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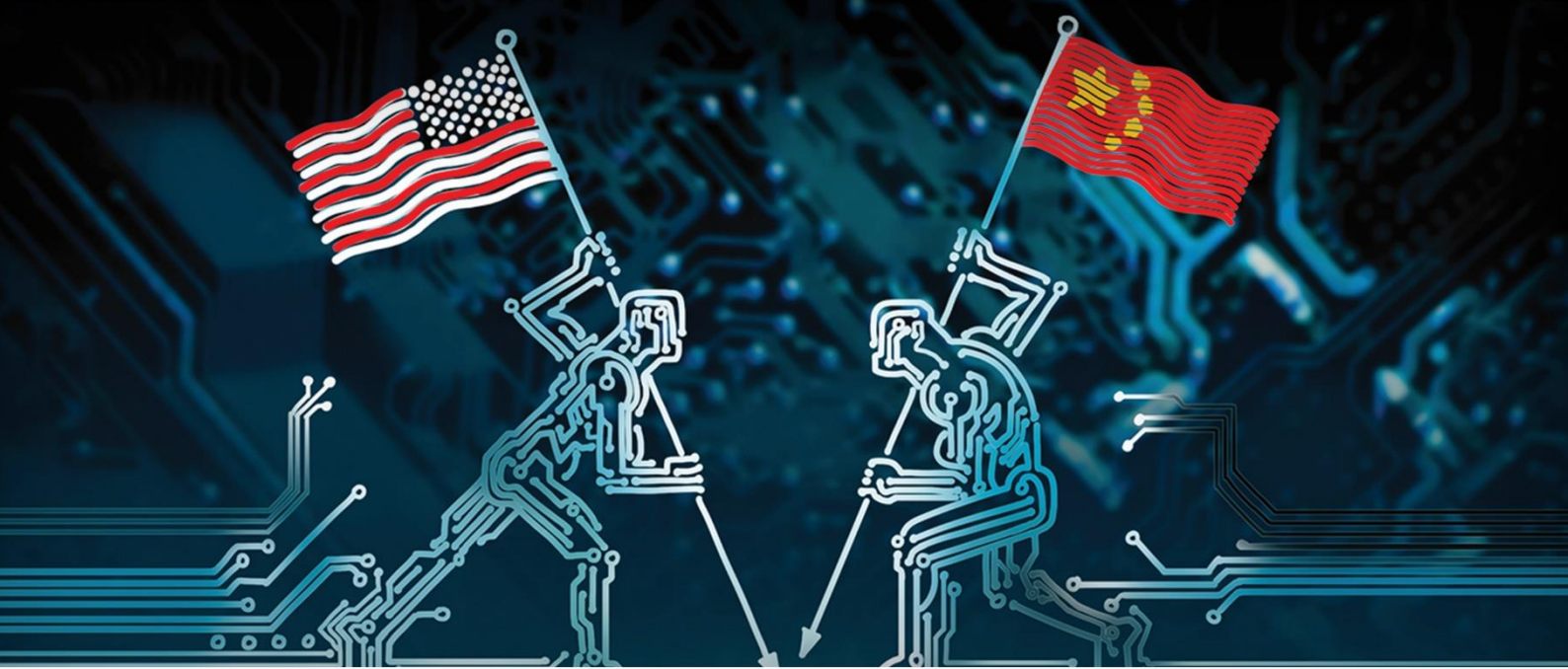
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**Militarization of Space ... Arms  
Race or a Round of Struggle?**

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## Militarization of Space ... Arms Race or a Round of Struggle?

Mohamed Abu Saada

The US President, Donald Trump, has officially approved funding for the US Space Force, the first new US military service in more than 70 years (since 1947), as the 6<sup>th</sup>. branch of the United States Armed Forces, believing that space is a war-fighting domain just like land, air, and sea.

At Joint Base Andrews outside Washington, Trump has described space as the most recent battlefield in the world. "Space is the world's new war-fighting domain," Trump said during the signing ceremony, adding, "Among grave threats to our national security, American superiority in space is absolutely vital. And we're leading, but we're not leading by enough, and very shortly we'll be leading by a lot."

"Many things can be used for peaceful and military purposes," says Jan Worner, director general of the European Space Agency (ESA), adding, "Space is different from 50 years ago. Then, it was a race between superpowers; today, it is everything. We all rely on space each and every day." When we wake up in the morning and look at the weather forecast, when we use a satnav to get somewhere we've never been before, when we listen to the radio or make a mobile phone call, when we buy things online, the chances are that these signals are mediated by satellites in some way.

*This assessment will seek to monitor the space arms race in order to foresee forms of space conflicts.*

### Space arms race

Since the launch of the first space trip in the second half of the last century, humans continue to compete on launching space trips, discover more things outside our planet, and open up new horizons in another world that is still crowded with secrets and mysteries. The Soviet astronaut, Yuri Gagarin, won the title of the first human to roam around the Earth's orbit and ascend to space, on the space shuttle "Vostok 1", 58 years ago, specifically on April 12, 1961. Note that the Soviet Union is also the pioneer in launch of the first satellite into space, Sputnik 1 on October 4, 1957. Four months later, on January 31, 1958, the United States launched the Explorer 1 satellite toward Earth's orbit. US President John F. Kennedy said in a speech on September 12, 1962, that their next goal in the space

race was to ascend to the moon, pledging to send manned flights to the moon over the next ten years.

Along with the Soviet Union and the United States, China has become a third world power in this field, when Yang Liwei, has become the first Chinese astronaut to ascend into space on October 15, 2003 after several failed attempts since 1976.

In the field of militarization of space, the Lawrence Livermore National Laboratory, California, in the 1970s, worked on Project Excalibur, which aimed to detonate a nuclear weapon in space. Lasers would then focus the resulting x-rays on to as many as 50 incoming missiles at a time to destroy them as they arced through space towards the US and its allies. The project collapsed through lack of progress and funding, however.

The Lawrence Livermore National Laboratory - California - implemented the Excalibur project in the 1970s, which was aimed at detonating a nuclear weapon in space. And that is by focusing the X-ray lasers, but no news about it has been published yet to show the success or failure of the experiment. In 2007, the United States destroyed a failed spy satellite that was gradually falling back to Earth. However, such destructions can cause dangerous clouds of space debris, which endanger other satellites indiscriminately. In the FY2008, the Bush administration also provided \$10 million for initial work toward missile experimental test.

In May 2014, the Russians launched a mysterious satellite that was seen to be maneuvering in orbit. Some thought it was the Russians testing a future space weapon because such orbital gymnastics are exactly what would be expected from an attack satellite designed to approach another and put it out of operation. Indeed, the Russians have a history of testing such spacecraft. In 2007, China destroyed one of their own weather satellites using a missile launched from Earth. The FY-1C satellite was at an altitude of 865km and was hit by the missile travelling at 8km/s. The satellite disintegrated into an estimated 150,000 pieces of space debris.

## Space conflict indicators

1) More than 52 years ago, the Senate approved the Outer Space Treaty, which bars signatory states from placing into orbit any objects carrying nuclear and other weapons of mass destruction. Although it has helped protect space for peaceful uses by all countries, the treaty has not closed off all threats



to the safety of military and civilian space assets and the pursuit of other types of space-based weapons. Some countries have developed capabilities of their offensive weapons that can shoot satellites into space orbit by using surface-to-surface ballistic missiles.

2) On March 6, 2018, US Defense Intelligence Agency director Lt Gen Robert P Ashley Jr testified before the US Senate armed services committee in Washington, DC, and said that Russia and China were developing weapons for use in a space war that included such satellites. It's a sure bet the US is developing them too.

3) In December 2019, the US House of Representatives approved the Defense Budget Act for FY2020, amounting to \$738 billion and immediately after Congress announced its approval of the 2020 Budget Act, where the US Army budget increased by 3%, about \$20 billion, compared to last year's budget, according to the US Senate's Military Affairs Committee. Some \$140 million has been allocated for the Missile Defense Agency to develop targeted energy projects and space sensing as well as high-speed defense capabilities.

4) In September 2019, Gen Joseph F. Dunford, chairman of the Joint Chiefs of Staff, said that the space capabilities of Russia, North Korea, China and Iran pose a threat to the American space capabilities.

5) A recent report by the US Defense Intelligence Agency (DIA) said that China is now developing jamming devices that can target a wide range of frequencies, including military communication ranges. North Korea is also believed to have bought jamming devices from Russia. It is noteworthy that armed organizations in Iraq and Afghanistan use these devices as well.

6) In 2008, one of the cyberattacks on a ground station in Norway succeeded in interfering with the work of NASA's Landsat satellites (1) for a period of 12 minutes. Earlier in 2019, some hackers managed to reach the agency's Terra Earth satellite, and they did everything except giving orders. Although it was unclear who was behind the attack, some commentators at that time suggested it was China.

7) A number of countries have engaged in space race, most notably China, Japan, India, Pakistan, North Korea, Taiwan, and South Korea, raising international tensions.

8) Some Middle Eastern countries have possessed a missile system that has a role in space militarization. For example, Israel now possesses Arrow-3 defense missiles designed to intercept advanced missiles in space. Meanwhile, Iran is seeking to develop its ballistic missiles which can enhance space conflicts.

### Forms of space conflicts

"It is absolutely inevitable that we will see conflict move into space," says Michael Schmitt, professor of public international law and a space war expert at University of Exeter in the United Kingdom, adding, "Space war is inevitable because today's modern militaries use space for everything, from spy satellites to a soldier on a mountaintop using satnav to figure out exactly where he or she is. "The reliance upon space is truly extraordinary in contemporary conflict," says Schmitt. And in any war, one side will seek to deprive the other of their ability to function. In this day and age, that means attacking the satellites.

Schmitt thinks that any conflict in space is unlikely to start with such brutal measures. "The immediate form would be cyber-attacks, either against the satellites or the ground stations that control them. It depends on the nature of the conflict whether you go beyond that," he says. Although treaties already exist that say you can't put military installations on the moon or weapons of mass destruction into orbit, there is a decidedly grey area.

"There is a rule in humanitarian law that says that when conducting a military operation you must choose the method that produces the least collateral damage," says Schmitt. "So blowing up satellites must be operations of last resort – at least I hope so."

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It appears that development of military conflicts in space may take many forms, most prominently through malware and (logical) bombs within spacecraft surveillance systems. Accordingly, the coming stage of cyber wars is likely to lead to space conflicts, as Jan Worner, ESA director general says, "We have to take cyber-attacks seriously."

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Therefore, in light of competition between the major powers on space, which threatens to turn into a global war, the only solution lies in the availability of political will to the major powers, as the case was with the Cold War, in order to stop likely space conflicts.

