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Inside the Apocalyptic Soviet Doomsday Machine

By Nicholas Thompson 09.21.09

The technical name was Perimeter, but some called it Mertvaya Ruka, Dead Hand.
Illustration: Ryan Kelly

Listen: Author Nicholas Thompson Discusses Dead Hand on NPR's *All Things Considered*

Valery Yarynich glances nervously over his shoulder. Clad in a brown leather jacket, the 72-year-old former Soviet colonel is hunkered in the ba the dimly lit Iron Gate restaurant in Washington, DC. It's March 2009—the Berlin Wall came down two decades ago—but the lean and fit Yarynich jumpy as an informant dodging the KGB. He begins to whisper, quietly but firmly.

"The Perimeter system is very, very nice," he says. "We remove unique responsibility from high politicians and the military." He looks around agai Yarynich is talking about Russia's doomsday machine. That's right, an actual doomsday device—a real, functioning version of the ultimate weapon always presumed to exist only as a fantasy of apocalypse-obsessed science fiction writers and paranoid über-hawks. The thing that historian Lewis Mumford called "the central symbol of this scientifically organized nightmare of mass extermination." Turns out Yarynich, a 30-year veteran of the Soviet Strategic Rocket Forces and Soviet General Staff, helped build one.

The point of the system, he explains, was to guarantee an automatic Soviet response to an American nuclear strike. Even if the US crippled the US with a surprise attack, the Soviets could still hit back. It wouldn't matter if the US blew up the Kremlin, took out the defense ministry, severed the communications network, and killed everyone with stars on their shoulders. Ground-based sensors would detect that a devastating blow had been struck and a counterattack would be launched.

The technical name was Perimeter, but some called it Mertvaya Ruka, or Dead Hand. It was built 25 years ago and remained a closely guarded sec With the demise of the USSR, word of the system did leak out, but few people seemed to notice. In fact, though Yarynich and a former Minuteman launch officer named Bruce Blair have been writing about Perimeter since 1993 in numerous books and newspaper articles, its existence has not penetrated the public mind or the corridors of power. The Russians still won't discuss it, and Americans at the highest levels—including former top officials at the State Department and White House—say they've never heard of it. When I recently told former CIA director James Woolsey that the USSR had built a doomsday device, his eyes grew cold. "I hope to God the Soviets were more sensible than that." They weren't.

The system remains so shrouded that Yarynich worries his continued openness puts him in danger. He might have a point: One Soviet official who spoke with Americans about the system died in a mysterious fall down a staircase. But Yarynich takes the risk. He believes the world needs to know about Dead Hand. Because, after all, it is still in place.

The system that Yarynich helped build came online in 1985, after some of the most dangerous years of the Cold War. Throughout the '70s, the USSR had steadily narrowed the long US lead in nuclear firepower. At the same time, post-Vietnam, recession-era America seemed weak and confused. Then in strode Ronald Reagan, promising that the days of retreat were over. It was morning in America, he said, and twilight in the Soviet Union.

Part of the new president's hard-line approach was to make the Soviets believe that the US was unafraid of nuclear war. Many of his advisers had long advocated modeling and actively planning for nuclear combat. These were the progeny of Herman Kahn, author of *On Thermonuclear War* and *Thinking About the Unthinkable.* They believed that the side with the largest arsenal and an expressed readiness to use it would gain leverage during every crisis.

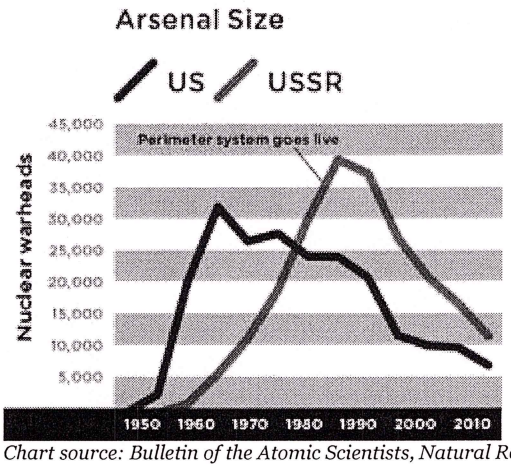


Chart source: Bulletin of the Atomic Scientists, Natural Resources Defense C

You either launch first or convince the enemy that you can strike back even if you're dead.
Illustration: Ryan Kelly

The new administration began expanding the US nuclear arsenal and priming the silos. And it backed up the bombs with bluster. In his 1981 Senat confirmation hearings, Eugene Rostow, incoming head of the Arms Control and Disarmament Agency, signaled that the US just might be crazy enc to use its weapons, declaring that Japan "not only survived but flourished after the nuclear attack" of 1945. Speaking of a possible US-Soviet excha he said, "Some estimates predict that there would be 10 million casualties on one side and 100 million on another. But that is not the whole of the population."

Meanwhile, in ways both small and large, US behavior toward the Soviets took on a harsher edge. Soviet ambassador Anatoly Dobrynin lost his reserved parking pass at the State Department. US troops swooped into tiny Grenada to defeat communism in Operation Urgent Fury. US naval exercises pushed ever closer to Soviet waters.

The strategy worked. Moscow soon believed the new US leadership really was ready to fight a nuclear war. But the Soviets also became convinced t the US was now willing to *start* a nuclear war. "The policy of the Reagan administration has to be seen as adventurous and serving the goal of worl domination," Soviet marshal Nikolai Ogarkov told a gathering of the Warsaw Pact chiefs of staff in September 1982. "In 1941, too, there were many among us who warned against war and many who did not believe a war was coming," Ogarkov said, referring to the German invasion of his countr "Thus, the situation is not only very serious but also very dangerous."

A few months later, Reagan made one of the most provocative moves of the Cold War. He announced that the US was going to develop a shield of l and nuclear weapons in space to defend against Soviet warheads. He called it missile defense; critics mocked it as "Star Wars."

To Moscow it was the Death Star—and it confirmed that the US was planning an attack. It would be impossible for the system to stop thousands of incoming Soviet missiles at once, so missile defense made sense only as a way of mopping up after an initial US strike. The US would first fire its thousands of weapons at Soviet cities and missile silos. Some Soviet weapons would survive for a retaliatory launch, but Reagan's shield could bloc many of those. Thus, Star Wars would nullify the long-standing doctrine of mutually assured destruction, the principle that neither side would eve start a nuclear war since neither could survive a counterattack.

As we know now, Reagan was not planning a first strike. According to his private diaries and personal letters, he genuinely believed he was bringin about lasting peace. (He once told Gorbachev he might be a reincarnation of the human who invented the first shield.) The system, Reagan insistec purely defensive. But as the Soviets knew, if the Americans were mobilizing for attack, that's exactly what you'd expect them to say. And according Cold War logic, if you think the other side is about to launch, you should do one of two things: Either launch first or convince the enemy that you c strike back even if you're dead.

Perimeter ensures the ability to strike back, but it's no hair-trigger device. It was designed to lie semi-dormant until switched on by a high offic a crisis. Then it would begin monitoring a network of seismic, radiation, and air pressure sensors for signs of nuclear explosions. Before launching retaliatory strike, the system had to check off four if/then propositions: If it was turned on, then it would try to determine that a nuclear weapon h Soviet soil. If it seemed that one had, the system would check to see if any communication links to the war room of the Soviet General Staff remain they did, and if some amount of time—likely ranging from 15 minutes to an hour—passed without further indications of attack, the machine would assume officials were still living who could order the counterattack and shut down. But if the line to the General Staff went dead, then Perimeter w infer that apocalypse had arrived. It would immediately transfer launch authority to whoever was manning the system at that moment deep inside protected bunker—bypassing layers and layers of normal command authority. At that point, the ability to destroy the world would fall to whoever v on duty: maybe a high minister sent in during the crisis, maybe a 25-year-old junior officer fresh out of military academy. And if that person decid press the button ... If/then. If/then. If/then. If/then.

Once initiated, the counterattack would be controlled by so-called command missiles. Hidden in hardened silos designed to withstand the massive and electromagnetic pulses of a nuclear explosion, these missiles would launch first and then radio down coded orders to whatever Soviet weapons survived the first strike. At that point, the machines will have taken over the war. Soaring over the smoldering, radioactive ruins of the motherland with all ground communications destroyed, the command missiles would lead the destruction of the US.

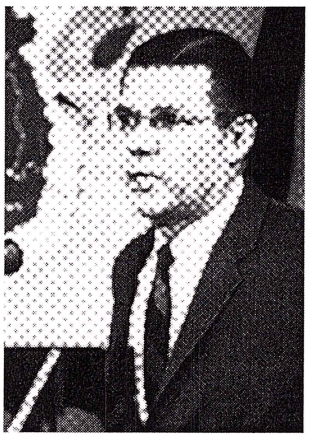
The US did build versions of these technologies, deploying command missiles in what was called the Emergency Rocket Communications System. also developed seismic and radiation sensors to monitor for nuclear tests or explosions the world over. But the US never combined it all into a syst zombie retaliation. It feared accidents and the one mistake that could end it all.

Instead, airborne American crews with the capacity and authority to launch retaliatory strikes were kept aloft throughout the Cold War. Their miss was similar to Perimeter's, but the system relied more on people and less on machines.

And in keeping with the principles of Cold War game theory, the US told the Soviets all about it.

Great Moments in Nuclear Game Theory

Permissive Action Links

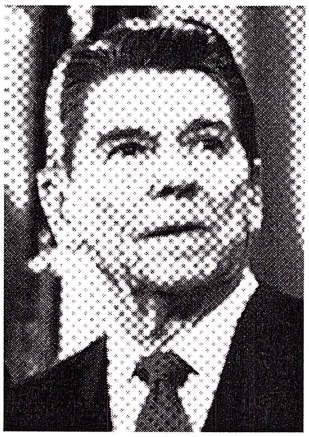


When: 1960s
What: Midway through the Cold War, American leaders began to worry that a rogue US officer might launch a small, unauthorized strike, prompting massive retaliation. So in 1962, Robert McNamara ordered every nuclear weapon locked with numerical codes.
Effect: None. Irritated by the restriction, Strategic Air Command set all the codes to strings of zeros. The Defense Department didn't learn of the subterfuge until 1977.

US-Soviet Hotline

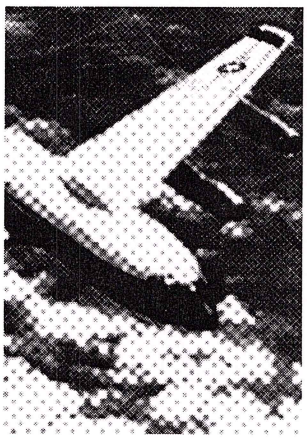
When: 1963
What: The USSR and US set up a direct line, reserved for emergenci The goal was to prevent miscommunication about nuclear launches.
Effect: Unclear. To many it was a safeguard. But one Defense official the 1970s hypothesized that the So leader could authorize a small strik and then call to blame the launch o renegade, saying, "But if you prom not to respond, I will order an absolute lockdown immediately."

Missile Defense



When: 1983
What: President Reagan proposed a system of nuclear weapons and lasers in space to shoot down enemy missiles. He considered it a tool for peace and promised to share the technology.
Effect: Destabilizing. The Soviets believed the true purpose of the "Star Wars" system was to back up a US first strike. The technology couldn't stop a massive Soviet launch, they figured, but it might thwart a weakened Soviet response.

Airborne Command Post



When: 1961-1990
What: For three decades, the US k aircraft in the sky 24/7 that could communicate with missile silos anc give the launch order if ground-bas command centers were ever destroyed.
Effect: Stabilizing. Known as Lool Glass, it was the American equivalc of Perimeter, guaranteeing that the US could launch a counterattack. A the US told the Soviets all about it, ensuring that it served as a deterre

The first mention of a doomsday machine, according to P. D. Smith, author of *Doomsday Men*, was on an NBC radio broadcast in February 195 when the atomic scientist Leo Szilard described a hypothetical system of hydrogen bombs that could cover the world in radioactive dust and end al human life. "Who would want to kill everybody on earth?" he asked rhetorically. Someone who wanted to deter an attacker. If Moscow were on the brink of military defeat, for example, it could halt an invasion by declaring, "We will detonate our H-bombs."

A decade and a half later, Stanley Kubrick's satirical masterpiece *Dr. Strangelove* permanently embedded the idea in the public imagination. In th movie, a rogue US general sends his bomber wing to preemptively strike the USSR. The Soviet ambassador then reveals that his country has just deployed a device that will automatically respond to any nuclear attack by cloaking the planet in deadly "cobalt-thorium-G."

"The whole point of the doomsday machine is lost if you keep it a secret!" cries Dr. Strangelove. "Why didn't you tell the world?" After all, such a d works as a deterrent only if the enemy is aware of its existence. In the movie, the Soviet ambassador can only lamely respond, "It was to be announ at the party congress on Monday."

In real life, however, many Mondays and many party congresses passed after Perimeter was created. So why didn't the Soviets tell the world, or at the White House, about it? No evidence exists that top Reagan administration officials knew anything about a Soviet doomsday plan. George Shult secretary of state for most of Reagan's presidency, told me that he had never heard of it.

In fact, the Soviet military didn't even inform its own civilian arms negotiators. "I was never told about Perimeter," says Yuli Kvitsinsky, lead Sovie negotiator at the time the device was created. And the brass still won't talk about it today. In addition to Yarynich, a few other people confirmed th existence of the system to me—notably former Soviet space official Alexander Zheleznyakov and defense adviser Vitali Tsygichko—but most questi about it are still met with scowls and sharp nyets. At an interview in Moscow this February with Vladimir Dvorkin, another former official in the Strategic Rocket Forces, I was ushered out of the room almost as soon as I brought up the topic.

So why was the US not informed about Perimeter? Kremlinologists have long noted the Soviet military's extreme penchant for secrecy, but surely t couldn't fully explain what appears to be a self-defeating strategic error of extraordinary magnitude.

The silence can be attributed partly to fears that the US would figure out how to disable the system. But the principal reason is more complicated a surprising. According to both Yarynich and Zheleznyakov, Perimeter was never meant as a traditional doomsday machine. The Soviets had taken g theory one step further than Kubrick, Szilard, and everyone else: They built a system to deter themselves.

By guaranteeing that Moscow could hit back, Perimeter was actually designed to keep an overeager Soviet military or civilian leader from launchin prematurely during a crisis. The point, Zheleznyakov says, was "to cool down all these hotheads and extremists. No matter what was going to happ there still would be revenge. Those who attack us will be punished."

And Perimeter bought the Soviets time. After the US installed deadly accurate Pershing II missiles on German bases in December 1983, Kremlin military planners assumed they would have only 10 to 15 minutes from the moment radar picked up an attack until impact. Given the paranoia of t era, it is not unimaginable that a malfunctioning radar, a flock of geese that looked like an incoming warhead, or a misinterpreted American war exercise could have triggered a catastrophe. Indeed, all these events actually occurred at some point. If they had happened at the same time, Armageddon might have ensued.

Perimeter solved that problem. If Soviet radar picked up an ominous but ambiguous signal, the leaders could turn on Perimeter and wait. If it turn out to be geese, they could relax and Perimeter would stand down. Confirming actual detonations on Soviet soil is far easier than confirming distar launches. "That is why we have the system," Yarynich says. "To avoid a tragic mistake. "

The mistake that both Yarynich and his counterpart in the United States, Bruce Blair, want to avoid now is silence. It's long past time for the wor come to grips with Perimeter, they argue. The system may no longer be a central element of Russian strategy—US-based Russian arms expert Pave Podvig calls it now "just another cog in the machine"—but Dead Hand is still armed.

To Blair, who today runs a think tank in Washington called the World Security Institute, such dismissals are unacceptable. Though neither he nor anyone in the US has up-to-the-minute information on Perimeter, he sees the Russians' refusal to retire it as yet another example of the insufficien reduction of forces on both sides. There is no reason, he says, to have thousands of armed missiles on something close to hair-trigger alert. Despite far the world has come, there's still plenty of opportunity for colossal mistakes. When I talked to him recently, he spoke both in sorrow and in ange "The Cold War is over. But we act the same way that we used to."

Yarynich, likewise, is committed to the principle that knowledge about nuclear command and control means safety. But he also believes that Perim can still serve a useful purpose. Yes, it was designed as a self-deterrent, and it filled that role well during the hottest days of the Cold War. But, he wonders, couldn't it now also play the traditional role of a doomsday device? Couldn't it deter future enemies if publicized?

The waters of international conflict never stay calm for long. A recent case in point was the heated exchange between the Bush administration and Russian president Vladimir Putin over Georgia. "It's nonsense not to talk about Perimeter," Yarynich says. If the existence of the device isn't made public, he adds, "we have more risk in future crises. And crisis is inevitable."

As Yarynich describes Perimeter with pride, I challenge him with the classic critique of such systems: What if they fail? What if something goes wr What if a computer virus, earthquake, reactor meltdown, and power outage conspire to convince the system that war has begun?

Yarynich sips his beer and dismisses my concerns. Even given an unthinkable series of accidents, he reminds me, there would still be at least one human hand to prevent Perimeter from ending the world. Prior to 1985, he says, the Soviets designed several automatic systems that could launch counterattacks without any human involvement whatsoever. But all these devices were rejected by the high command. Perimeter, he points out, w never a truly autonomous doomsday device. "If there are explosions and all communications are broken," he says, "then the people in this facility c would like to underline can—launch."

Yes, I agree, a human could decide in the end not to press the button. But that person is a soldier, isolated in an underground bunker, surrounded evidence that the enemy has just destroyed his homeland and everyone he knows. Sensors have gone off; timers are ticking. There's a checklist, an soldiers are trained to follow checklists.

Wouldn't any officer just launch? I ask Yarynich what he would do if he were alone in the bunker. He shakes his head. "I cannot say if I would push button."

It might not actually be a button, he then explains. It could now be some kind of a key or other secure form of switch. He's not absolutely sure. Afte he says, Dead Hand is continuously being upgraded.

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