few other manmade devices are capable of reaching hypersonic speeds, including ballistic missiles, space launch vehicles and unmanned spacecraft such as the Boeing X-37. The only manned aircraft to achieve hypersonic speed is the rocket-powered North American X-15, which broke speed and altitude records when it was introduced in the 1960s. Recently, the focus of research in hypersonic technologies has shifted toward missile development, but **several challenges** must be overcome to make hypersonic missiles a reality. First, it is difficult to create a weapon that can reach hypersonic speeds while enduring the **stress and extreme temperatures** of hypersonic flight. It is harder still to ensure that the weapon can maintain those speeds **for** an extended period — **enough time** to reach its target. Second, high velocities can make a hypersonic vehicle **sensitive to changes in flight conditions, resulting in instability** in the missile's airframe during flight. Coupled with the fact that high speeds leave **less time to course correct,** this instability can make **guidance** of hypersonic missiles **problematic**. Finally, hypersonic vehicles' actual flight paths **often do not match** the predictions researchers derive from ground tests and theoretical models, lengthening the process of development. Despite these obstacles, hypersonic missiles have some considerable advantages. Their speed enables them to reach their targets much more quickly than other missiles and to better penetrate enemy defense systems. Those with gliding capabilities can also cover great distances, enabling one country to strike at another from farther away. Guided hypersonic missiles would be more accurate than traditional ballistic missiles, and they could conceivably be armed with nuclear warheads, becoming a strike asset or a deterrent in nuclear warfare.