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US can't afford to let China win new space race

Beijing knows that control of the area between Earth and moon will be key in future conflicts

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Television scriptwriters in China have been banned from writing about time travel lest viewers get the impression that all is not well in the here and now of Xi Jinping's realm. Going to the moon, on the other hand, is something to be celebrated as part of the great technological power struggle with America.

Since the first early 20th-century translations of Jules Verne, the Chinese have had their eye on colonising the moon, a romantic dream but also increasingly a sense that it is the place where future wars will be played out.

This week they are set to land there again, setting down a robot in the Ocean of Storms. It's not yet a manned flight — the Chang'e 5 will dig up two kilos of lunar dust, reconnect with an orbiting mother ship and return to Earth in about a fortnight — but a Chinese man or woman on the moon is likely to happen within a few years.

Last year China landed on the far side of the moon, the part that is perpetually invisible from Earth. Everything points to China wanting to establish a base in the south pole of the satellite, which has 200 Earth days of sunlight a year, a zone hospitable enough for Beijing's taikonauts. What is China up to in space? Perhaps there is a bit of the old romance — Chang'e is named after a moon goddess — and scientific curiosity, a sense of trophy-hunting too against Russia and the US. But the sum of its recent efforts since 2007, when it destroyed one of its own weather satellites in what appeared to be a bit of target practice, is that there is a complex military operation under way.

This summer marked the final launch of China's equivalent of GPS satellites. It has seen how GPS can win wars for America and doesn't want to be at a disadvantage. Xi has ordered the upgrading of an army strategic support force for anti-satellite warfare, for jamming and dazzling America's eyes in the sky. Preparing moon expeditions is a way to test space applications of 3D printing and artificial intelligence. They help to build co-operative networks between commercial operators and the military.

The strategic aim is to control what is known as cislunar space, the stretch between Earth and the moon that controls the access lines to deeper space. The space war theorist Everett Dolman, professor of military strategy at the US air force command college, has come up with an apocalyptic-sounding formula: "Who controls low-Earth orbit controls near-Earth space. Who controls near-Earth space dominates the Terra. Who dominates Terra determines the destiny of humankind."

An expanding naval power like China understands the merits of space surveillance: satellites can detect deep submarine activity and can warn surface fleets of changing weather. And it understands the

principle of naval blockade when applied to space. Just as warships can block sea lanes, so a space force can prevent the enemy using celestial communication.

The incoming Biden administration thus has to decide whether the US is approaching a Sputnik moment. In 1957 the Soviet Union rattled the US administration by launching the first Earth-orbiting artificial satellite. It triggered a space race. Engineers and mathematical geeks flocked to Nasa to work (for not very much money) on the clinching argument for US technical superiority: the landing of men on the moon. That took 12 years and it remains today a benchmark of what can be achieved by fully funded, goal-oriented science.

In the meantime, though, the distinction between Earth and space has been blurred. Geopolitics used to be Earth-bound, world war was war between continents. Now it isn't. China is ahead on this. Clausewitz is taught in its military academies and so too is the Prussian argument for a *Feldherrenhügel*, the mound from which commanders can direct battles. Space is the ultimate "higher ground" from which all strands of a battle can be monitored and directed. That is why the moon is more than a sentimental prize.

A senior Chinese general was quoted in 2016 as saying "the space between the Earth and the moon will be strategically important for the great rejuvenation of the Chinese nation". The head of the Chinese lunar mission says "if we don't go there now, even though we are capable of it, then we will be blamed by our descendants. If others go, then they will take over."

There is, then, a sense of urgency on the part of the Chinese. And of indifference on the part of the Americans. Donald Trump rubber-stamped the creation of a dedicated space force, drew brickbats when he had them kitted out in jungle fatigues (despite the disappointing lack of vegetation in outer space) and then lost interest. Biden, whose metaphorical moonshot may be a Covid-19 vaccine rather than a head-on technological race with Beijing, could well be happy to let the competing tycoons Elon Musk and Jeff Bezos take on some of the heavy lifting of space exploration.

But even their multibillion-dollar fortunes are likely to fall short. China is playing for higher stakes than the Musk v Bezos my-rocket-is-bigger-than-yours stag-rutting. It considers a foothold on the moon to be a form of future-proofing, part of a plan to thwart the US in all domains should their great power rivalry hurtle out of control.

If you believe the speech bubbles coming from the Chinese top brass, command in space is now deemed to be an existential issue. The new US president needs to pay attention. The race for the moon is still on.