



DARPA: AI Mosaic Warfare And Multi-Domain Battle Strategy

Technocrats at DARPA are racing to apply Artificial Intelligence to engaged warfare, coordinating all battlefield components into a coordinated killing machine. Success depends on engineers and computer programmers. □ TN Editor

[DARPA is automating air-to-air combat, enabling reaction times at machine speeds and freeing pilots to concentrate on the larger air battle and directing an air wing of drones.](#)

Dogfighting will still be rare in the future but it is part of AI and automation taking over all high-end fighting. New human fighter pilots learn to dogfight because it represents a crucible where pilot performance and trust can be refined. To accelerate the transformation of pilots from aircraft operators to mission battle commanders — who can entrust dynamic air combat tasks to unmanned, semi-autonomous airborne assets from the cockpit — the AI must first prove it can handle the basics.

The vision is AI handles the split-second maneuvering during within-

visual-range dogfights and pilots become orchestra conductors or higher level managers over large numbers of unmanned systems.

DARPA wants mosaic warfare. Mosaic warfare shifts from expensive manned systems to a mix of manned and less-expensive unmanned systems that can be rapidly developed, fielded, and upgraded with the latest technology to address changing threats. Linking together manned aircraft with significantly cheaper unmanned systems creates a “mosaic” where the individual “pieces” can easily be recomposed to create different effects or quickly replaced if destroyed, resulting in a more resilient warfighting capability.

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Goodbye World: AI Arms Race

Headed Toward Autonomous Killer Robots

The rapidly emerging AI arms race to create autonomous killing machines is Technocrat insanity at its highest peak. To the Technocrat mind, every problem has a scientific solution; so why not let an armed and lethal AI robot do all the work of human soldiers? □ TN Editor

When it comes to deciding to kill a human in a time of war, should a machine make that decision or should another human?

The question is a moral one, brought to the foreground by the techniques and incentives of modern technology. It is a question whose scope falls squarely under the auspices of international law, and one which nations have debated for years. Yet it's also a collective action problem, one that requires not just states, but also companies and workers in companies to come to an agreement to forgo a perceived advantage. The danger is not so much in making a weapon, but in making a weapon that can choose targets independently of the human responsible initiating its action.

In a May 8 report by Pax — a nonprofit with the explicit goal of protecting civilians from violence, reducing armed conflict, and building a just peace — authors look at the existing state of artificial intelligence in weaponry and urge nations, companies and workers to think about how to prevent an AI arms race, instead of thinking about how to win one. Without corrective action, the report warns, the status quo could lead all participants into a no-win situation, with any advantage gained from developing an autonomous weapon temporary and limited.

“We see this emerging AI arms race and we think if nothing happens that that is a major threat to humanity,” said Frank Slijper, one of the authors on [the report](#). “There is a window of opportunity to stop an AI arms race from happening. States should try to prevent an AI arms race and work toward international regulation. In the meantime, companies and research institutes have a major responsibility themselves to make sure that that work in AI and related fields is not contributing to

potential lethal autonomous weapons.”

The report is written with a specific eye toward the seven leading AI powers. These include the five permanent members of the UN security council: China, France, Russia, the United Kingdom and the United States. In addition, the report details the artificial intelligence research of Israel and South Korea, both countries whose geographic and political postures have encouraged the development of military AI.

“We identified the main players in terms of use and research and development efforts on both AI and military use of AI in increasingly autonomous weapons. I couldn’t think of anyone, any state we would have missed out from these seven,” says Slijper. “Of course, there’s always a number eight and the number nine.”

For each covered AI power, the report examines the state of AI, the role of AI in the military, and what is known of cooperation between AI developers in the private sector or universities and the military. With countries like the United States, where military AI programs are named, governing policies can be pointed to, and debates over the relationship of commercial AI to military use is known, the report details that process. The thoroughness of the research is used to underscore Pax’s explicitly activist mission, though it also provides a valuable survey of the state of AI in the world.

As the report maintains throughout, this role of AI in weaponry isn’t just a question for governments. It’s a question for the people in charge of companies, and a question for the workers creating AI for companies.

“Much of it has to do with the rather unique character of AI-infused weapons technology,” says Slijper. “Traditionally, a lot of the companies now working on AI were working on it from a purely civilian perspective to do good and to help humanity. These companies weren’t traditionally military producers or dominant suppliers to the military. If you work for an arms company, you know what you’re working for.”

In the United States, there’s been expressed resistance to contributing to Pentagon contracts from laborers in the tech sector. After Google worker outcry after learning of the company’s commitment to [Project](#)

[Maven](#), which developed a drone-footage processing AI for the military, the company's leadership agreed to sunset the project. (Project Maven is now managed by the [Peter Thiel-backed Andruil](#).)

Microsoft, too, experienced [worker resistance](#) to military use of its augmented reality tool HoloLens, with some workers writing a letter stating that in the Pentagon's hands, the sensors and processing of the headset made it dangerously close to a weapon component. The workers specifically noted that they [had built HoloLens](#) "to help teach people how to perform surgery or play the piano, to push the boundaries of gaming, and to connect with the Mars Rover," all of which is a far cry from aiding the military in threat identification on patrol.

"And I think it is for a lot of people working in the tech sector quite disturbing that, while initially, that company was mainly or only working on civilian applications of that technology, now more and more they see these technologies also been used for military projects or even lethal weaponry," said Slijper.

Slijper points to the Protocol on Blind Weapons as a way the international community regulated a technology with both civilian and military applications to ensure its use fell within the laws of war.

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If Seeing Is Believing, Get Ready To Be Deceived

When the eco-world gets their hands on 'deep fake' AI software, they can make earth images that cannot be detected as false, inserting things that are not there and removing things that are there. Forget 'lying with statistics'; Now it's lying with images. □ TN Editor

Step 1: Use AI to make undetectable changes to outdoor photos. Step 2: release them into the open-source world and enjoy the chaos.

Worries about [deep fakes](#)—machine-manipulated videos of celebrities and world leaders purportedly saying or doing things that they really didn't—are quaint compared to a new threat: doctored images of the Earth itself.

China is the acknowledged leader in using an emerging technique called generative adversarial networks to trick computers into seeing objects in landscapes or in satellite images that aren't there, says Todd Myers, automation lead and Chief Information Officer in the Office of the Director of Technology at the National Geospatial-Intelligence Agency.

“The Chinese are well ahead of us. This is not classified info,” Myers said Thursday at the second annual [Genius Machines](#) summit, hosted by *Defense One* and *Nextgov*. “The Chinese have already designed; they’re already doing it right now, using GANs—which are generative adversarial networks—to manipulate scenes and pixels to create things for nefarious reasons.”

For example, Myers said, an adversary might fool your computer-assisted imagery analysts into reporting that a bridge crosses an important river at a given point.

“So from a tactical perspective or mission planning, you train your forces to go a certain route, toward a bridge, but it’s not there. Then there’s a big surprise waiting for you,” he said.

First [described in 2014](#), GANs represent a big evolution in the way neural networks learn to see and recognize objects and even detect truth from fiction.

Say you ask your conventional neural network to figure out which objects are what in satellite photos. The network will break the image into multiple pieces, or pixel clusters, calculate how those broken pieces relate to one another, and then make a determination about what the final product is, or, whether the photos are real or doctored. It’s all based on the experience of looking at lots of satellite photos.

GANs reverse that process by pitting two networks against one another—hence the word “adversarial.” A conventional network might say, “The presence of x, y, and z in these pixel clusters means this is a picture of a cat.” But a GAN network might say, “This is a picture of a cat, so x, y, and z must be present. What are x, y, and z and how do they relate?” The adversarial network learns how to construct, or generate, x, y, and z in a way that convinces the first neural network, or the discriminator, that something is there when, perhaps, it is not.

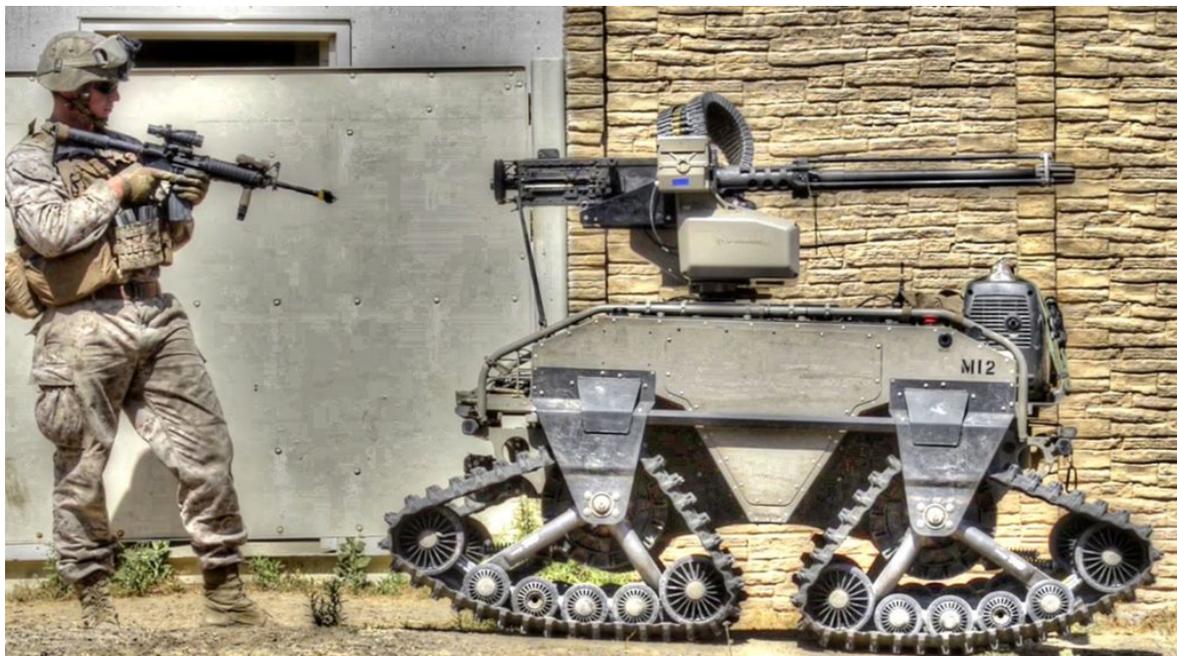
A lot of scholars have found GANs useful for spotting objects and sorting valid images from fake ones. In 2017, Chinese scholars used [GANs](#) to identify roads, bridges, and other features in satellite photos.

The concern, as AI technologists [told Quartz](#) last year, is that the same technique that can discern real bridges from fake ones can also help create fake bridges that AI can't tell from the real thing.

Myers worries that as the world comes to rely more and more on open-source images to understand the physical terrain, just a handful of expertly manipulated data sets entered into the open-source image supply line could create havoc. "Forget about the [Department of Defense] and the [intelligence community]. Imagine Google Maps being infiltrated with that, purposefully? And imagine five years from now when the [Tesla \[self-driving\] semis](#) are out there routing stuff?" he said.

When it comes to deep fake videos of people, [biometric indicators](#) like pulse and speech can defeat the fake effect. But faked landscape isn't vulnerable to the same techniques.

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Pentagon Pursues AI-Powered Weapons Despite Public Outcry

Technocrats in the military who build simply because they can, are a threat to the entire world. Technology that serves and helps humans, not kill or control them, is what mankind desires. □ TN Editor

The controversy surrounding military artificial intelligence is rooted in “grave misperceptions” about what the department is actually trying to do, according to current and former Defense officials.

Protecting the U.S. in the decades ahead will require the Pentagon to make “substantial, sustained” investments in military artificial intelligence, and critics need to realize it doesn’t take that task lightly, according to current and former Defense Department officials.

Efforts to expand the department’s use of AI systems have been met with public outcry among many in the tech and policy communities who worry the U.S will soon entrust machines to make life-and-death decisions on the battlefield. Last year, employee protests led Google [to pull out an Air Force project](#) that used machine-learning to sort through surveillance footage.

On Wednesday, officials said the Pentagon is [going to great lengths](#) to ensure any potential applications of AI adhere to strict ethical standards and international norms. Even if the U.S. military balks on deploying the tech, they warned, global adversaries like Russia and China certainly will not, and their ethical framework will likely be lacking.

“The Department of Defense is absolutely unapologetic about pursuing this new generation of AI-enabled weapons,” former Deputy Defense Secretary Robert Work said Wednesday at an event hosted by AFCEA’s Washington, D.C. chapter. “If we’re going to succeed against a competitor like China that’s all in on this competition ... we’re going to have to grasp the inevitability of AI.”

Released in February, the [Pentagon's AI strategy](#) explicitly requires human operators to have the ability to override any decisions made by a military AI system and ensures the tech abides by the laws of armed conflict.

"I would argue the U.S. military is the most ethical military force in the history of warfare, and we think the shift to AI-enabled weapons will continue this trend," Work said. And despite the criticism, he added, the tech could potentially save lives by reducing friendly fire and avoiding civilian casualties.

Lt. Gen. Jack Shanahan, who leads the department's newly minted Joint Artificial Intelligence Center, told the audience much of the criticism he's heard directed at military AI efforts is rooted in "grave misperceptions about what [the department] is actually working on." While some may envision a general AI system "that's going to roam indiscriminately across the battlefield," he said, the tech will only be narrowly applied, and humans will always stay in the loop.

If anything, the outcry shows the Pentagon isn't engaging enough with industry about the projects it's pursuing, according to Shanahan.

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Killer Robots: Russia Races To Build 'Ground Force' Of Self-Driving Tanks And 'Drone Swarms'

Talk of a ban on autonomous killer robots is useless chatter as the arms race between superpowers progresses. AI and networking are enabling fearsome weapons systems that can kill without human intervention. □
TN Editor

A terrifying new video showcases some of Russia's latest killer robot technology.

AI-controlled mini-tanks and swarms of autonomous cat-sized drones obliterate targets in the propaganda clip released by the Kremlin.

The robots are designed to assist Russian infantry, and are currently controlled by a human remotely.

However, in future the tech will be fully autonomous, meaning it can target and kill enemies without needing help from a human.

Russia's Advanced Research Foundation (ARF), the military research division behind the new technology, said the ultimate goal is to have an army of robots controlled by AI.

<https://www.youtube.com/watch?v=7ZM8HqjmCgE>

"The evolution of combat robots is on the path of increasing the ability to perform tasks in autonomous mode with a gradual reduction in the role of the operator," a spokesperson told [C4ISRNET](#).

The video, uploaded to YouTube by the ARF, shows off the terrifying capabilities of the killer tech.

In it, a mini-tank is shown dashing over snow while targeting and firing at targets.

The deadly vehicle lines up with a soldier and is follow his line of sight, pointing its huge guns in whatever direction his rifle turns.

It seems to suggest that Russia's AI tanks will one day autonomously follow their handler's aim to dish out extra firepower.

As well as mini-tanks, the video also shows off Russia's military drone technology.

A swarm of quadrocopters rises up in a coordinated shape and whizzes across the firing range.

They appear to drop explosives on targets, leaving them smouldering in the snow.

Russia is not the only country developing autonomous weapons.

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Defense Experts: China Poses ‘Existential Threat’ To U.S.

Technocracy in China is a greater threat to the world than military domination, although the two could go hand-in-hand. Technocracy means total Scientific Dictatorship and China is racing to complete its global net. □ TN Editor

China’s growing power throughout the world presents an existential threat to Americans’ future that they are not prepared for, experts warned Thursday during a panel discussion at the 2019 Conservative Political Action Conference (CPAC).

“This is an existential threat. The American people are not prepared to deal with it, but this will be the challenge of our generation, and maybe later ones as well,” said Gordon G. Chang, author and expert on China.

The panel, entitled, “China, the Global Menace,” was one of several during the three-day conference exploring the challenge to the U.S. from a rising China.

Rick Fisher, senior fellow on Asian Military Affairs at the International Assessment and Strategy Center, said China has been methodically building networks around the world, as well as a military that will project power around the globe.

“China for 30 years has been assiduously gathering economic power in all regions of the planet, using this economic power to gather political networks, and is...today convincing those political networks to begin military cooperation to proto-alliance cooperation with China,” he said.

For example, the Shanghai Cooperation Organization started in 1996 as an economic cooperation body, but “all it produces are military exercises,” Fisher said.

He said in July, China announced the [China Africa Defense and Security Forum](#), which includes every country on the African continent but is “controlled by the People’s Liberation Army.”

“So this is the beginning of a second proto-alliance, and they make no bones publicly [that they are] working to form a similar forum in all the countries of Latin America and the Caribbean,” he said.

Experts on the panel said China is the largest source of support outside the region for the Cuban communist regime, the Venezuelan dictatorship, and other left-wing regimes.

Retired Navy Captain Jim Fanell, a former intelligence officer and current fellow at the Geneva Center for Security, said more and more Chinese navy vessels have been going to the Caribbean.

“I expect at some point in the near future, you’re going to start seeing Chinese intelligence collection vessels operating in the Caribbean and more closely to each of our coasts, because they’ve been very frustrated that we’ve been operating inside the first island chain in the Western Pacific,” he said.

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Pentagon Releases Blueprint For Accelerating Artificial Intelligence

Pentagon Technocrats are having a heyday with AI. The report states, “AI is poised to transform every industry, and is expected to impact every corner of the Department, spanning operations, training, sustainment, force protection, recruiting, healthcare, and many others.” The problem is obvious: “artificial intelligence” is an oxymoron. □ TN Editor

The Pentagon made public for the first time on Feb. 12 the outlines of its master plan for speeding the injection of artificial intelligence (AI) into military equipment, including advanced technologies destined for the battlefield.

By declassifying key elements of a strategy it had adopted last summer, the Defense Department appeared to be trying to address disparate

criticism that it was not being heedful enough of the risks of using AI in its weaponry or not being aggressive enough in the face of rival nations' efforts to embrace AI.

The [17-page strategy](#) summary said that AI — a shorthand term for machine-driven learning and decision-making — held out great promise for military applications, and that it “is expected to impact every corner of the Department, spanning operations, training, sustainment, force protection, recruiting, healthcare, and many others.”

It depicted AI's embrace in solely positive terms, asserting that “with the application of AI to defense, we have an opportunity to improve support for and protection of U.S. service members, safeguard our citizens, defend our allies and partners, and improve the affordability and speed of our operations.”

Stepping back from AI in the face of aggressive AI research efforts by potential rivals would have dire — even apocalyptic — consequences, it further warned. It would “result in legacy systems irrelevant to the defense of our people, eroding cohesion among allies and partners, reduced access to markets that will contribute to a decline in our prosperity and standard of living, and growing challenges to societies that have been built upon individual freedoms.”

The publication of the Pentagon strategy's core concepts comes eight months after [a Silicon Valley revolt](#) against the military's premier AI research program. After thousands of Google employees signed a petition protesting the company's involvement in an effort known as Project Maven, meant to speed up the analysis of videos taken by a drone so that military personnel could more readily identify potential targets, Google [announced on June 1](#) that it would back out of it.

But the release of the strategy makes clear that the Trump administration isn't having second thoughts

about the utility of AI. It says the focus of the Defense Department's Joint Artificial Intelligence Center (JAIC), created last June, will be on “near-term execution and AI adoption.” And in a section describing image analysis, the document suggests there are some things machines

can do better than humans can. It says that “AI can generate and help commanders explore new options so that they can select courses of action that best achieve mission outcomes, minimizing risks to both deployed forces and civilians.”

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China Releases Fully Autonomous Killer Robots And Drones For Combat

Thanks to China, the Technocrat arms race for autonomous killing machines has accelerated as they proliferate their new weapons systems to any non-Western aligned nation in the world. □ TN Editor

China is aggressively unleashing lethal fully autonomous drones that can carry out targeted military strikes, a think tank has warned.

The killer drones and pilotless aircraft fitted with AK-47 rifles are being exported to Asia, Africa and combat zones in the Middle East.

China is unleashing lethal fully autonomous drones that can carry out targeted military strikes

China's CH-7 stealth aircraft is expected to have its first flight in late 2019

US national security think tank Center for a New American Security (CNAS) said in a report that Chinese officials see this AI 'arms race' as a threat to global peace.

Gregory C Allen, the author of the report, said China is rushing to integrate ever more sophisticated artificial intelligence into weapons and military equipment.

He pointed out that drones, both large and small, are a particular example of a type of weaponry that is increasingly becoming automated.

In the US, drones are capable of basic autopilot, performing simple tasks like flying in a circle around a target.

But China is being "more aggressive about introducing greater levels of autonomy closer to lethal use of force," he says.

One example is the Blowfish A2 drone, which China exports internationally and which Mr Allen says is advertised as being capable of "full autonomy all the way up to targeted strikes."

'TARGETED PRECISION STRIKES'

The Blowfish A2 "autonomously performs complex combat missions, including fixed-point timing detection and fixed-range reconnaissance, and targeted precision strikes."

Depending on customer preferences, Chinese military drone manufacturer Ziyang offers to equip Blowfish A2 with either missiles or machine guns.

Mr Allen wrote: "Though many current generation drones are primarily remotely operated, Chinese officials generally expect drones and military

robotics to feature ever more extensive AI and autonomous capabilities in the future.

“Chinese weapons manufacturers already are selling armed drones with significant amounts of combat autonomy.”

China is also interested in using AI for military command decision-making.

FUTURE OF WARFARE

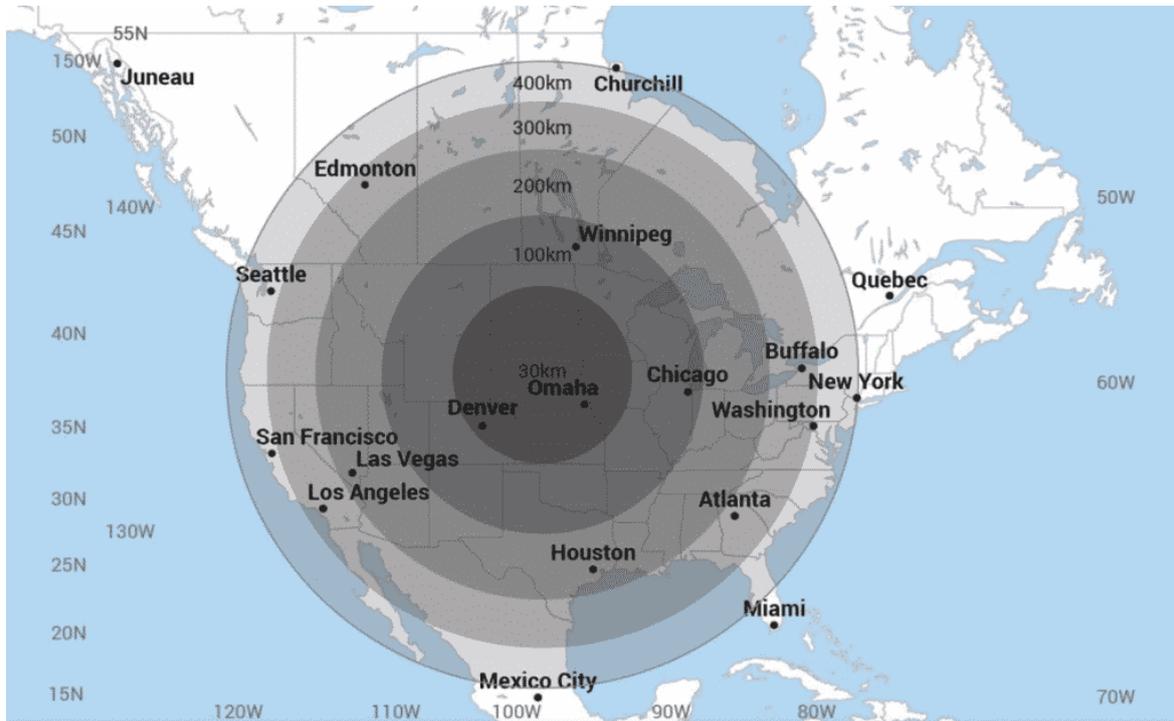
According to the report, Zeng Yi, a senior executive at China’s third largest defense company, said AI will be at the core of future warfare.

“Mechanized equipment is just like the hand of the human body. In future intelligent wars, AI systems will be just like the brain of the human body,” Zeng said, according to the report.

He added that “AI may completely change the current command structure, which is dominated by humans” to one that is dominated by an “AI cluster.”

This opinion is consistent with broader thinking in Chinese military circles.

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‘Blackout Warfare’: China, Russia Building Super-EMP Bombs

One way to stop Technocracy dead in its tracks would be to destroy electronics on a massive scale. However, if Technocrats are controlling foreign/military policy, that will never happen because it essential for societal control. □ TN Editor

Several nations, including China and Russia, are building powerful nuclear bombs designed to produce super-electromagnetic pulse (EMP) waves capable of devastating all electronics—from computers to electric grids—for hundreds of miles, according to a newly-released congressional study.

A report by the now-defunct Commission to Assess the Threat to the United States from EMP Attack, for the first time reveals details on how nuclear EMP weapons are integrated into the military doctrines of China, Russia, North Korea, and Iran.

The report discloses how those states could use EMP attacks in theaters

of battle in the Middle East, Far East, Europe, and North America.

“Nuclear EMP attack is part of the military doctrines, plans, and exercises of Russia, China, North Korea, and Iran for a revolutionary new way of warfare against military forces and civilian critical infrastructures by cyber, sabotage, and EMP,” the report states.

“This new way of warfare is called many things by many nations: In Russia, China, and Iran it is called Sixth Generation Warfare, Non-Contact Warfare, Electronic Warfare, Total Information Warfare, and Cyber Warfare.”

Nuclear-electronic warfare also is called “Blackout War” because of its effects on all electronic devices.

EMP attacks will be carried out at such high altitudes they will produce no blast or other immediate effects harmful to humans. Instead, three types of EMP waves in seconds damage electronics and the strikes are regarded by adversaries as not an act of nuclear war.

“Potential adversaries understand that millions could die from the long-term collateral effects of EMP and cyber-attacks that cause protracted black-out of national electric grids and other life-sustaining critical infrastructures,” the report said.

The attacks are regarded by enemy military planners as a relatively easy, potentially unattributable means of inflicting mass destruction and forcing opponents to capitulate.

EMP strikes can be adjusted in the size of the area and the intensity of the wave by detonating at different altitudes. The closer to the earth the more powerful is the pulse. The higher the altitude, the wider the area of impact.

“A single nuclear weapon can potentially make an EMP attack against a target the size of North America,” the report said. “Any nuclear weapon detonated at an altitude of 30 kilometers [18.6 miles] or higher will generate a potentially catastrophic EMP.”

Super-EMP bombs produce gamma rays that generate a peak EMP field

of 200,000 volts per meter—enough to fry strategic communications and intelligence systems. China, Russia, and probably North Korea are said to have these arms, according to the commission. The United States has no super-EMP weapons in its nuclear arsenal.

The bombs do not require accuracy and the weapons do not require a re-entry vehicle, heat shield, and shock absorbers required for nuclear warheads detonated in the atmosphere above targets.

The weapons can be delivered through a variety of means including satellites, long- or medium-range missile; short-range missiles launched from a freighter; from some cruise missiles and anti-ship missiles; from jets or a commercial jetliner; or a meteorological balloon.

The declassified report was cleared for release by the Pentagon after a security review and provides graphics showing for the first time in an official government publication how nuclear detonations triggered 18.6 miles to 248 miles above the earth will produce targeted electronic waves stretching up to 1,500 miles.

Portions of the report are redacted in order to prevent adversaries from learning U.S. electronic vulnerabilities.

The report shows how Iran—a state U.S. intelligence agencies have assessed is one year away from building a nuclear weapon—could use a single nuclear weapon fired on a medium-range missile to black out Israel, Egypt and Israel together, or Saudi Arabia without creating blast damage.

China also could use EMP weapons to plunge the island of Taiwan into electronic darkness and disable aircraft carrier strike groups sailing to defend Taiwan from a mainland attack.

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Navy Ready To Unleash Killer Robot Ships On World's Oceans

War-minded Technocrats within DARPA have one answer for wiping out the enemy: autonomous machines. When DARPA first released Sea-Hunter, there were pledges that it was only for surveillance and not killing. The flip-flop was anticipated. □ TN Editor

The world's largest navy has spent the last few years feeling like it was being put in check.

[China and Russia](#) have heavily invested in anti-access technologies aimed at holding its main force-projection assets — aircraft carriers — at risk. Now the U.S. Navy and the upper ranks of the military are preparing to take back control of the game board, and it's [looking to unmanned technologies](#) to help.

The [U.S. surface fleet](#) has for the past few years sought to flip the script on actors such as China. The fleet aimed to move from a role of simply defending the carrier to going on the offensive.

The goal was to spread out over a wide area to strain Chinese

intelligence and reconnaissance assets and thereby exercise a degree of sea control in places such as the South and East China seas that China seeks to deny with long-range, anti-ship missiles and an ever-growing fleet.

Initially, the push was to add big surface combatants to hold down the Navy's hefty commitments for peacetime presence while maintaining enough firepower to both defend themselves and project power in an anti-access environment.

But that's changing.

The Navy plans to spend this year taking the first few steps into a markedly different future, which, if it comes to pass, will upend how the fleet has fought since the Cold War. And it all starts with something that might seem counterintuitive: It's looking to get smaller.

"Today, I have a requirement for 104 large surface combatants in the force structure assessment; I have 52 small surface combatants," said [Surface Warfare Director Rear Adm. Ronald Boxall](#). "That's a little upside down. Should I push out here and have more small platforms? I think the future fleet architecture study has intimated 'yes,' and our war gaming shows there is value in that."

Enter: the rise of the machines.

The paradigm shift is moving the fleet away from platforms like the Arleigh Burke-class destroyers — enormous, tightly packed ships bristling with capabilities, weapons and sensors, but enormously expensive to build, maintain and upgrade.

"It's a shift in mindset that says, instead of putting as much stuff on the ship for as much money as I have, you start thinking in a different way," Boxall said in a December interview. "You start saying: 'How small can my platform be to get everything I need to be on it?'"

"We want everything to be only as big as it needs to be. You make it smaller and more distributable, given all dollars being about equal. And when I look at the force, I think: 'Where can we use unmanned so that I

can push it to a smaller platform?’ ”

The Navy is getting ready to find out.

Inside Boxall’s OPNAV N96 shop, officials are preparing a request for information from industry for two new classes of manned or optionally manned warships: a medium sensor platform along the lines of the [Defense Advanced Research Projects Agency’s Sea Hunter](#), and a large unmanned surface combatant able to carry sensors and weapons — an unmanned ship on a scale never yet attempted.

The RFI is the first step in the process toward creating a program to design and build the ships.

The idea

The unmanned surface combatants are part of an overall fleet structure that has been approved by the Joint Staff, Boxall said, and includes both the [Navy’s next-generation frigate](#) and the [large surface combatant](#) that will ultimately replace both the cruisers and the destroyers.

In this construct, the manned combatants will act as command and control for the unmanned sensors and shooters, keeping humans firmly in the loop.

For the medium unmanned surface combatant, the fleet is looking at a forward sensor platform that can connect back to manned surface combatants that can process and act on the data.

“Should we put a sensor forward on a medium unmanned platform [to detect air targets]? Should we look at [anti-submarine warfare] with the sensors out ahead of the force or on a prescreen? Those are the types of things we are looking at when you talk about the medium unmanned — mostly you are talking about sensors and communicating them in some ways,” Boxall said. “Sensing, communicating and maybe a little bit of command and control.”

In regard to the large unmanned surface combatant, Boxall and his team are researching what’s needed to get a big sensor like a solid-state phased array radar onboard, along with missiles to make it a no-b.s.

killer.

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