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Space was never really peaceful. Now everyone's stopped pretending

From lasers to space planes, the battle for space is already underway – and everyone wants to win it

by TOM HOWARTH



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hen Germany announced plans in February to spend tens of billions of euros on new military capabilities, it wasn't just the size of the investment that raised eyebrows – it was how openly they talked about what they might buy.

Encrypted communication satellite constellations. 'Inspector' spacecraft able to manoeuvre close to other satellites. Sensors, trackers and even lasers capable of interfering with enemy satellites.

For decades, space was viewed as a peaceful backdrop to the conflict on Earth. Not any more. Now Germany is among a growing list of countries treating space not just as infrastructure, but as a domain that may need to be actively defended, contested and potentially fought over.

"Having a war-fighting mindset for orbit is dangerous," says Dr Michael Mulvihill, a Vice Chancellor Research Fellow in astropolitics at

Teesside University. "Space has always been framed as a collaborative space, [but] even though it was used for military operations, they were usually for communications or reconnaissance to extend military capabilities."

Now that's changing. From the US and China to the UK, France, India and Japan, governments are pouring money into military space systems. But what exactly do they plan on putting up there? And where does this militarisation lead?

SPACE WAS NEVER REALLY PEACEFUL

The idea that space was once a serene, apolitical domain is mostly a myth that governments found useful to promote.

"The US applied a lot of interpretive flexibility to what peaceful activities entailed," says Dr Aaron Bateman, an assistant professor of history and international affairs at George Washington University and author of *Weapons in Space*. "The simplistic narrative of space systems – 'the silent sentinels that are

ABOVE Technicians work on X-37B, a secret uncrewed space plane operated by the United States Space Force (USSF). Details on its activities are sparse

ABOVE RIGHT The Thor 278 was a nuclear-armed missile primed to launch as part of the anti-satellite Program 437



THE ERA OF BLOWING THINGS UP MAY BE ENDING

According to the Secure World Foundation's (SWF's) 2025 Global Counterspace Capabilities report, four nations have now demonstrated the ability to physically destroy a satellite: China, the US, India and Russia.

But the era of explosive demonstrations may be drawing to a close because blowing up satellites is increasingly self-defeating.

"If people start using kinetic ASATs against stuff, particularly in low Earth orbit (LEO), it's going to create a hell of a mess," says Dr Stuart Eves, a space consultant with nearly 40 years' experience, including time at the UK's Ministry of Defence.

Space debris is already a problem for countries operating in space. NASA estimates some 500,000 debris objects between 1 and 10cm (0.3–4in) are currently in orbit; the European Space Agency puts the figure at over a million.

At LEO velocities, Eves points out, a 1cm (0.3in) object has "the same sort of energy as a hand grenade", hence why countries are reluctant to make more mess up there.

The rise of vast satellite constellations makes kinetic attacks even more irrational. There are roughly 16,000 trackable active objects in orbit – Starlink's mega constellation of satellites alone accounts for approximately 10,000 of them.

keeping the peace between the superpowers' – obfuscated quite a lot." In practice, the US and former Soviet Union have been testing weapons in orbit since the dawn of the space age.

America, for example, fielded Program 437, a nuclear-tipped ground-to-space anti-satellite (ASAT) system that ran until 1975. Russia, meanwhile, equipped its Salyut 3 space station, launched in 1974, with a machine gun, which is said to have been test-fired in space.

Perhaps the most infamous demonstration of space war-fighting capabilities came on 9 July 1962, when the US detonated a nuclear warhead 400km (250 miles) above the Pacific in a test called Starfish Prime. The resulting electromagnetic pulse crippled several satellites and helped prompt the Outer Space Treaty of 1967, which prohibits placing weapons of mass destruction in orbit.

What's changed, Bateman argues, isn't intent so much as scale, sophistication and candour. "There's much more overt signalling from the

"The simplistic narrative of space systems obfuscated quite a lot"

US government now," he says.

The X-37B is a case in point: a military space plane that conducts classified multi-year missions in orbit, yet whose launches the US Air Force now marks with press releases. Once, governments would have gone to great lengths to obscure exactly this kind of activity. Now they publicise it – and America is far from being the only country to do so.



“You really can’t use traditional anti-satellite weapons where you’re going to fire a missile and blow up the satellite,” says Bateman. “There are so many of them, and you can replenish them rapidly. Just from a cost perspective, there’s a strong disincentive.”

THE SUBTLE ARTS OF SPACE WARFARE

So if you can’t just blow things up, what do you do? The answer increasingly involves subtler methods. Jamming – flooding a satellite’s signal with noise – is one approach that’s been used for decades. But more sophisticated options are available, too.

Russia’s cyber attack on the Viasat network on the first day of its invasion of Ukraine in February 2022 is the most significant publicly known example: by sending false commands to modems across Europe, the hack disrupted Ukrainian government communications.

Then there are lasers. Not the Hollywood variety – these are usually directed at the optical sensors of surveillance satellites to dazzle or blind them. “If you’re using an observation satellite photographing Earth from space, shining a laser into those optics effectively blinds it,” explains Mulvihill.

Russia’s mobile ground-based laser system Peresvet is already deployed to protect its road mobile nuclear ballistic missile forces,

ABOVE Dr G Satheesh Reddy, the former head of India’s Defence Research and Development Organisation (pictured with a surface-to-air missile launcher), oversaw the country’s first successful test of its anti-satellite weapon



by **TOM HOWARTH**
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according to the SWF report. Meanwhile, China is thought to have at least five so-called ‘directed energy’ test sites.

Ground infrastructure, too, is a target. For example, Bateman points to a 2022 incident in which fibre-optic cables linking mainland Norway to the Svalbard satellite ground station were severed. “You don’t even have to blow the satellites up or physically destroy the ground stations. If you cut off the links that bring the data from point A to point B, that could also potentially be very attractive to an adversary in a conflict scenario.”

JOINING MIDDLE POWERS

If the Cold War was a two-horse space race, today’s environment is considerably more crowded. Still, there are two clear front-runners: the US and, more recently, China.

China has launched over 1,000 satellites in the past decade. As of late 2024, more than 510 are thought to be intelligence, surveillance and reconnaissance capable, according to the US-China Economic and Security Review Commission.

Against this backdrop, where do middle powers like Germany fit in? Germany’s investment may look like a belated attempt to catch up. But there’s some sense to it, Mulvihill says.

“NATO basically relied on America for all of its space capabilities,” he adds. “My read is that over the past year, this has become more transactional – more about the ability to have services withdrawn.”

Germany’s inspector satellites and electronic warfare capabilities would most likely operate under a NATO umbrella, balancing, if only slightly, what the US could restrict.

If the middle powers work together, their contribution could be significant. Eves points to past European cooperation – frameworks under which France and Germany shared access to each other’s surveillance satellites – as a model for how middle powers can meaningfully contribute.

But Bateman is sceptical that coordination will be smooth. “If history is any guide,” he says, “it’s going to be really difficult.”

So, is a world with more space powers safer or more dangerous? Probably both, and it’s certainly messier. “It’s more chaotic,” Mulvihill says. “You’re seeing that collaborative zone becoming much more fragmented, much more about self-interest and transactional politics.”

In truth, the stars have never been quite as peaceful as we like to think. The only difference now is that as more nations pile on, nobody’s hiding their true intentions.

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